



Transport
for NSW

Execution version

Enabling Works Contract

ISD-17-6763

Parramatta Light Rail – Stage 1

Dated

6 July 2018

Transport for NSW (ABN 18 804 239 602) ("Principal")

Diona Pty Ltd (ACN 001 904 258) and Ward Civil & Environmental
Engineering Pty Ltd (ACN 098 942 459) (together, the "Contractor")



Enabling Works Contract

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Enabling Works Contract

Details

Parties	The Principal and the Contractor	
Principal	Name	Transport for NSW , a NSW Government agency and a corporation constituted by section 3C of the <i>Transport Administration Act 1988</i> (NSW)
	ABN	18 604 239 602
	Address	Level 5, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067
	Telephone	(02) 9200 0200
	Attention	Tim Poole
Contractor	Name	Diona Pty Ltd (ACN 001 904 258); and Ward Civil & Environmental Engineering Pty Ltd (ACN 098 942 459).
	Address	Suite 2, Level 4, 65 Epping Road North Ryde NSW 2113
	Telephone	02 9438 3666
	Attention	[REDACTED]
Governing law	New South Wales	
Business Day place (s)	Sydney, Australia	
Recitals	A	On 8 December 2015, the NSW Government announced its intention to deliver the Project.
	B	The Principal has been selected by the NSW Government as the proponent for the development and delivery of the Project.
	C	The Contractor acknowledges the importance of: <ul style="list-style-type: none">(i) the safety of the public and all Project participants during the construction of the PLR;(ii) the minimisation of disruption to the community, and(iii) the need to approach the performance of the Contractor's Activities in a co-operative and



positive manner

- D** The Project is being delivered in the following packages:
- (i) the Remediation Works which are being delivered by the Remediation Contractor under the Remediation Contract;
 - (ii) the Infrastructure Works which are being delivered by the Infrastructure Contractor under the Infrastructure Contract;
 - (iii) the SOM Works which are being delivered by the SOM Contractor under the SOM Contract; and
 - (iv) the design and construction of the Works, which are to be delivered under this Contract.
- E** On 2 July 2018, following completion of a public tender process, the Principal selected the Contractor as the successful proponent to design and construct the Works in consideration of the Contract Sum in accordance with the terms of this Contract.
- F** The Principal has reposed trust in the Contractor to deliver the Works:
- (i) in accordance with this Contract;
 - (ii) consistently with the matters set out in these Recitals; and
 - (iii) consistently with the Contractor's representation that it has the resources and expertise to perform the Contractor's Activities in accordance with this Contract.
- G** In reliance on these representations made by the Contractor and on the basis of the trust reposed by Principal in the Contractor, the Principal has engaged the Contractor to perform the Contractor's Activities on the terms of this Contract.

Enabling Works Contract

General terms

1 Definitions and Interpretation

1.1 Definitions

In this Contract, unless the context otherwise indicates:

Act of Prevention means:

- (a) a breach of this Deed by the Principal,
- (b) a negligent act or omission by the Principal (excluding a negligent act or omission in the exercise by the Principal of its functions and powers pursuant to any Law);
- (c) any other act of the Principal or its Associates or an Other Contractor engaged by the Principal (other than an Interface Contractor), except where such act is:
 - (i) expressed as not constituting an Act of Prevention pursuant to the provisions of this Deed;
 - (ii) caused by or arising out of the failure of the Contractor to fulfil its obligations under this Deed or any act or omission of an Associate of the Contractor; or
 - (iii) in the exercise by the Principal of its functions and powers pursuant to any Law; and
- (d) a Variation the subject of a direction by the Principal's Representative under clause 6.2, except where that Variation is directed in the circumstances described in clause 8.2(a).

The valuation of entitlements to money under clauses 10.1 and 13.3 is not a Variation for the purposes of this definition of Act of Prevention.

Advanced Amount means the amount specified in Schedule 2.

Approved Actual Utilities Cost means,

where the Utilities Target Cost Scope is performed by Subcontractors:

- (a) the amount properly and reasonably payable by the Contractor to Subcontractors pursuant to Subcontracts for the performance of the Utilities Target Cost Scope and will exclude any amount payable by the Contractor to a Subcontractor in respect of:
 - (i) a breach of the Subcontract by the Contractor;
- (b) the correction of Defects (as defined by this Deed);
- (c) Claims made by Subcontractors arising out of:

- (ii) negligence on the part of the Contractor;
- (iii) misleading or deceptive conduct by the Contractor; or
- (iv) any other unlawful conduct or recklessness on the part of the Contractor; and
- (v) any Claim by a Subcontractor against the Contractor arising out of a breach of this Deed by the Contractor;

where the Utilities Target Cost is self-performed:

- (d) the amount properly and reasonably payable to the Contractor for the performance of the Utilities Target Cost Scope excluding the correction of Defects.

Associate means in relation to a person, any Related Body Corporate of that person and any officer, employee, agent, contractor, consultant, nominee, licensee or adviser of that person or that Related Body Corporate and

- (a) in the case of the Contractor, includes its Subcontractors and their respective Associates (but does not include the Principal or any of its Associates);
- (b) in the case of the Principal, does not include the Contractor or its Associates; and
- (c) in the case of both parties, does not include the Environmental Representative.

Australian Standards means national standards developed by Standards Australia.

Authority includes any governmental or semi-governmental or local government authority, administrative or judicial body or tribunal, department, commission, public authority, agency, Minister, statutory corporation or instrumentality and any private electricity, telecommunications, gas or other utility company having statutory rights in relation to the Works or the Contractor's Activities.

Authority Approval means any licence, permit, consent, approval, determination, exemption, certificate, memorandum of understanding, notification or permission from any Authority or under any Law, and any variations or modifications to them, or any requirement made under any Law, which must be obtained or satisfied (as the case may be) to:

- (a) carry out the Contractor's Activities including for the avoidance of doubt all things required for dealing with, transporting and disposing of Contamination, Hazardous Material or waste; or
- (b) occupy and use for its intended purpose the completed Works or a completed Portion,

and for the avoidance of doubt includes the:

- (c) Planning Approval;
- (d) Roads Act Approval;
- (e) approval of the City of Parramatta Council; and
- (f) approval of the Traffic Management Centre.

Best Industry Practice means (subject to any express provisions of this Contract which impose higher standards) the practices which are generally engaged in or observed by experienced and competent designers and builders, with respect to works similar to the Works and activities similar to the Contractor's Activities which, with respect to any objective, may be expected, in the exercise of its expertise, to accomplish that objective in a manner consistent with recognised highest standards regarding quality, safety and environmental protection, including:

- (a) using effective procurement methods;
- (b) complying with all Law;
- (c) using good quality, new, undamaged equipment and materials for the Works which are suitable for the purpose for which they are required;
- (d) ensuring that all workmanship and construction techniques are of the highest quality and standards; and
- (e) complying with relevant Australian Standards and best practice guidelines.

Building Code means the Building Code 2013 issued under subsection 27(1) of the *Fair Work (Building Industry) Act 2012* (Cth).

Business Day means any day other than a Saturday, Sunday, public holiday in New South Wales or 27, 28, 29, 30 or 31 December.

CCU means Construction Compliance Unit, the unit established within NSW Industrial Relations to monitor compliance with and receive reports of alleged breaches of the NSW Guidelines.

Change in Authority Approval means a change:

- (a) in an Authority Approval which is in existence as at the date of this Contract; and
- (b) which occurs after the date of this Contract.

Change in Codes and Standards means a change in the Codes and Standards taking effect after the date of this Contract, excluding a change in the Codes and Standards which, as at the date of this Contract:

- (a) was published or of which public notice had been given (even as a possible change in the Codes and Standards); or
- (b) a party experienced and competent in the delivery of works and services similar to the Works or the Contractor's Activities (as applicable) would have reasonably foreseen or anticipated.

Change in Law means (if it takes effect after the date of this Contract):

- (a) a change in an existing Law (other than a change in an Authority Approval); or
- (b) a new Law (other than a new Authority Approval),

compliance with which:

- (c) has a direct effect on the Contractor carrying out the Contractor's Activities; and

- (d) directly results in an increase or decrease in the Contractor's costs of carrying out the Contractor's Activities, or a delay to the Contractor achieving Completion of a Portion by the relevant Date for Completion in accordance with clause 10.7(a),

but excludes:

- (e) a change in an existing Law in respect of Taxes or a new Law in respect of Taxes; and
- (f) a change in an existing Law or a new Law which, as at the date of this Contract was published or of which public notice had been given (even as a possible change in an existing Law or a possible new Law).

Claim includes any claim for an increase in the Contract Sum, for payment of money (including damages), for an extension of time to a Date for Completion or for any other form of relief:

- (a) under, arising out of, or in any way in connection with, this Contract, including any direction of the Principal's Representative;
- (b) arising out of, or in any way in connection with, the Contractor's Activities or the Works or either party's conduct prior to the date of this Contract; or
- (c) otherwise at Law or in equity including:
 - (i) under or for breach of statute;
 - (ii) in tort for negligence or otherwise, including negligent misrepresentation, or
 - (iii) for restitution, including restitution based on unjust enrichment.

Codes and Standards means:

- (a) the relevant building codes (including the Building Code of Australia), Standards Australia codes, standards, specifications, guidelines, rules, procedures or other publications current at the date of this Contract (including the Disability (Access to Premises – Buildings) Standards 2010), including any specified or required by this Contract;
- (b) the Code of Practice for Procurement (January 2005), NSW Government Policy on Aboriginal Participation in Construction (May 2015 updated 1 August 2016), NSW Code, NSW Guidelines, Environmental Management Systems Guidelines (3rd edition) (January 2014), Work Health and Safety Management Systems and Auditing Guidelines (5th edition) (2014), Training Management Guidelines (February 2009), Quality Management System Guidelines for Construction (August 2013), GREP and any other NSW Government guidelines and requirements specified or required by this Contract; and
- (c) if (and to the extent) the codes and standards referred to in paragraphs (a) or (b) are irrelevant, then relevant internal or external codes, standards, specifications, guidelines, rules, procedures or other publications current at the date of this Contract.

Commonwealth means the Commonwealth of Australia.

Commissioning has the meaning given to that term in the TfNSW Standard Requirements.



Completion means the stage in the execution of the Contractor's Activities when:

- (a) the Works are, or a Portion is, complete in accordance with this Contract except for minor Defects, which in the opinion of the Principal's Representative:
 - (i) do not prevent the Works or the Portion from being reasonably capable of being used for the intended purpose of the Works or the Portion;
 - (ii) can be rectified without prejudicing the convenient intended use of the Works or the Portion; and
 - (iii) the Contractor has reasonable grounds for not promptly rectifying;
- (b) the Contractor has:
 - (i) carried out and passed all tests that:
 - (A) are required under this Contract to be carried out and passed before the Works or a Portion reaches Completion; or
 - (B) must necessarily be carried out and passed to verify that the Works or a Portion is in the condition this Contract requires the Works or Portion (as the case may be) to be in at Completion;
 - (ii) without limiting clause 2.3(d)(iv), obtained all Authorly Approvals that it is required under this Contract to obtain before Completion of a Portion and provided such Authorly Approvals to the Principal's Representative;
 - (iii) given to the Principal's Representative all other documents and information:
 - (A) required (including in accordance with the TfNSW Standard Requirements and the Works Brief) for the use, operation, maintenance and repair of the Works or a Portion; and
 - (B) that are to be handed over to the Principal's Representative before Completion of a Portion;
 - (iv) complied with all performance requirements that this Contract requires to be verified before Completion of a Portion; and
 - (v) provided the Principal's Representative with the Contractor's Certificate of Completion in the form of Schedule 21 for the Works or a Portion; and
- (c) the Contractor has done everything else that it is required to do under this Contract before Completion of a Portion including those things referred to in Item 1 of Schedule 1.

Completion Payment Claim has the meaning given in clause 11.10.

Concept Design means the preliminary design of the Works (if any) which appears in Annexure A of the Works Brief.



Conditions Precedent means the conditions precedent set out in Item 1 of Schedule 1.

Confidentiality Undertaking means the confidentiality undertaking in the form of Schedule 3.

Consequential or Indirect Loss means:

- (a) any Loss that does not flow directly and naturally from the relevant breach of this Contract or a duty of care, and
- (b) any loss of income, loss of revenue, loss of profit, loss of financial opportunity, loss of business or loss of business opportunity, loss of contract, loss of goodwill, loss of use, loss of production or failure to realise anticipated savings (whether the loss is direct or indirect),

however, does not include:

- (c) any Loss the subject of an indemnity given by the Contractor in favour of the Principal; and
- (d) any Loss incurred by the Principal to the Infrastructure Contractor, the SOM Contractor or a Third Party.

The exclusion in paragraph (c) of this definition does not extend to Loss the subject of an indemnity given in clause 16.16(c), which would otherwise fall within Items (a) or (b) of this definition.

Construction Environmental Management Plan means the plan which forms part of the Contract Management Plan which is required to be provided and implemented by the Contractor pursuant to the TfNSW Standard Requirements.

Construction Plant means equipment, appliances, machinery and things used in the execution of the Contractor's Activities but not forming part of the Works.

Construction Plant Insurance means a policy of insurance insuring construction plant that is material to the Contractor's ability to perform the Contractor's Activities against loss, theft, damage or destruction.

Contamination or Contaminated means the presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.

Contemporaneous Work means work carried out:

- (a) by Other Contractors on or after the date of this Contract;
- (b) on or adjacent to the Site; and
- (c) upon or by which the proper execution of the Contractor's Activities is dependent or may be appreciably affected by it being unsuitable, unsatisfactory or detrimental in any way.

Contract means the contract between the Principal and the Contractor in respect of the Works constituted by the documents referred to in Item 2 of Schedule 1.

Contract Documentation means all documentation in computer readable or written forms brought into (or required to be brought into) existence as part of, or



for the purpose of, performing the Contractor's Activities (whether before or after the date of this Contract) including:

- (a) the items described in Item 2 of Schedule 1 and all Design Documentation, and
- (b) all plans, manuals, programs and other documents.

Contract Management Plan means the documents required to be provided and implemented by the Contractor pursuant to the TfNSW Standard Requirements as developed, amended or updated from time to time in accordance with the Contract.

Contract Sum means the Original Contract Price increased or decreased by the amounts by which this Contract requires the Contract Sum to be increased or decreased.

Contractor means the person named as the Contractor in Item 3 of Schedule 1.

Contractor's Activities means all things or tasks which the Contractor is, or may be, required to do to comply with its obligations under this Contract, including:

- (a) the design, construction, commissioning and hand-over of the Works,
- (b) the provision of Temporary Works and Construction Plant;
- (c) Commissioning and Operational Readiness;
- (d) Provisional Sum Work; and
- (e) anything incidental or ancillary to the obligations in paragraphs (a) to (d).

Contractor's Program means the program prepared and provided by the Contractor in accordance with clause 10.2, as developed and updated in accordance with clause 10.2 from time to time.

Contractor's Representative means the person notified to the Principal's Representative in accordance with clause 9.4(a) as being the Contractor's Representative.

COPC Development Agreement means the agreement entered into between Principal and the City of Parramatta Council dated 28 March 2018 a copy of which is at Exhibit I

Crown Building Work has the meaning given to that term in section 6.28 of the *Environmental Planning and Assessment Act 1979* (NSW).

Date for Completion means in respect of the Works or a Portion the date, or the last day of the period of time, specified in Item 4 of Schedule 1 for the Works or that Portion, as adjusted under this Contract by an extension of time determined by the Principal's Representative or pursuant to any determination by an expert or any litigation.

Date of Completion means:

- (a) the date of Completion of a Portion, set out in a Notice of Completion; or
- (b) where another date is determined in any determination by an expert or any court pursuant to clause 15 as the date upon which Completion was achieved, that date.

Date of Final Completion means:

- (a) the date determined in accordance with clause 12.8(a)(i) as the date Final Completion was achieved; or
- (b) where another date is determined in any determination by an expert or any court pursuant to clause 15 as the date upon which Final Completion was achieved, that date.

Defect means any:

- (a) defect, deficiency, fault, error or omission in the Works or Temporary Works, including subsidence, shrinkage and movement outside the required tolerances; or
- (b) other aspect of the Works, Temporary Works or Contractor's Activities that is not in accordance with the requirements of this Contract, including non-compliances, non-conformances and non-conformities.

Defects Rectification Period means the period:

- (a) stated in Item 5 of Schedule 1, as extended by clause 8.6 and
- (b) stated in Item 30 of Schedule 1 in relation to any Third Party Agreement.

Design Documentation means all design documentation (including design standards, design reports, durability reports, construction descriptions, specifications, models, samples, prototypes, calculations, drawings, digital records, computer software and all other relevant data) in computer readable and written forms, or stored by any other means required by this Contract or necessary to be produced by the Contractor to design and construct the Works and the Temporary Works and documentation (including certificates and check lists) to evidence that the design documentation complies with the requirements of this Contract.

Design Stage means a design stage described in the TfNSW Standard Requirements.

Difference in Conditions has the meaning given to that term in clause 2.15(b)(iv).

Dispute has the meaning given to that term in clause 15.1.

Document means any document which is required to be submitted for the review of the Principal's Representative under this Contract

Draft Third Party Agreement has the meaning given to that term in clause 2.15(b)(i)(A).

Electronic Portal means the electronic portal or document management system (if any) referred to in a notice by the Principal's Representative under clause 16.1(a).

Enabling Works Lump Sum means the amount specified in Schedule 2, as adjusted in accordance with this Deed.

Environment means components of the earth, including:

- (a) land, air and water;
- (b) any layer of the atmosphere;



- (c) any organic or inorganic matter and any living organism;
- (d) human-made or modified structures and areas; and
- (e) interacting natural ecosystems that include components referred to in paragraphs (a) to (c).

Environmental Representative means the environmental manager (or any replacement) notified to the Contractor by the Principal's Representative.

Excepted Risk means any one of:

- (a) war, invasion, act of foreign enemies, hostilities (whether war is declared or not), civil war, rebellion, revolution, act of terrorism, insurrection or military or usurped powers, martial law or confiscation by order of any government or public authority;
- (b) ionising radiations or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel not caused by the Contractor or its Subcontractors or either's employees or agents; or
- (c) any other event so described in Item 7 of Schedule 1 or otherwise specifically excepted in this Contract

Excluded Claim means any claim:

- (a) with respect to a Change in Law under clause 2.3(e);
- (b) for a Variation directed in accordance with clause 6.2 or a direction by the Principal's Representative to which clause 17.1 applies;
- (c) for an extension of Time to any Date for Completion under clause 10.8; or
- (c) for payment under clause 11, including claims under clauses 11.9 and 11.12.

Executive Negotiators means the persons described in Item 52 of Schedule 1.

Exhibit means an exhibit to this Contract

Extra Land means the land referred to in clause 3.5(a).

Final Completion means the stage in the execution of the Contractor's Activities when:

- (a) all Defects Rectification Periods (including any extension under clause 6.6) have expired and the Contractor has rectified all Defects in accordance with the Contract;
- (b) the Contractor has:
 - (i) carried out and passed all tests which:
 - (A) are required under this Contract to be carried out and passed before the Works reach Final Completion; or
 - (B) must necessarily be carried out and passed to verify that the Works are in the condition this Contract requires them to be in at Final Completion;



- (ii) obtained all Authority Approvals that it is required under this Contract to obtain which:
 - (A) were not obtained before Completion of the last Portion to reach Completion; or
 - (B) are to be obtained prior to Final Completion,
 and provided such Authority Approvals to the Principal's Representative;
- (iii) given to the Principal's Representative all other documents or information referred to in this Contract:
 - (A) which are required for the use, operation, maintenance and repair of the Works but which were not obtained before Completion of the last Portion to reach Completion; or
 - (B) which are required to be handed over to the Principal's Representative before Final Completion; and
- (iv) complied with all performance requirements under this Contract that must be verified before Final Completion; and
- (c) the Contractor has done everything else which it is required to do under this Contract before Final Completion.

Final Payment Claim has the meaning given in clause 11.12.

Financial Assessment has the meaning given to that term in clause 9.11(a).

First Statement of Outstanding Claims means a statement issued in accordance with clause 11.10(c).

Force Majeure Event means:

- (a) riot, war, invasion or act of foreign enemies, acts of terrorism, or hostilities;
 - (b) industrial action in the form of a strike that is not specific to, or caused by, the Contractor; and
 - (c) earthquakes, substantial fire (which is not caused by the Contractor or the Contractor's personnel), or severe tropical cyclone, but excluding weather conditions regardless of severity,
- but only where such events or circumstances;
- (d) are beyond the reasonable control of the affected party;
 - (e) where the affected party is the Contractor, are such that a competent contractor would not have been able to prevent or overcome the effect of such events or circumstances on the performance of the Contractor's obligations under the Contract if it had exercised the care, skill, diligence, prudence and foresight reasonably or ordinarily expected of a competent, qualified, skilled and experienced contractor supplying similar works; and
 - (f) are not caused or contributed to in whole or in part by a breach by the affected party (or their personnel) of the Contract.

General Conditions means clauses 1 to 20 of this Contract

Greenhouse Data means all data, information, records and reports of the type that a registered corporation or any other person may be required or entitled to provide under the NGER Legislation, including as to:

- (a) greenhouse gas emissions, energy production or energy consumption, and
- (b) reduction of greenhouse gas emissions, removal of greenhouse gases or offsets of greenhouse gas emissions from any greenhouse gas project,

relating to any aspect of any of the Contractor's Activities or the activities of any of the Contractor's personnel in connection with the Contractor's Activities.

GREP means the NSW Government Resource Efficiency Policy.

Hazardous Material means any natural or artificial substance whether solid, liquid or gas (alone or in combination with any other substance) which is toxic, flammable or otherwise capable of causing harm to humans or damage to the Environment including asbestos, toluene, polychlorine biphenyls, lead based paints, glues, solvents, clearing agents, paints and water treatment chemicals.

Incentive means the amount calculated and payable in accordance with Schedule 16.

Incident means:

- (a) any work health and safety or environmental or security incident arising from the performance of (or failure to perform) the Contractor's Activities including:
 - (i) a fatality or injury to any person including any incident which must be reported to New South Wales WorkCover Authority;
 - (ii) loss of containment, escape of or migration of Contamination off-Site and into the Environment;
 - (iii) any fire or dangerous event on the Site or Extra Land;
 - (iv) a security breach;
 - (v) any unauthorised removal of trees;
 - (vi) a non-compliance with an Authority Approval; or
 - (vii) any public complaint; or
- (b) any unplanned and/or undesired event which results in or has the potential to result in injury, ill-health, damage to or Loss of property, interruption to operations or environmental impairment,

and includes:

- (c) a near miss, breach of procedure, quality failure and/or injuries to contractors and members of the public; and
- (d) a notifiable incident under the WHS Legislation.

Independent Certifier means the person engaged by the Principal in accordance with the Independent Certifier Deed.

Independent Certifier Certificate of Compliance means the certificates issued by the Independent Certifier in accordance with clause 9.8(f)(iv).

Independent Certifier Deed means the deed that will be entered into by the Principal, the Contractor and the Independent Certifier.

Infrastructure Contract means the contract between the Principal and the Infrastructure Contractor in respect of the Infrastructure Works, which will be entered into after the date of this Contract.

Infrastructure Contractor means the contractor appointed to undertake the Infrastructure Works pursuant to the Infrastructure Contract.

Infrastructure Works means the design and construction of the infrastructure package for the Project, which is to be delivered under the Infrastructure Contract.

Information Documents and Materials means:

- (a) the items specified in Schedule 9;
- (b) the Reports; and
- (c) all other documents, core and other samples, exhibits and materials in any format or medium including any electronic form provided to the Contractor unless expressly identified as forming part of this Contract,

including anything which is expressly stated by this Contract to form part of the Information Documents and Materials but excludes the Concept Design.

Insolvency Event means when:

- (a) one party informs the other party in writing, or its creditors generally, that the party is insolvent or is unable to proceed with its obligations under this Contract for financial reasons;
- (b) in relation to an individual, the individual (being a party) commits an act of bankruptcy, a bankruptcy petition is presented against the individual or the individual is made bankrupt;
- (c) execution is levied against a party by a creditor, debenture holders or trustees or under a floating charge; or
- (d) in relation to a corporation any one of the following:
 - (i) notice is given of a meeting of creditors with a view to the corporation entering into a deed of company arrangement or scheme of arrangement (other than a solvent scheme of arrangement);
 - (ii) the corporation enters a deed of company arrangement or composition with creditors;
 - (iii) an application is made for, a resolution is passed by the directors for the appointment of, or an order is made for, a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator to be appointed to the corporation;
 - (iv) a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator is appointed to the corporation;

- (v) an application is made to a court for the sequestration or winding up of the corporation and not stayed, dismissed or discontinued within 21 days;
- (vi) a sequestration order or winding up order is made in respect of the corporation;
- (vii) the corporation resolves by special resolution that it be wound up voluntarily (other than for a members' voluntary winding-up), or a meeting of creditors of a party under administration or a deed of company arrangement resolves that the corporation be wound up;
- (viii) a mortgagee of any property of the corporation takes possession of that property; or
- (ix) the corporation ceases, suspends or threatens to cease or suspend the conduct of all or a substantial part of its business, or disposes or threatens to dispose of all or a substantial part of its assets.

Inspection includes auditing, surveillance, monitoring, testing, review, examination and measuring.

Intellectual Property means all rights in copyright, inventions (including patents and innovation patents), registered and unregistered trademarks or name, registered and registrable designs, confidential information, trade secrets, technical data and know-how, circuit layout rights, and all other protected rights of intellectual property defined in Article 2 of the Convention Establishing the World Intellectual Property Organisation of July 1987.

Interface Contractor means an Other Contractor listed in Item 8 of Schedule 1 or otherwise identified by the Principal's Representative, as an Interface Contractor that is carrying out, or that will carry out, Interface Work.

Interface Work means the work to be executed by Interface Contractors, which will interface with or affect or be affected by the Contractor's Activities and the Works, including that described in the Works Brief.

Item means the corresponding item in Schedule 1.

Joint Venturer has the meaning given in clause 2.22(a).

Joint Venture Agreement has the meaning given in clause 2.22(a).

Key Result Areas or KRAs has the meaning given in clause 11.19(a).

Latent Conditions has the meaning given in clause 3.6.

Law means:

- (a) Commonwealth, New South Wales or local government legislation, including ordinances, instruments, codes of practice, policy and statutory guidance (but excluding the Building Code of Australia, any other building codes or Standards Australia codes), requirements, regulations, by-laws and other subordinate legislation;
- (b) principles of law or equity established by decisions of courts, and
- (c) Authority Approvals (including any condition or requirement under them).



Licence of Occupation means the licence of occupation to be entered into by the Principal and Property NSW, substantially in the form set out in Attachment A to Schedule 31.

Loss means:

- (a) any cost, expense, loss, damage, liability or other amount; and
- (b) without being limited by paragraph (a) and only to the extent not prohibited by law, any fine or penalty,

whether direct, indirect, consequential, present, future, fixed, unascertained, actual or contingent and, for the avoidance of doubt, includes Consequential or Indirect Loss.

Mitigation Measure means a measure, action, standard or precaution to mitigate the impact of the Works.

Monument has the meaning given to that term in the *Surveying and Spatial Information Regulation 2006 (NSW)*

Motor Vehicle Insurance means a policy of insurance covering vehicle third party bodily injury and property damage in respect of all vehicles to be used by the Contractor (whether owned, rented or leased) in connection with the Contractor's Activities

NGER Legislation means *National Greenhouse and Energy Reporting Act 2007 (Cth)*, related regulations and legislative instruments.

Non-VENM Material means excavated general solid waste which is:

- (a) not either virgin excavated natural material or excavated natural material; or
- (b) otherwise classified in accordance with one of the classifications contained in Schedule 2 Part 3.

Nominated Documents means the documents identified in Schedule 1.

Notice of Completion means a notice issued under clause 12.3(d)(i) by the Principal's Representative stating that Completion of a Portion has been achieved.

Notice of Dispute has the meaning given in clause 15.1(b).

NSW Code has the meaning given in clause 20.2.

NSW Guidelines has the meaning given in clause 20.1.

Operational Readiness has the meaning given to that term in the T/NSW Standard Requirements.

Option means an option referred to in Schedule 15.

Original Contract Price means the amount set out in Item 9 of Schedule 1, which is, and all components of which are, exclusive of GST.

Other Contractor means any contractor, consultant, artist, tradesperson or other person engaged by the Principal or others to do work, other than the Contractor and its Subcontractors.



Other Contractor Work means the works to be undertaken by an Other Contractor on a part of the Site during any period in which the Contractor has been engaged as principal contractor in respect of that part of the Site.

Overhead Costs means the costs referable to the items described in Part B of Schedule 10.

Parent Company Guarantee means the Deed which appears in Schedule 17.

Parramatta Light Rail or PLR means the light rail network to be constructed and operated to connect Parramatta to key areas being transformed by the NSW Government and private investment, including any modification or augmentation.

Payment Breakdown Schedule means Schedule 2.

Payment Claim Date means the latter of:

- (a) the date when the Contractor has complied with the requirements in clause 11.6; and
- (b) the following dates:
 - (i) prior to the time for submission of the Final Payment Claim, upon the first Thursday of each month;
 - (ii) for the Completion Payment Claim, within the time required by clause 11.9; and
 - (iii) for the Final Payment Claim, within the time required by clause 11.2.

Performance and Compliance Incentive Payment Scheme means the scheme for calculation and payment of the Incentive set out in Schedule 16.

Planning Approval means:

- (a) the Authority Approval set out in Exhibit D as it may be modified from time to time, and any other Authority Approvals issued from time to time by either the Principal or the Minister for Planning and Infrastructure (acting in their capacity as determining authority) under the *Environmental Planning and Assessment Act 1979 (NSW)* in respect of the Works; and
- (b) any Mitigation Measures and statement of commitments that are required to be complied with or fulfilled in the documents referred to in paragraph (a).

Planning Approval Matrix means the planning approval matrix in Schedule 4.

Pollution has the meaning given to pollution in the Dictionary to the *Protection of the Environment Operations Act 1997 (NSW)*.

Portion means a part of the Contractor's Activities or Works, as described in Item 10 of Schedule 1 or as directed under clause 12.6(a).

PPS Act means the *Personal Property Securities Act 2009 (Cth)*.

PPS Law means:

- (a) the PPS Act and any regulations made at any time under the PPS Act, as amended from time to time; and

- (b) any relevant amendment made at any time to any other legislation as a consequence of paragraph (a).

Principal means TINSW and includes the Transport Management Centre.

Principal Supplied Items means the items listed in Schedule 27.

Principal's Representative means:

- (a) the person nominated in Item 11 of Schedule 1; or
(b) any other person appointed from time to time by the Principal under clause 9.2,

and includes any appointed under clause 9.3.

Professional Indemnity Insurance means a policy of insurance to cover claims for breach of professional duty (whether owed in contract or otherwise) by the Contractor or its Subcontractors in carrying out the Contractor's Activities.

Progress Claim has the meaning given in clause 11.2(d)(iii).

Prohibited Subcontractor means:

- (a) any Subcontractor:
(i) who has made an admission to the Independent Commission Against Corruption that it has engaged in; or
(ii) in respect of whom the Independent Commission Against Corruption has made a finding that it has engaged in,

corrupt conduct as defined in the *Independent Commission Against Corruption Act 1989* (NSW); or

- (b) any Subcontractor employing an employee in respect of whom paragraph (a)(i) or (a)(ii) apply.

Project means the Parramatta Light Rail project which will be delivered through the Works, Infrastructure Works, SOM Works, Remediation Works and any preceding, subsequent or consequent works.

Project Work Health and Safety Management Plan means the plan which forms part of the Contract Management Plan which is required to be provided and implemented by the Contractor pursuant to the TINSW Standard Requirements and which must:

- (a) set out in adequate detail the procedures the Contractor will implement to manage the Works and the performance of the Contractor's Activities from a work health and safety perspective; and
(b) describe how the Contractor proposes to ensure the Works and Contractor's Activities are performed consistently with Law in relation to work health and safety.

Property Adjustment Works has the meaning given to that term in the TSR's.

Provisional Sum Work means the work detailed in Item 35 of Schedule 1.

Public and Product Liability Insurance means a policy of insurance in the joint names of the Contractor and the Principal covering:

- (a) the respective rights and interests and liabilities of the Principal, the Contractor, the Principal's Representatives and all Subcontractors from time to time; and
- (b) the parties' respective liability to each other for loss or damage to property (including the Principal's property) and the death of or injury to any person (other than liability which the Law requires to be covered under a workers compensation insurance policy),

arising out of, or in any way in connection with, the Contractor's Activities.

RAA Defects has the meaning given in clause 8.2(b).

Referral Date has the meaning given to that term in clause 15.5(a).

Reimbursable Work Price means the amount calculated on an open-book basis, on rates to be agreed between the Contractor and the Principal.

Related Body Corporate means:

- (a) in relation to the Principal, any entity controlled by the Secretary of Transport; and
- (b) in relation to any other person, has the same meaning as in the *Corporations Act 2001* (Cth).

Relevant Matters has the meaning given to that term in clause 9.15(a).

Remediation Action Plan has the meaning given to that term in clause 3.10(d)(i)(B).

Remediation Contract means the contract between Principal and the Remediation Contractor.

Remediation Contractor means a contractor engaged to carry out the Remediation Works.

Remediation Steps has the meaning given to that term in clause 3.10(d)(i)(A)(aa).

Remediation Works means stabilising and maintenance yard remediation undertaken by the Remedial Contractor in accordance with the Remediation Contract.

Replacement Certifier means the successor of the Independent Certifier.

Replacement Third Party Agreement has the meaning given to that term in clause 2.15(b)(i)(B).

Report means each report referred to in Item 2 of Schedule 7.

Revised Allocation has the meaning given to that term in clause 2.15(b)(i)(D).

RMS means Roads and Maritime Services, a NSW Government agency constituted by section 46 of the *Transport Administration Act 1988* (NSW).

RMS Dead Poll means a dead in the form of Schedule 7 to the RMS Project Collaboration Agreement.



RMS Project Collaboration Agreement means the agreement entered into between Principal and RMS dated 5 February 2018 a copy of which is at Exhibit I.

RMS Works has the meaning given to "Works" in the Roads Act Approval.

Roads Act Approval means the consents and approvals granted by RMS under the Roads Act 1993 (NSW), a copy of which is at Exhibit I.

Schedule means a schedule to this Contract.

Schedule 1 Dispute has the meaning given in clause 15.1(b).

Second Statement of Outstanding Claims means a statement issued in accordance with clause 11.12(c).

Security has the meaning given in clause 2.7(a).

Security Interest has the meaning given to that term in clause 16.28(a).

Site means:

- (a) the lands and other places described in Table 1 of Schedule 31 and identified in Exhibit H;
- (b) Temporary Land; and
- (c) any other lands and places made available to the Contractor by the Principal for the purpose of this Contract.

including underground strata and air space as required to deliver the Works within the Site (excluding the Temporary Land).

SOM Contract means the contract between the Principal and the SOM Contractor in respect of the SOM Works, which will be entered into after the date of this Contract.

SOM Contractor means the contractor appointed to undertake the SOM Works pursuant to the SOM Contract.

SOM Works means the physical works, assets, systems and deliverables that the SOM Contractor must design, construct, manufacture, install, test and commission under the SOM Contract.

SOP Act means the *Building and Construction Industry Security of Payment Act 1999* (NSW).

Statement of Business Ethics means TfNSW's Statement of Business Ethics, which may be obtained from TfNSW and is located at: www.transport.nsw.gov.au.

Subcontract includes an agreement for the supply of goods or services (including professional services and plant hire) or both.

Subcontractor includes a consultant or a supplier of goods or services (including professional services and plant hire) or both.

Survey Certificate has the meaning given to that term in the *Surveying and Spatial Information Regulation 2006* (NSW).



Survey Plan has the meaning given to that term in the *Surveying and Spatial Information Act 2002* (NSW).

Taxes means income, stamp, indirect or other taxes levies, imposts, deductions, charges, duties (including import duty), compulsory loans and withholdings (including financial institutions duty, debits tax or other taxes whether incurred by, payable by return or passed on to another person) together with interest thereon or penalties, if any, and charges, fees or other amounts made on, or in respect thereof.

Temporary Land means land which is made available to the Contractor, by the Principal, that can be used for the Temporary Works, which will be handed back to the Principal or other owner of the land in accordance with the requirements of this Contract (including the requirements of Schedule 31).

Temporary Works means any temporary works required to be carried out or provided by the Contractor for the purpose of the execution of the Contractor's Activities but not forming part of the Works.

Tender means the response provided by a Tenderer to the Principal's invitation to submit a tender to undertake the Contractor's Activities.

Tenderer means an entity or entities that submitted a Tender for the Contractor's Activities.

TfNSW means Transport for NSW, a NSW Government agency and a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW).

TfNSW Standard Requirements or TSRs means the documents which appear as Exhibit A to this Contract.

Third Party means a party to a Third Party Agreement other than the Principal.

Third Party Agreement means the agreements referred to in Schedule 1 in respect of which:

(a) where the agreement has been executed by all parties to the agreement, a copy of the agreement; or

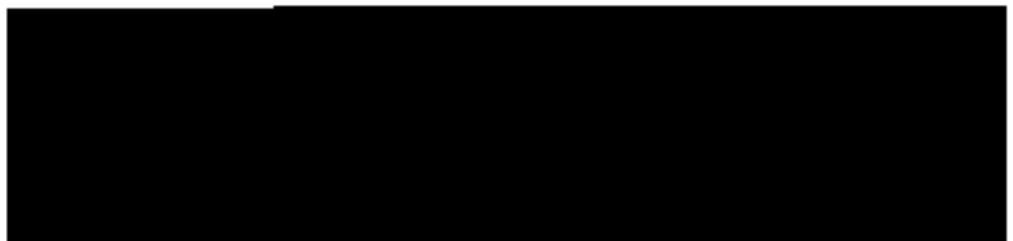
(b) where the agreement has not been executed, a draft of the agreement, appears in Exhibit I.

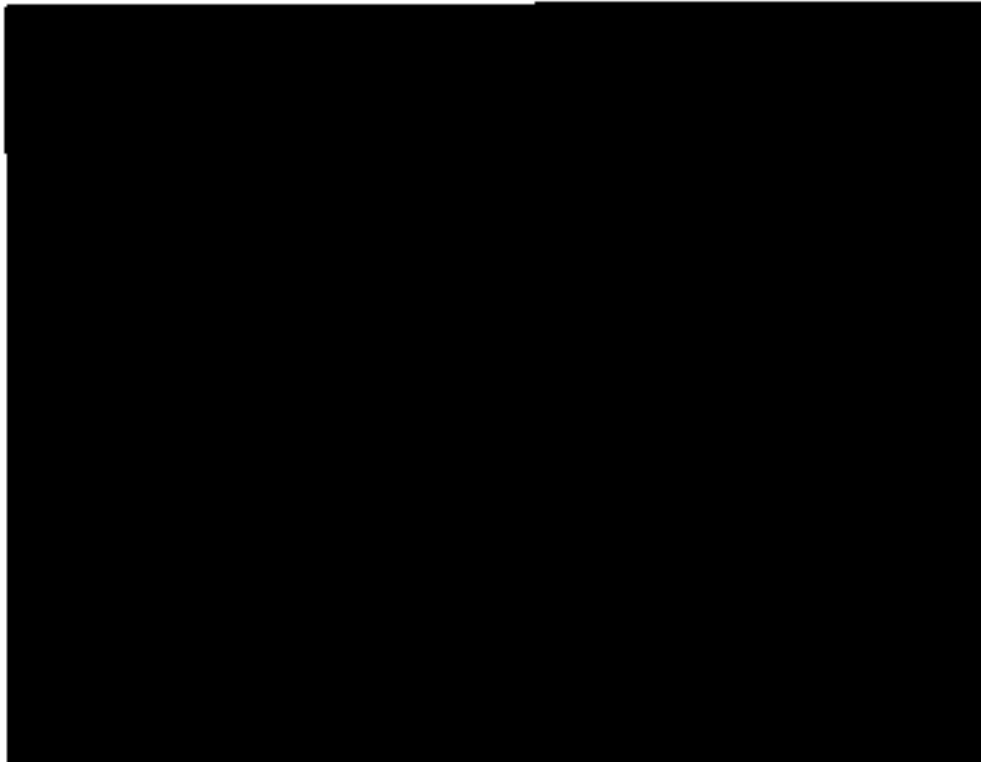
Third Party Works means all works which the Contractor is required to undertake pursuant to a Third Party Agreement, as set out in this Contract and Schedule 4.

Traffic Management Centre has the meaning given in the Roads Act Approval.

Training Target has the meaning given in clause 9.14(f).

Trigger Event has the meaning given to that term in clause 2.15(b)(iv)(G).





Utilities Margin means:

- (a) 25% of the Approved Actual Utilities Cost of Utilities Target Cost Scope performed up to and not exceeding the Utilities Target Cost; and
- (b) 7% of the Approved Actual Utilities Cost of Utilities Target Cost Scope performed to the extent that the Utilities Target Cost is exceeded.

Utilities Share of Savings means the sum ascertained by applying the following formula:

(Utilities Target Cost – Approved Actual Utilities Cost) / 60%.

Utility Service means any service (including redundant service), utility, facility or item of infrastructure, including for the provision of water, electricity, gas, ethane, fuel, telephone, drainage (including piped, open or subsoil drains), sewerage, industrial waste disposal, street lighting, CCTV and electronic communications service.

Utilities Model means the model contained in Exhibit F.

Utilities Target Cost means the amount set out in Schedule 2 as adjusted in accordance with this Deed.

Utilities Target Cost Scope means the works so defined in the Works Brief, the Utilities design report (which is set out at annexure A to the Concept Design) and the Utilities Model and for the avoidance of doubt includes any Utility Services not identified in the Utilities Model but excludes storm water drainage.

Valuable Finds has the meaning given to that term in clause 3.9(a).

Variation means any change to the Works or the Temporary Works including:

- (a) any addition or increase to, or decrease, omission or deletion from, the Works or the Temporary Works;
- (b) any change to the character or quality, or demolition or removal, of any material or work;



- (c) any change to the levels, lines, positions or dimensions of any part of the Works or the Temporary Works; or
- (d) any change that is required as a result of the need to amend the Concept Design,

but it excludes:

- (e) any changes to the Works or the Temporary Works that are required as a result of the exercise of an Option by the Principal's Representative under clause 6.3;
- (f) any changes to the Works or the Temporary Works or the requirements of the Works Brief that are required to ensure the Contractor complies with its obligations under this Contract; and
- (g) any Provisional Sum Work.

Variation Order means an order issued pursuant to clause 6.2.

Variation Proposal Request means a request for a Variation issued in accordance with clause 6.1.

WHS means work health and safety.

WHS Accreditation Scheme means the Australian Government Building and Construction OH&S Accreditation Scheme established by the *Fair Work (Building Industry) Act 2012* (Cth).

WHS Guidelines means the NSW Government Work Health and Safety Management Systems and Auditing Guidelines (5th edition), May 2014 or any document issued from time to time which amends or substitutes this document.

WHS Legislation means:

- (a) the *Work Health and Safety Act 2011* (NSW) and the *Work Health and Safety Regulation 2017* (NSW); and
- (b) any legislation in other States and Territories of Australia addressing work health and safety which applies to the Works.

Workers Compensation Insurance means a policy of insurance to insure against liability for death or injury to employees, including liability by statute and at common law.

Workplace Relations Management Plan means the plan described in the NSW Guidelines developed in relation to the Works

Works means the whole of the works, including:

- (a) any changes to the Works that are required solely as a result of the exercise of an Option by the Principal's Representative under clause 6.3; and
- (b) all Variations to the Works,

that the Contractor must design, construct, commission, integrate and hand-over to the Principal (or its nominee) under this Contract.

Works Brief means the Principal's written requirements for the Works described in:

- (a) Exhibit B, and
- (b) the Concept Design,

and includes all schedules and annexures to the Works Brief.

Works Insurance means a policy of insurance to:

- (a) cover the Principal, the Contractor and all Subcontractors for their respective rights, interests and liabilities; and
- (b) insure all the things referred to in clause 13.1 for which the Contractor bears the risk against loss or damage resulting from any insurable event.

1.2 Interpretation

In this Contract unless the context otherwise requires:

- (a) references to a person include an individual, a body politic, the estate of an individual, a firm, a corporation, an authority, an association or joint venture (whether incorporated or unincorporated), or a partnership;
- (b) the words "including", "includes" and "include" will be read as if followed by the words "without limitation";
- (c) a reference to any party to this Contract includes that party's executors, administrators, successors, and permitted substitutes and assigns, including any person taking part by way of novation;
- (d) a reference to any Authority, institute, association or body is:
 - (i) if that Authority, institute, association or body is reconstituted, renamed or replaced or if the powers or functions of that Authority, institute, association or body are transferred to another organisation, deemed to refer to the reconstituted, renamed or replaced organisation or the organisation to which the powers or functions are transferred, as the case may be; and
 - (ii) if that Authority, institute, association or body ceases to exist, deemed to refer to the organisation which serves substantially the same purposes or objects as that Authority, institute, association or body;
- (e) a reference to this Contract or to any other deed, agreement, document or instrument is deemed to include a reference to this Contract or such other deed, agreement, document or instrument as amended, novated, supplemented, varied or replaced from time to time;
- (f) a reference to any legislation or to any section or provision of it includes:
 - (i) any statutory modification or re-enactment of, or any statutory provision substituted for, that legislation, section or provision; and
 - (ii) ordinances, by-laws, regulations of and other statutory instruments issued under that legislation, section or provision;
- (g) words in the singular include the plural (and vice versa) and words denoting any gender include all genders;

- (h) headings are for convenience only and do not affect the interpretation of this Contract;
- (i) a reference to:
 - (i) a party, clause, Schedule or Exhibit is a reference to a party, clause, Schedule or Exhibit of or to this Contract; and
 - (ii) a paragraph or a sub-paragraph is a reference to a paragraph or sub-paragraph in the clause in which the reference appears;
- (j) subject to clause 3.7, a reference to this Contract includes all Schedules and Exhibits;
- (k) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (l) where under this Contract:
 - (i) a direction is required to be given or must be complied with;
 - (ii) payment of money must be made;
 - (iii) an unconditional undertaking must be released; or
 - (iv) a default must be remedied,

within a period of 7 days or less from a specified event, then only Business Days will be counted in computing the number of days;
- (m) for the purposes of clauses 10.10, 10.11, 10.12 and 10.13:
 - (i) any extension of time to any Date for Completion stated in days; or
 - (ii) any reference to "day",

will include only those days indicated in Item 13 of Schedule 1, or otherwise approved by the Principal's Representative, as working days;
- (n) for all purposes (other than as set out in clauses 1.2(l) and 1.2(m), or where otherwise designated as a Business Day), "day" means calendar day;
- (o) for the avoidance of doubt, a reference to an Other Contractor includes an Interface Contractor;
- (p) a reference to "\$" is to Australian currency;
- (q) a reference to "direction" in the definition of "Claim" in clause 1.1 or in any of clauses 7.1(a)(i)(B), 9.1, 9.8(o), 15 and 17 will be read as also including certificate, decision, demand, determination, instruction, notice, order, rejection, request or requirement but will not include any failure to reject a Document;
- (r) no rule of construction applies to the disadvantage of a party on the basis that the party put forward or drafted this Contract or any part;
- (s) any reference to "information" will be read as including information, representations, statements, data, samples, calculations, assumptions,

deductions, determinations, drawings, design, specifications, models, plans and other documents in all forms including the electronic form in which it was generated;

- (t) the interpretations of the terms "Date for Completion", "Date of Completion", "Completion", "liquidated damages" and clauses 8, 10, 12 and 13, will apply separately to each Portion and references therein to the Works and to the Contractor's Activities will mean so much of the Works and the Contractor's Activities as is comprised in the relevant Portion;
- (u) any reference to "Principal's Design" shall be read as if it is a reference to "Concept Design"; and
- (v) any reference to "intended purpose" in:
 - (i) the definition of "Authority Approval" and "Completion" in clause 1.1; or
 - (ii) clauses 1.4, 2.1, 2.3(d), 3.2, 4.1, 5.1, 5.2, 7.1 or 11.7,will be read as referring to the intended use or intended purpose having regard to any intended use or intended purpose stated in, contemplated by or ascertainable from the terms of this Contract including the requirement that the Works, when completed will be designed and constructed in compliance with all health and safety requirements of the WHS Legislation;
- (w) the obligations of the Principal under and in connection with this Contract are limited to those expressly stipulated in this Contract, and
- (x) any reference in this Deed to "the Contract" or "this Contract" will be taken to be a reference to this Deed.

1.3 Ambiguous terms

- (a) If the Principal's Representative considers, or if the Contractor notifies the Principal's Representative in writing that it considers, that there is an ambiguity, inconsistency or discrepancy in the Contract (including in any Exhibit), the Principal's Representative must, subject to clause 1.4, direct the interpretation of this Contract which the Contractor must follow.
- (b) The Principal's Representative, in giving a direction in accordance with clause 1.3(a), is not required to determine whether or not there is an ambiguity, inconsistency or discrepancy in this Contract.

1.4 Order of Precedence

- (a) In the event of any other inconsistency, ambiguity or discrepancy between the various documents comprising this Contract then:
 - (i) where the inconsistency, ambiguity or discrepancy is between two or more documents that together comprise the Works Brief, then to the extent of any inconsistency, ambiguity or discrepancy, the higher, or more onerous, or more rigorous, requirement will apply; and
 - (ii) otherwise, to the extent of any inconsistency, ambiguity or discrepancy, the order of precedence in Item 14 of Schedule 1 applies.



- (b) The Works Brief, any Concept Design and the Planning Approval are to be regarded as mutually explanatory and anything contained in one but not in the other will be equally binding as if contained in all, so as to ensure that the Works comply with this Contract and are fit for their intended purposes.

1.5 Not Used

1.6 Authorities

- (a) This Contract will not in any way unlawfully restrict or otherwise unlawfully affect the unfettered discretion of the Principal to exercise any of the Principal's functions and powers pursuant to any legislation.
- (b) Without limiting clause 1.6(a), anything the Principal does, or fails to do or purport to do, pursuant to the Principal's functions and powers under any legislation, will be deemed not to be an act or omission by the Principal under this Contract.

2 Contractor's obligations

2.1 General

The Contractor:

- (a) must execute the Contractor's Activities, including design, construct, commission and hand-over the Works and each Portion, in accordance with this Contract;
- (b) must fulfil and comply with the requirements of this Contract;
- (c) warrants that the Temporary Works will at all reasonable times be fit for their intended purposes;
- (d) warrants that the Works and each Portion will upon Completion be, and remain, safe and fit for their intended purposes;
- (e) must perform and complete the Contractor's Activities in a manner which is not less than Best Industry Practice;
- (f) must, unless otherwise agreed by the Principal's Representative in writing, employ the person or persons specified in Item 39 of Schedule 1, including the Contractor's Representative in the performance of the Contractor's Activities;
- (g) must use all reasonable efforts to inform itself of the requirements of the Principal and regularly consult with the Principal during the performance of the Contractor's Activities; and
- (h) must liaise, cooperate and confer with others as directed by the Principal.

2.2 Subcontracts

- (a) Subject to clause 2.2(b), the Contractor may enter into Subcontracts for the vicarious performance of its obligations under this Contract.
- (b) The Contractor must not enter into any Subcontract;

- (i) with:
 - (A) a Prohibited Subcontractor; or
 - (B) an initial subcontract price equal to or over the amount specified in Item 15 of Schedule 1 without the prior written approval of the Principal's Representative (which may be conditional but which will not be unreasonably withheld);
 - (ii) for the parts of the Works specified in Item 16 of Schedule 1 without the prior written approval of the Principal's Representative to the relevant Subcontractor (which may be conditional but which will not be unreasonably withheld); or
 - (iii) for the parts of the Work set out in Item 17 of Schedule 1 (regardless of contract value), unless the Subcontractor is pre-qualified or registered to the appropriate level under the RMS pre-qualification and registration procedures.
- (c) Any request by the Contractor for approval to Subcontract under this clause 2.2 must be in writing and include such details as may be required by the Principal's Representative, including details of the proposed Subcontract conditions, and the proposed Subcontractor's capacity to undertake the relevant work, past performance in undertaking similar work, safety (including work health, safety and rehabilitation issues and providing evidence of compliance with clause 2.2(m)), environmental compliance (including any environmental management system) and other performance, management systems and proposed safe working procedures
- (d) Within 14 days after a request by the Contractor for approval pursuant to clause 2.2(c), the Principal's Representative will advise the Contractor whether the request is approved (and, if approved, any relevant conditions) or not and, where it is not approved, the reasons why approval is not given.
- (e) The Contractor must ensure that each Subcontractor referred to in Item 18 of Schedule 1:
- (i) effects and maintains Professional Indemnity Insurance which:
 - (A) covers the Subcontractor's liability in respect of breaches of professional duty (whether owed in contract or otherwise) by the Subcontractor or its Subcontractors in carrying out the work under the relevant Subcontract;
 - (B) covers the Subcontractor for liability to the Principal or the Contractor for the relevant minimum amount listed in Item 19 of Schedule 1;
 - (C) unless the Subcontractor using its best endeavours is unable reasonably to procure such a term in the policy, includes at least one automatic reinstatement of the total limit of liability per annum after claims have been paid; and
 - (D) remains in place at least until the expiration of a 7 year period from completion of the relevant Subcontract works or professional services; and

- (f) is obliged under the relevant Subcontract to comply with clause 13.8 of this Contract in relation to the insurance referred to in clause 2.2(e)(i).
- (f) The Contractor will be:
- (i) fully responsible for the Contractor's Activities despite subcontracting the carrying out of any part of the Contractor's Activities; and
 - (ii) vicariously liable to the Principal for all acts, omissions and defaults of its Subcontractors (and those of the employees, Subcontractors and other agents of its Subcontractors) relating to, or in any way connected with, the Contractor's Activities.
- (g) The Contractor must:
- (i) without limiting clause 16.22(d), ensure that each of its Subcontracts that has an initial subcontract price of the amount specified in Item 20 of Schedule 1 or more includes provisions to the effect set out in Schedule 5 and a clause to the same effect as this clause 2.2(g)(i) that is binding on the Subcontractor and provide evidence of this to the Principal's Representative when requested by the Principal's Representative;
 - (ii) where a Subcontractor is to carry out design work or other professional services, unless not required by the Principal's Representative, procure that Subcontractor to execute a Deed in the form of Schedule 6 and provide this to the Principal's Representative within 7 days of the engagement of that Subcontractor;
 - (iii) ensure that each Subcontractor (and their Subcontractors) executes a Confidentiality Undertaking and provides this to the Principal's Representative within 7 days of the engagement of that Subcontractor;
 - (iv) procure that each of its Subcontractors:
 - (A) engaged under a Subcontract that has an initial subcontract price equal to or greater than the amount specified in Item 22 of Schedule 1; or
 - (B) in respect of the categories of work set out in Item 22 of Schedule 1 (regardless of subcontract price),
 executes a deed in the form of Schedule 14 and provides this to the Principal's Representative within 7 days of being engaged by the Contractor; and
 - (v) in respect of all Subcontracts in which it holds retention money from the Subcontractor, comply with all requirements under the *Building and Construction Industry Security of Payment Amendment (Retention Money Trust Account) Regulation 2015* (NSW).
- (h) The Contractor must, as a Condition Precedent to Completion of a Portion, procure and provide the Principal's Representative with those warranties described in Item 23 of Schedule 1 or elsewhere in this Contract from relevant Subcontractors undertaking or supplying the work or items the subject of the warranty.

- (i) The warranties referred to in clause 2.2(h):
- (i) must be in the form set out in Schedule 11 and must be in favour of the Principal and any other entity nominated by the Principal's Representative from time to time; and
 - (ii) will not derogate from any rights that the Principal may have against the Contractor in respect of the subject matter of these warranties.
- (j) If directed by the Principal, the Contractor must, without being entitled to compensation, within 5 Business Days of the date of receipt by the Contractor of the direction, execute and deliver to the Principal a deed of novation in the form which appears in Schedule 18, such deed being between the Principal, the Contractor and the Subcontractor stated in Item 24 of Schedule 1.
- (k) The Contractor irrevocably and severally appoints the Principal and any authorised representative of the Principal to be the Contractor's attorney to execute, sign, seal and deliver in the name of the Contractor, the deed referred to in this clause 2.2(j) and all notices, deeds and documents for that purpose.
- (l) Any direction given by the Principal and any novation occurring pursuant to clause 2.2(j) will not:
- (i) relieve the Contractor from its liabilities or obligations (including those arising out of any warranties given under this Contract);
 - (ii) limit or otherwise affect the Principal's rights against the Contractor (including those arising out of any warranties given under this Contract); or
 - (iii) entitle the Contractor to make any Claim,
- whether under this Contract or otherwise according to any Law.
- (m) The Contractor must:
- (i) ensure that, if any Law, including in the State or Territory in which the Works are situated or the Works are carried out (as the case may be), requires that:
 - (A) a person
 - (aa) be authorised or licensed (in accordance with the WHS Legislation) to carry out any work at that workplace, that person is so authorised or licensed, and complies with any conditions of such authorisation or licence; and/or
 - (ab) has prescribed qualifications or experience or, if not, is to be supervised by a person who has prescribed qualifications or experience (as defined in the WHS Legislation), that person has the required qualifications or experience or is so supervised; or
 - (B) a workplace, plant or substance (or design), or work (or class of work) be authorised or licensed, that workplace, plant or substance, or work is so authorised or licensed;

- (ii) not direct or allow a person to carry out or use plant or substances at a workplace unless the requirements of clause 2.2(m)(i) are met (including any requirement to be authorised, licensed, qualified or supervised); and
- (iii) if requested by the Principal's Representative or required by the WHS Legislation, produce evidence of any approvals, certificates, authorisations, licences, prescribed qualifications or experience, or any other information relevant to work health and safety (as the case may be) to the satisfaction of the Principal's Representative before the Contractor or Subcontractor (as the case may be) commences such work.

2.3 Compliance with, and changes to, Law, Codes and Standards, Authority Approvals

- (a) Subject to clause 2.3(d)(i), the Contractor must in carrying out the Contractor's Activities:
 - (i) comply with, and ensure that the Works and the Temporary Works comply with, all applicable Law;
 - (ii) give all notices and pay all fees, bonds and other amounts which it is required to pay in respect of the performance of its obligations under this Contract and give the Principal's Representative copies of all notices it gives to Authorities at the time or before it submits such notices to Authorities;
 - (iii) give the Principal's Representative copies of all documents (including Authority Approvals and other notices) that Authorities issue to it;
 - (iv) at all times conform and comply with, and ensure that the Works and the Temporary Works conform and comply with, all Codes and Standards; and
 - (v) not engage in any fraud, bribery or corruption
- (b) Where there is a Change in Codes and Standards:
 - (i) the Contractor must give a written notice to the Principal's Representative within 20 Business Days of the Change in Codes and Standards containing:
 - (A) details of the Change in Codes and Standards; and
 - (B) an estimate of the Contractor's increased or decreased costs of complying with the Change in Codes and Standards including sufficient information to support the estimate; and
 - (ii) if a notice is given by the Contractor which complies with clause 2.3(b)(i), then within 10 Business Days of the notice being given, the Principal's Representative will either:
 - (A) direct the Contractor to disregard the Change in Codes and Standards; or
 - (B) direct a Variation under clause 6.2(a) in respect of the Change in Codes and Standards after which the relevant adjustments will be made under clause 6.4.

- (c) If there is any change in the Codes and Standards which does not constitute a Change in Codes and Standards the Contractor must comply with the change and will not be entitled to make any Claim against the Principal arising out of or in any way in connection with the change.
- (d) The Contractor must:
- (i) obtain all Authority Approvals required for the execution of the Contractor's Activities and occupation and use of the completed Works or Portions (and for that purpose prepare and submit all applications and associated documents to relevant Authorities), except for those Authority Approvals specified in Schedule 7 that either:
 - (A) were obtained by the Principal prior to the date of this Contract; or
 - (B) will be obtained by the Principal after the date of this Contract where required;
 - (ii) unless otherwise expressly specified in Schedule 4, comply with, satisfy, carry out and fulfil the conditions and requirements of all Authority Approvals (whether obtained by the Contractor or the Principal), including those conditions and requirements that the Principal is required, under the terms of the Authority Approvals, including the Planning Approval, to comply with, satisfy, carry out and fulfil;
 - (iii) in respect of any:
 - (A) Authority Approvals which are to be obtained by the Principal after the date of this Contract; or
 - (B) conditions and requirements of Authority Approvals which pursuant to Schedule 4 are to be satisfied or fulfilled by the Principal.

provide the Principal with such reasonable assistance as may be reasonably required by the Principal to enable the Principal to obtain the Authority Approvals or satisfy or fulfil the conditions and requirements;
 - (iv) for the purpose of obtaining all Authority Approvals as required by clause 2.3(d)(i), prepare all associated studies and reports required because of the design of the Works or Temporary Works proposed by the Contractor; and
 - (v) as a condition precedent to Completion of a Portion, ensure that it has:
 - (A) obtained all Authority Approvals it is required to obtain under this Contract;
 - (B) complied with, carried out and fulfilled all conditions and requirements of all Authority Approvals it is required to comply with, carry out and fulfil under this Contract;
 - (C) without limiting clauses 2.3(d)(v)(A) and 2.3(d)(v)(B), complied with, carried out and fulfilled all conditions and requirements of the Planning Approval which it is

required to comply with, carry out and fulfil (including obtaining the approval of any person for anything) under this Contract; and

- (D) unless it is included in Schedule 7 as an Authority Approval which the Principal will obtain, obtained and supplied to the Principal's Representative certification that the Works or the Portion, as designed and built, comply with the requirements of the Building Code of Australia to the extent applicable,

including for the avoidance of doubt any Authority Approvals, conditions or requirements which must be obtained, carried out or fulfilled to enable the Principal to occupy and use the Works or Portion for its intended purpose.

(e) Where there is a Change in Law:

- (i) if either party wishes this clause 2.3(e)(i) to apply, then that party must, within 14 days of the Change in Law, give a written notice to the other and the Principal's Representative stating that this clause 2.3(e)(i) applies and containing details of the Change in Law, including, where the notice is given by the Contractor, its impact on the Contractor's costs of carrying out the Contractor's Activities and any effect it will have on the Contractor's Program;
- (ii) if a notice pursuant to clause 2.3(e)(i) is given the Principal's Representative will determine:
 - (A) where the Change in Law decreases the Contractor's costs of carrying out the Contractor's Activities in compliance with the Change in Law, a reasonable amount as the amount of the decrease; or
 - (B) where the Change in Law increases the Contractor's costs of carrying out the Contractor's Activities in compliance with the Change in Law, the amount of the increased costs reasonably incurred by the Contractor on the basis that the Contractor took all reasonable steps to mitigate those increased costs,

and the Contract Sum will be increased or decreased by that amount; and

- (iii) the Contractor must comply with the Change in Law.

(f) If a Change in Authority Approval occurs which necessitates a Variation, the Contractor must:

- (i) if the relevant Authority Approval was obtained by the Principal, within 14 days of the date on which the Contractor becomes aware or ought reasonably to have become aware of the Change in Authority Approval taking effect; or
- (ii) otherwise within 14 days of the Change in Authority Approval taking effect,

notify the Principal's Representative in writing with detailed particulars of the reason why the Change in Authority Approval necessitates a Variation. If the Contractor gives such a notice and the Change in Authority Approval does necessitate a Variation the Principal's

Representative will direct a Variation under clause 6.2(a) after which relevant adjustments will be made under clause 6.4.

- (g) Other than as set out in clause 2.3(f), the Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with:
- (i) any Change in Authority Approval;
 - (ii) an Authority Approval obtained or issued or which otherwise takes effect after the date of this Contract;
 - (iii) a change in an Authority Approval after the date of this Contract; or
 - (iv) any:
 - (A) assumptions the Contractor makes; or
 - (B) failure by the Contractor to adequately satisfy itself, as to what work methodologies and Temporary Works might be permissible under all Authority Approvals.
- (h) Without limiting the Contractor's obligations under any other clause of this Contract, insofar as the Contractor, in carrying out the Contractor's Activities, is:
- (i) a person conducting a business or undertaking that designs plant, substances or structures to whom section 22 of the *Work Health and Safety Act 2011* (NSW) applies;
 - (ii) a person conducting a business or undertaking that manufactures plant, substances or structures to whom section 23 of the *Work Health and Safety Act 2011* (NSW) applies;
 - (iii) a person conducting a business or undertaking that imports plant, substances or structures to whom section 24 of the *Work Health and Safety Act 2011* (NSW) applies;
 - (iv) a person conducting a business or undertaking that supplies plant, substances or structures to whom section 25 of the *Work Health and Safety Act 2011* (NSW) applies; or
 - (v) a person conducting a business or undertaking that installs, constructs or commissions plant or structures to whom section 26 of the *Work Health and Safety Act 2011* (NSW) applies.

The Contractor shall comply with the applicable obligations under the WHS Legislation.

2.4 Legal Challenge to Approval

- (a) If there is a legal challenge, proceedings or action in relation to the assessment or determination of an application for an Authority Approval or a modification of an Authority Approval, performance of the Contractor's Activities or the Works, or compliance with any Authority Approval under:
- (i) the *Environmental Planning and Assessment Act 1979* (NSW);

- (ii) the *Protection of the Environment Operations Act 1997* (NSW);
- (iii) the *Environment Protection and Biodiversity Conservation Act 1999* (Cth); or
- (iv) any other Law,

the Contractor must continue to perform its obligations under this Contract unless, as a result of that legal challenge, proceedings or action, it is otherwise:

- (v) ordered or directed by an Authority;
 - (vi) ordered by a court or tribunal; or
 - (vii) directed by the Principal or the Principal's Representative.
- (b) Subject to clause 2.4(c), the Principal must pay the Contractor the costs reasonably incurred by the Contractor as a direct result of:
- (i) an Authority order referred to in clause 2.4(a)(v);
 - (ii) a court order referred to in clause 2.4(a)(vi); or
 - (iii) a direction by the Principal or the Principal's Representative referred to in clause 2.4(a)(vii).

to the extent that such Authority order, court order, or direction prevents the Contractor from achieving Completion of a Portion by the relevant Date for Completion.

- (c) Clause 2.4(b) does not apply to the extent that a legal challenge, proceedings or action of the kind referred to in clause 2.4(a) is brought or upheld due to the Contractor's non-compliance with its obligations under this Contract or any Authority Approval.

2.5 Utility Services

- (a) The Contractor must:
- (i) obtain and pay for any Utility Service it needs to perform its obligations under this Contract;
 - (ii) relocate, remove, modify, support, protect, reinstate and provide all Utility Services necessary for the Contractor to comply with its obligations under this Contract;
 - (iii) provide and maintain all signage, line marking, flagmen, barriers and other road traffic devices needed by the Contractor to comply with its obligations under this Contract, including any such devices reasonably required by the Principal's Representative;
 - (iv) despite any other provision in the Contract to the contrary, ensure that no Utility Services are:
 - (A) damaged or destroyed; or
 - (B) disconnected, disrupted, interfered with or interrupted during normal operating hours.

by reason of the performance of the Contractor's Activities;

- (v) cooperate and coordinate with the owners of all Utility Services, and implement their requirements as part of the Contractor's Activities; and
- (vi) indemnify the Principal against any claim, damages, expense, costs, Loss, liability, fine or penalty the Principal suffers or incurs arising out of or in any way in connection with any disconnection, interference with, interruption or disruption to any Utility Service arising out of or in any way in connection with the Contractor's Activities, provided that the Contractor's liability to indemnify the Principal will be reduced proportionally to the extent that an act or omission of the Principal, an Other Contractor or an agent of the Principal contributed to the claim, damages, expense, costs, Loss, liability, fine or penalty.

(b) Subject to

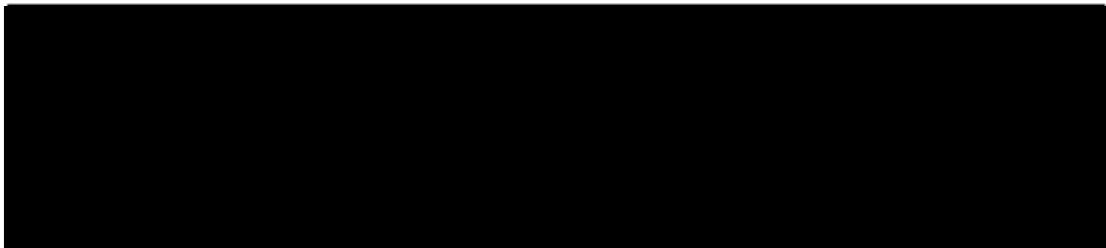
- (i) its entitlement to be paid for the Utilities Target Cost Scope pursuant to clause 11.1(b)(i);
- (ii) its entitlements in relation to clauses 10.8 and 10.13(a)(v),

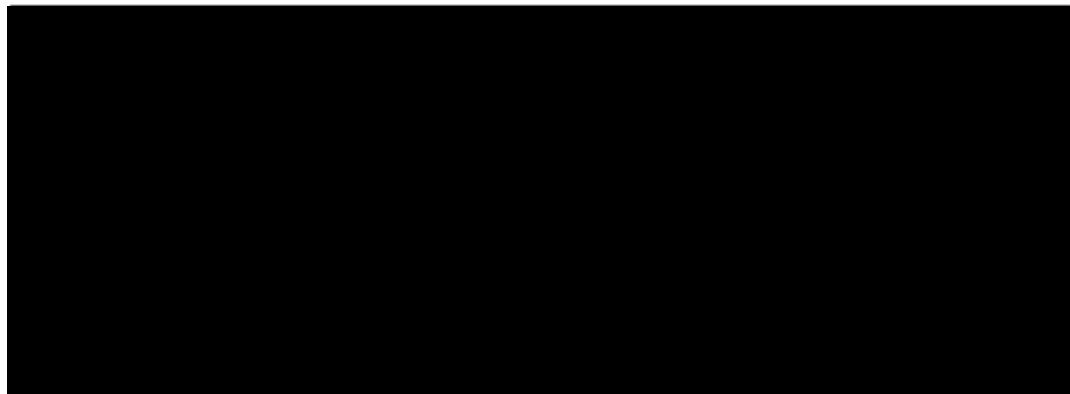
the Contractor agrees it is responsible for, and assumes the risk of all additional work, increased costs and any damages, expense, Loss, liability, delay or disruption (including any delay in achieving Completion) it suffers or incurs arising out of or in any way in connection with the existence, location, condition and availability of all Utility Services required for the execution of the Contractor's Activities.

(c) The Contractor must investigate, adjust, protect, support, relocate or provide for all Utilities Services that are affected by the Contractor's Activities or required for the Works whether or not the existence or extent of the existing Utilities were known prior to the date of the Contract and include such costs in its claims for Approved Actual Utilities Cost. The Utilities Target Cost will not be adjusted for any of these matters.

2.6 Crown Building Work

- (a) The Contractor must, in relation to any part of the Works that is a Crown Building Work, certify (on behalf of the Principal) as required by section 109R of the *Environmental Planning and Assessment Act 1979* (NSW).
- (b) Any certification under clause 2.6(a) will not lessen or otherwise affect:
 - (i) the Contractor's other liabilities or responsibilities under this Contract or otherwise according to Law; or
 - (ii) the Principal's rights against the Contractor, whether under this Contract or otherwise according to Law.





- (b) The Security will be:
 - (i) the property of the Principal; and
 - (ii) not held on trust for the Contractor.
- (c) The Security set out in clause 2.7(a) must be either:
 - (i) issued by an insurer:
 - (A) approved by the Principal; and
 - (B) that has a credit rating of at least A- by Standard and Poor's (Australia) Pty Limited; and
 - (C) in the form set out in Schedule 8 Part 1; or
 - (ii) issued by a bank:
 - (A) authorised under section 9 of the *Banking Act 1959* (Cth), which has its principal place of business in Australia; and
 - (B) that has a credit rating of at least A- by Standard and Poor's (Australia) Pty Limited or A3 by Moody's Investors Services Inc; and
 - (C) in the form set out in Schedule 8 Part 2.
- (d) If the Contractor fails to provide the Security then the Principal may retain from any payment otherwise due to the Contractor amounts up to the amount of the Security.
- (e) The amounts retained by the Principal pursuant to clause 2.7(c) will be:
 - (i) the property of the Principal;
 - (ii) not held on trust for the Contractor; and
 - (iii) paid to the Contractor to the extent that the Contractor provides the Security.
- (f) The Principal may make demand on and utilise the Security:
 - (i) to pay for any costs, expenses or damages which the Principal claims that it has incurred, or might in the future incur, as a consequence of any act or omission of the Contractor, which the Principal asserts constitutes a breach of this Contract by the Contractor;



- (ii) to satisfy any amount which the Principal asserts is payable by the Contractor pursuant to this Contract; or
- (iii) in the event of:
 - (A) a termination of this Contract by the Principal;
 - (B) the Principal forming the view that an Insolvency Event might occur in relation to the Contractor; or
 - (C) an Insolvency Event occurs in relation to the Contractor.
- (g) It is not necessary for the Principal to establish the validity of the claim before making demand on and utilising the Security.
- (h) The Contractor must not take any steps whatsoever to injunct the issuer of the unconditional bank undertakings or the Principal in respect of dealing with any Security.
- (i) If the Principal makes a demand on the Security, the Principal:
 - (i) does not hold the amount received under the demand on trust for the Contractor; and
 - (ii) is not obliged to pay the Contractor interest on that amount.
- (j) If the Principal makes a demand on the Security and it is later established that the Principal was not entitled to make such a demand, the Principal must return the amount demanded to the Contractor which will be the sole remedy of the Contractor arising out of the Principal's demand on the Security.
- (k) Subject to any demands made under clause 2.7(f), the Principal must release:
 - (i) the Security provided pursuant to clause 2.7(a)(i), within 20 Business Days after receipt of a written request from the Contractor, which request may only be made after the Date of Completion of Portion 1;
 - (ii) the Security provided pursuant to clause 2.7(a)(ii), within 20 Business Days after receipt of a written request from the Contractor, which request may only be made after the Date of Completion of Portion 2;
 - (iii) the Security provided pursuant to clause 2.7(a)(iii), within 20 Business Days after receipt of a written request from the Contractor, which request may only be made after the Date of Completion of Portion 3; and
 - (iv) the Security provided pursuant to clause 2.7(a)(iv), within 20 Business Days after receipt of a written request from the Contractor, which request may only be made after the later of:
 - (A) the Date of Final Completion; and
 - (B) the final resolution of any Dispute, including the payment of any costs order and other judgment or award made in favour of the Principal.



- (f) The Contractor is responsible for all stamp duty (including penalties, if applicable) payable in connection with:
 - (i) the Security; and
 - (ii) any demands made on the Security.

2.8 Replacement Security

- (a) If:
 - (i) the Principal holds any Security which contains an expiry date which is earlier than the date upon which the Principal is required to return the Security to the Contractor; or
 - (ii) the credit rating of the issuing bank falls below the rating required under clause 2.7(c)-(3),the Contractor must, on or before the date which is 20 Business Days prior to the expiry date for that Security, provide the Principal with replacement Security in accordance with clause 2.7(c) in exchange for the Security which is being replaced ("Replacement Security").
- (b) If clause 2.8(a) applies in respect of any Security and the Principal has not received from the Contractor the Replacement Security at least 20 Business Days prior to the expiry date for that Security then, irrespective of anything contained in, and without limiting the Principal's rights under, this Contract or the Security, the Principal may make a demand under the Security for the entire amount payable under that Security and thereafter retain the proceeds.
- (c) Subject to the Principal's rights under this Contract to use these proceeds, the proceeds from any demand made by the Principal pursuant to clause 2.8(b) will be paid to the Contractor at the same time as the Principal would have been required to return the Security from which the proceeds were obtained.
- (d) The Contractor acknowledges that damages will not be an adequate remedy for the Principal if the Contractor fails to comply with its obligations under clause 2.8(a).

2.9 Additional Security

- (a) If the Principal directs a Variation under clause 6 which increases the Contract Sum, the Principal may direct the Contractor to provide additional Security so as to ensure that the amount of the Security then held by it equals 5% of the Contract Sum ("Additional Security").
- (b) The Contractor must provide Additional Security in accordance with clause 2.7(c) within 10 Business Days of a direction under clause 2.9(a).

2.10 Parent Company Guarantee

- (a) On the date of this Contract the Contractor must provide to the Principal a guarantee duly executed by each entity referred to in Item 25 of Schedule 1 in favour of the Principal in the form of the Parent Company Guarantee, which are duly stamped.
- (b) Despite any other provision of this Contract to the contrary, where this Contract may otherwise require the Principal to release an unconditional undertaking, or this Contract is terminated by the Principal either

pursuant to clauses 14 or clause 2.13(d) or by reason of the Contractor repudiating this Contract, (or otherwise at law), the Principal may continue to hold the unconditional undertaking after the date for its release or the termination of this Contract to the extent of any claim which the Principal may have against the Contractor arising out of, or in any way in connection with, this Contract or the Contractor's Activities whether for damages (including liquidated damages) or otherwise.

2.11 Long Service Leave Levy

Where the Contractor is specified in Item 26 of Schedule 1 as being responsible for payment of the long service leave levy, then, before commencing any construction work under this Contract (including any construction of Temporary Works), the Contractor must:

- (a) pay to the Long Service Corporation or that body's agent all amounts payable for the long service leave levy in respect of the Contractor's Activities under the *Building and Construction Industry Long Service Payments Act 1986* (NSW); and
- (b) produce to the Principal's Representative the documents evidencing payment of the amounts referred to in clause 2.11(a).

2.12 Co-operation with Interface Contractors

- (a) The Contractor:
 - (i) acknowledges that:
 - (A) the Contractor's Activities interface with the Interface Work;
 - (B) Interface Contractors will be executing work on parts of the Site or Extra Land, or adjacent to the Site or Extra Land, at the same time as the Contractor is performing the Contractor's Activities;
 - (C) the timing of the Interface Contractors' activities will be as discovered by the Contractor;
 - (D) it may require certain design and work methodology input from Interface Contractors to coordinate the design of the Works and Temporary Works with the Interface Work;
 - (E) Interface Contractors may require the Contractor to provide design and work methodology information to them to coordinate the design of the Interface Work with the Works and Temporary Works, and this must be provided in a timely manner by the Contractor; and
 - (F) any delay in the performance of the Contractor's Activities or in the Contractor providing information to, or co-operating and co-ordinating with any Interface Contractor, may adversely impact upon, delay or disrupt any one or more Interface Contractors or the Contractor's Activities in a way which may lead to the Principal suffering or incurring additional costs, losses and damages; and
 - (ii) must at all times:

- (A) permit Interface Contractors to execute the Interface Work on the applicable parts of the Site or Extra Land, or on any adjacent property to the Site or Extra Land;
- (aa) at the same time as the Contractor is performing the Contractor's Activities; and
- (ab) at the times agreed with the Interface Contractor, or failing agreement at the times determined by the Principal's Representative,
- and for this purpose ensure they have safe, clean and clear access to those parts of the Site or Extra Land, or property adjacent to the Site or Extra Land, required by them for the purpose of carrying out their work;
- (B) protect the Works, Temporary Works and other improvements on the Site or Extra Land from accidental damage by Interface Contractors and provide means of receiving, storing and protecting goods and equipment supplied by Interface Contractors;
- (C) co-operate with Interface Contractors, and do everything reasonably necessary to facilitate the execution of work by Interface Contractors, including providing Interface Contractors with such assistance as may be directed by the Principal's Representative;
- (D) carefully coordinate and interface the Contractor's Activities with the Interface Work and for this purpose:
- (aa) make proper allowance in all programs for the Interface Work;
- (ab) review all programs provided by Interface Contractors and confirm that they adequately allow for the Contractor's Activities and the interfaces of the Interface Work with the Contractor's Activities;
- (ac) monitor the progress of the Interface Work;
- (ad) notify the Principal's Representative of any interface or sequence of activities that may affect the commencement, progress or Completion of the Works or any Portion; and
- (ae) provide the Interface Contractors with sufficient information about the current and expected Contractor's Activities to assist them to coordinate their Interface Work with the Contractor's Activities.
- (E) perform the Contractor's Activities so as to minimise any interference with or disruption or delay to the Interface Work;
- (F) be responsible for coordinating the Contractor's Activities, including work sequencing, construction methods, safety and industrial relations matters with those affecting, and influenced by, Interface

Contractors' personnel and work, including providing to the Principal's Representative copies of working method statements for those parts of the Works or Temporary Works which are adjacent to or interface with any Interface Work, at least 15 Business Days prior to commencing the work described in the work method statement;

- (G) provide for the purposes of clause 2.12(a)(ii)(F) (unless otherwise directed by the Principal's Representative), the number and form of copies of the work method statements specified in Item 27 of Schedule 1;
- (H) work directly with Interface Contractors where required to complete the design of the Works and Temporary Works and provide all necessary information to Interface Contractors in respect of the Works and Temporary Works to permit the Interface Contractors to complete the design of the Interface Works so that they are acceptable to the Principal and otherwise comply with this Contract, including the Works Brief and the Concept Design;
- (I) work in accordance with:
 - (aa) the Contract Management Plan that has been submitted for review and approved under clause 9.8, and
 - (ab) the TfNSW Standard Requirements;
- (J) attend interface coordination meetings chaired by the Principal's Representative with Interface Contractors and others every 14 days, or at other times to be advised by the Principal's Representative, to review current and future issues, including the exchange of information, status, problems, solutions, and newly identified interfaces;
- (K) when information is required from an Interface Contractor, provide reasonable written notice which must be at least 10 days (except in special circumstances) or any longer period of notice required under the Works Brief to that Interface Contractor requesting such information and specifying the date by which such information is required, with a copy to the Principal's Representative;
- (L) ensure that any written notice given under clause 2.12(a)(ii)(K) provides the Interface Contractor with the longest possible time for the provision of the information;
- (M) when any information is requested by Interface Contractors, including confirming the compatibility or suitability of the design of, work methods to be used in, or any other aspect of, the Interface Work with the Works or the Contractor's Activities:
 - (aa) provide the information to the Interface Contractor, with a copy to the Principal's



Representative, within the time requested by the Interface Contractor provided that this time period is reasonable:

- (ab) ensure that such information is provided to Interface Contractors by the requested dates; and
 - (ac) ensure and warrant that the information provided is accurate; and
- (N) use its best endeavours to resolve any problems, and work closely and interactively, with Interface Contractors, including providing design options, iterations, and work methodologies, to achieve the best solution to such problems, related to:
- (aa) the provision of information;
 - (ab) the obtaining of information;
 - (ac) the adequacy of information provided to, or received from, Interface Contractors;
 - (ad) the compatibility of the Works and Temporary Works with the Interface Work;
 - (ae) coordination in accordance with this clause 2.12(a); and
 - (af) technical issues with the information provided to, or received from, Interface Contractors;
- (iii) must, in the event that despite using its best endeavours, and working closely and iteratively with the Interface Contractors, the Contractor and any Interface Contractor fail to resolve a problem between them:
- (A) give written notice to the Principal's Representative with a copy to the Interface Contractor describing the problem; and
 - (B) attend any coordination meetings as requested, and to be chaired, by the Principal's Representative, and in good faith work with those present to attempt to resolve the problem;
- (iv) must promptly advise the Principal's Representative of all matters arising out of the liaison with Interface Contractors that may involve a change to design or construction work under this Contract or otherwise have an adverse effect upon the Contractor's Activities; and
- (v) acknowledges that conditions similar to those in this clause 2.12(a) applying to the Contractor will apply to all Interface Contractors engaged by the Principal, whether working on the Site or on any other site.
- (b) Where the Contractor has complied with all its obligations in clause 2.12(a), the Contractor must promptly give the Principal's Representative

written notice of any interface issue or dispute with any interface Contractor.

- (c) Upon receipt of the Contractor's notice under clause 2.12(b), the Principal's Representative must:
- (i) within 5 Business Days convene a meeting between the Contractor, the relevant Interface Contractor and any other relevant person (as reasonably determined by Principal's Representative); and
 - (ii) work in good faith with the Contractor and the Interface Contractor to resolve the issues or dispute.
- (d) The Contractor:
- (i) acknowledges and agrees:
 - (A) no act or omission by an Interface Contractor will, whether or not it causes any delay, disruption or interference to the Contractor's Activities, constitute an act or omission of the Principal or the Principal's Representative (including any breach of Contract or Variation directed by the Principal's Representative); or
 - (B) that except where the Principal's Representative directs a Variation in circumstances where the Contractor has fully complied with clause 2.12(a), the Principal will not be liable upon any Claim by the Contractor arising out of or in any way in connection with:
 - (aa) the Interface Contractors carrying out their work; or
 - (ab) any act or omission of an Interface Contractor; and
 - (ii) warrants that the Original Contract Price and the Contractor's Program contain sufficient allowances for the assumption by the Contractor of the obligations and risks under clause 2.12(a) and this clause 2.12(d), including the cost of all the design iterations required to accommodate Interface Work.

2.13 Incident Management Reporting

- (a) The Contractor must identify clear guidelines for responding to any Incident arising from the performance of the Contractor's Activities and establish procedures to ensure that the Principal's Representative is promptly notified of any Incident in accordance with the TNSW Standard Requirements.
- (b) Should an Incident occur which is reportable under any relevant Law, the Contractor must immediately report the Incident to the relevant Authority and the Principal's Representative in accordance with the TNSW Standard Requirements.
- (c) In relation to any environmental or safety Incident involving Hazardous Material, Contamination, Pollution or other waste that arises during the performance of the Contractor's Activities, the Contractor must:

- (i) at its own cost promptly take all appropriate action to manage and dispose of all Hazardous Material, Contamination, Pollution or other waste arising from the Incident;
 - (ii) comply with all relevant Laws including any requirements to give notice to a relevant Authority; and
 - (iii) at its own cost manage the Incident in a manner which minimises damage to the reputation of the Principal including complying with any reasonable request of the Principal's Representative.
- (d) If the Contractor causes or contributes to the occurrence of an Incident and fails to ensure that the Principal is promptly notified, the Principal, may without prejudice to any other right it has under this Contract, immediately terminate the Contract by written notice to the Contractor.
- (e) Without prejudice to the Principal's other rights under this Contract, if the Principal forms the reasonable view, upon the occurrence (or imminent risk of the occurrence) of an Incident, that the Contractor is not taking adequate measures to manage the Incident or control or eliminate the adverse impact or the risk of such an Incident arising in the future, the Principal may (but has no obligation) to take such actions as it deems necessary to overcome and alleviate the cause and consequences of any Incident. If the Principal takes any such action it will be entitled to recover its reasonable costs and expenses from the Contractor as a debt due from the Contractor to the Principal.
- (f) Without prejudice to the Principal's other rights under this Contract, the Principal's Representative may issue a direction under clause 2.14 requiring the Contractor to suspend the carrying out of the whole or any part of the Contractor's Activities in the event:
- (i) of any Incident involving:
 - (A) a significant spill of Contamination;
 - (B) any accident or release of Contamination which it believes may pose a danger to health, life or property; or
 - (C) any actual damage or harm to the Environment or a significant risk of harm to the Environment; or
 - (ii) any safety incident occurs which leads to, or has the potential to lead to, a fatality or injury to person (including any incident which must be reported to New South Wales WorkCover Authority) or damage to property.
- (g) The Principal will not be liable upon any Claim by the Contractor for any cost, expense, Loss, delay, disruption or penalty arising out of or in connection with
- (i) any suspension due to a direction to suspend issued, or for the failure to issue a notice to suspend, in the circumstances set out in this clause 2.13(f); and
 - (ii) complying with a direction issued under clause 2.13(h), including complying with the steps which Principal's Representative directs that the Contractor must take before the Principal's

Representative will issue a direction to recommence the Contractor's Activities.

- (h) If the Principal's Representative issues a notice to suspend in the circumstances set out in clause 2.13(f), the Contractor may not recommence the Contractor's Activities in respect of the part of the Contractor's Activities to which the notice relates until the Principal's Representative issues a direction to the Contractor permitting the Contractor to recommence the Contractor's Activities affected by the notice to suspend.
- (i) If the Principal's Representative issues a notice to suspend in the circumstances set out in clause 2.13(f) the Principal's Representative may also direct the Contractor as to the steps which the Contractor must take before the Principal's Representative will issue a direction pursuant to clause 10.14 permitting the Contractor to recommence the Contractor's Activities affected by the notice to suspend. In these circumstances the Contractor must, at its cost, comply with the direction of the Principal's Representative, and only once the Principal's Representative is satisfied that the Contractor has complied with the requirements of the direction issued under this clause 2.13(h) will the Principal's Representative issue a direction to the Contractor permitting the Contractor to recommence the Contractor's Activities affected by the notice to suspend.
- (j) The Principal will be entitled to recover its reasonable costs and expenses for any action the Principal's Representative deems necessary to avoid the issue of any notice to suspend in the circumstances set out in clause 2.13(f), as a debt due and payable from the Contractor to the Principal.

2.14 Principal Contractor

- (a) In this clause 2.14 the terms 'construction project', 'construction work', 'principal contractor' and 'workplace' have the same meanings assigned to those terms under the WHS Legislation.
- (b) For the purpose of the WHS Legislation and the Contract, the Works and any Other Contractor Work is taken to be part of the same construction project.
- (c) If the Contractor is specified in Item 28 of Schedule * as being the principal contractor:
 - (i) the Principal engages the Contractor as the principal contractor in respect of the Contractor's Activities and all Other Contractor Work carried out on the Site;
 - (ii) the Principal authorises the Contractor to have management and control over the Site and of each workplace at which the Contractor's Activities and the Other Contractor Work is to be carried out and to discharge the duties of a principal contractor under the WHS Legislation; and
 - (iii) the Contractor accepts the engagement as principal contractor and agrees to discharge the duties imposed on a principal contractor by the WHS Legislation.
- (d) To the extent not prohibited by law, the Contractor must indemnify the Principal against any damage, expense, Loss (including reasonable legal fees) or liability suffered or incurred by the Principal arising out of or in

connection with the Contractor's failure to discharge the duties imposed on a principal contractor by the WHS Legislation that the Contractor is required to discharge in accordance with this clause 2.14.

- (e) Where the Contractor is not specified in Item 28 of Schedule 1 to be the principal contractor, the Contractor:
 - (i) acknowledges that the person who is specified in Item 28 of Schedule 1 is the principal contractor in respect of all construction work carried out by or on behalf of the Principal on that Site during the period which that person is specified as being the principal contractor in Item 28 of Schedule 1; and
 - (ii) must comply with any exercise by the person referred to in clause 2.14(e)(i) of such authority as is necessary to enable that person to discharge the responsibilities imposed on a principal contractor by the WHS Legislation.
- (f) Without limiting anything else in this clause 2.14, the Contractor must, in respect of any construction work carried out on all or part of the Extra Land, discharge the duties of a principal contractor under the WHS Legislation in respect of such construction work.

2.15 Third Party Agreements

- (a) The Contractor:
 - (i) acknowledges that the Principal has entered or will enter into the Third Party Agreements and has provided copies of the Third Party Agreements to the Contractor;
 - (ii) must:
 - (A) carry out and complete the Third Party Works;
 - (B) in respect of Schedule 4, Part B, subject to any express provision of this Contract:
 - (aa) comply with, satisfy, carry out and fulfil the conditions and requirements of the Roads Act Approval that the Principal is required, under the terms of the Roads Act Approval, to comply with, satisfy, carry out and fulfil; and
 - (ab) comply with and fulfil any conditions, obligations or requirements allocated to the Contractor in Schedule 4, Part B that are additional to or more stringent or onerous than the conditions and requirements described in clause 2.15(a)(i)(B)(aa);
 - (C) in respect of Schedule 4, Part C, subject to any express provision of this Contract, comply with, satisfy, carry out and fulfil the conditions and requirements of the RMS Project Collaboration Agreement which are allocated to the Contractor in Schedule 4, Part C; and
 - (D) in respect of Schedule 4, Part D, subject to any express provision of this Contract, comply with, satisfy, carry out and fulfil the conditions and requirements of the CoPC

Development Agreement which are allocated to the Contractor in Schedule 4, Part D;

- (iii) must assist the Principal in any way that the Principal reasonably requires to enable the Principal to perform the obligations identified for the Principal to perform in Schedule 4;
- (iv) must comply with any reasonable directions of the Principal's Representative (who will have regard to any reasonable submissions made by the Contractor to the Principal's Representative) in relation to compliance with the relevant conditions and requirements of each Third Party Agreement;
- (v) must, where a Third Party Agreement provides for the Principal to provide a document, notice or information to the Third Party, provide such document, notice or information to the Principal (and not to the Third Party) within a reasonable time sufficient for the Principal to review and comment on the document, notice or information and provide it to the Third Party within the time period required by a Third Party Agreement;
- (vi) must, in carrying out the Contractor's Activities:
 - (A) ensure that no act or omission of the Contractor constitutes, causes or contributes to any breach by the Principal of its obligations to the Third Party under the Third Party Agreement; and
 - (B) otherwise act consistently with the terms of the Third Party Agreement;
- (vii) agrees that whenever, pursuant to the terms of a Third Party Agreement, the Principal makes an acknowledgment or gives a release or warranty, indemnity, or covenant to the Third Party under any clause of the Third Party Agreement then, subject to what is provided in Schedule 4 and the other terms of this Contract, the Contractor is deemed to make the same acknowledgment or give the same release or warranty, indemnity or covenant to the Principal on the same terms and conditions as the acknowledgment, release or warranty, indemnity or covenant made or given by the Principal under a Third Party Agreement in the same way as if the relevant terms of the acknowledgment, release or warranty, indemnity or covenant were set out in full in this Contract; and
- (viii) acknowledges that to the extent that a Third Party Agreement contains a provision pursuant to which the Third Party is stated to make no representation as to a state of affairs, the Contractor agrees that the Principal similarly makes no representation to the Contractor in respect of that state of affairs in the same way as if the relevant terms of the Third Party Agreement were set out fully in this Contract.

(b) The parties acknowledge that:

- (i) as at the date of this Contract:
 - (A) the terms and conditions of the Third Party Agreements identified in Schedule 4 as "Draft" have not been finalised between the Principal and the relevant Third Party (each a "Draft Third Party Agreement"); and

- (B) certain Third Party Agreements may need to be replaced with new agreements on different terms (each a "Replacement Third Party Agreement");
- (i) the Contractor has reviewed the Third Party Agreements executed at the date of this Contract and the Draft Third Party Agreements and has included in the Original Contract Price all of its costs (including the cost of all physical works and allowance for any delay or disruption) in complying with its obligations under clause 2.15(a) and the Principal's obligations under the Third Party Agreements executed at the date of this Contract and the Draft Third Party Agreements other than those identified in Schedule 4 for the Principal to perform;
- (ii) following:
- (A) finalisation of any Draft Third Party Agreement; or
 - (B) the execution of any Replacement Third Party Agreement,
- after the date of this Contract, the Principal must promptly give the Contractor a copy of the:
- (C) executed version of the Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable), together with (in the case of a Replacement Third Party Agreement) details of the Third Party Agreement that is replaced; and
 - (D) amendments (if any) to Schedule 4 arising out of the execution of the Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable) ("**Revised Allocation**");
- (iv) within 28 days of receipt of an executed copy of a Draft Third Party Agreement or a Replacement Third Party Agreement (as applicable), and the associated Revised Allocation, the Contractor must notify the Principal's Representative in writing if any terms and conditions of:
- (A) the executed version of the Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable); or
 - (B) the associated Revised Allocation,
- are substantially more onerous than those contained in:
- (C) the relevant Draft Third Party Agreement; and
 - (D) Schedule 4,
- ("Difference in Conditions") and:
- (E) where the Difference in Conditions or Revised Allocation will result in additional administration, details of such additional administration costs to be incurred by the Contractor;

- (F) where the Difference in Conditions or Revised Allocation will result in additional physical works:
 - (aa) not forming part of the Contractor's Activities; and
 - (ab) which is otherwise in addition to any physical works contemplated by the Third Party Agreements executed at the date of this Contract and the Draft Third Party Agreements,

details of such additional physical works and the cost of carrying out such additional physical works; and

- (G) where the Difference in Conditions or Revised Allocation alters the Contractor's risk profile under this Contract and creates a contingent liability which the Contractor did not previously bear and which may convert to an actual liability on the happening of another event ("Trigger Event"), details of the altered risk profile, contingent liability and Trigger Event and a notice of intention to claim;

- (v) if the Principal does not receive a notice from the Contractor under clause 2.15(b)(iv) within the 28 day period:

- (A) Schedule 4 is amended in accordance with the Revised Allocation as and from the date of receipt by the Contractor of the:

- (aa) executed copy of the Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable); and

- (ab) Revised Allocation,

under clause 2.15(b)(iii); and

- (B) the Contractor must carry out its obligations under this Contract on the basis of:

- (aa) the executed version of the Draft Third Party Agreement or Replacement Third Party Agreement (rather than the Third Party Agreement that is replaced) (as applicable); and

- (ab) the Revised Allocation,

without any adjustment to the Contract Sum or any entitlement to make any other Claim;

- (vi) if the Principal's Representative receives a notice from the Contractor under clause 2.15(b)(iv) within the 28 day period, then:

- (A) Schedule 4 is amended in accordance with the Revised Allocation as and from the date of receipt by the Contractor of the:

(aa) executed copy of the Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable); and

(ab) Revised Allocation,

under clause 2.15(b)(iii);

(B) the Contractor must carry out its obligations under this Contract on the basis of:

(aa) the executed version of the Draft Third Party Agreement or Replacement Third Party Agreement (rather than the Third Party Agreement that is replaced) (as applicable); and

(ab) the Revised Allocation;

(C) the Principal's Representative must:

(aa) where the Contractor has provided the details referred to in clause 2.15(b)(iv)(E), give the Contractor a notice setting out the Principal's Representative's determination of the reasonable, additional administration costs incurred or to be incurred by the Contractor in complying with the executed version of the Draft Third Party Agreement, the Replacement Third Party Agreement or Revised Allocation and the Contract Sum will be increased by that amount; and

(ab) where the Contractor has provided the details referred to in clause 2.15(b)(iv)(F), if the terms of any executed version of a Draft Third Party Agreement, the relevant Replacement Third Party Agreement or Revised Allocation require the Contractor to carry out any physical work which:

1. does not form part of the Contractor's Activities; and
2. is additional to any physical works contemplated by the Third Party Agreements executed at the date of this Contract and the Draft Third Party Agreements,

direct the Contractor to carry out such physical work as a Variation under clause 6.2, and

(D) where the Contractor has provided the details referred to in clause 2.15(b)(iv)(G), the Principal's Representative's obligation to make a determination in relation to the altered risk profile or contingent liability referred to in clause 2.15(b)(iv)(G) is deferred until the Trigger Event occurs;

(vii) if:

(A) the Contractor issues a notice under clause 2.15(b)(iv) and provides the details referred to in clause 2.15(b)(iv)(G); and

(B) a Trigger Event occurs during the implementation of:

(aa) the executed Draft Third Party Agreement or the Replacement Third Party Agreement (as applicable); and

(ab) the Revised Allocation,

the Contractor may issue a notice to the Principal's Representative providing details of the reasonable costs incurred in satisfying the actual liability which has arisen;

(viii) if the Principal's Representative receives a notice under clause 2.15(b)(vi), the Principal's Representative must give the Contractor a notice setting out the Principal's Representative's determination of the reasonable, additional costs incurred by the Contractor in satisfying the actual liability which has arisen and the Contract Sum will be increased by that amount; and

(ix) notwithstanding the provisions of clause 2.15(b), the amount of any additional costs incurred by the Contractor as a result of the circumstances referred to in clause 2.15(b) will not be added to the Contract Sum unless the Contractor has taken all proper and reasonable measures to:

(A) avoid the Trigger Event, and

(B) avoid or minimise the extra costs resulting from such circumstances.

(c) The Contractor,

(i) must indemnify the Principal from and against:

(A) any claim by a Third Party against the Principal; or

(B) any liability of the Principal, to a Third Party,

arising out of or in any way in connection with a Third Party Agreement (including a Draft Third Party Agreement or a Replacement Third Party Agreement executed after the date of this Contract) to the extent that the claim or liability arises out of or in any way in connection with the Contractor's Activities, provided that the Contractor's responsibility to indemnify the Principal will be reduced to the extent that an act or omission of the Principal, an Other Contractor or an agent of the Principal contributed to the claim or liability; and

(ii) agrees that it:

(A) bears the full risk of:

(aa) complying with the obligations under this clause 2.15; and

(ab) any acts or omissions of Third Parties; and

- (B) will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with the risks referred to in clause 2.15(c)(i)(A); and
 - (i) agrees that any indemnity or promise contained in Schedule 4, made by the Contractor in favour of RMS, is a promise made to TfNSW as the agent of RMS and RMS is entitled to directly enforce the benefit of that indemnity or promise.
- (d) The Contractor acknowledges that a 'Road Safety Audit' must be carried out by an independent auditor pursuant to Section 5, Schedule 4 of the Roads Act Approval.
- (e) If, as a result of the Contractor's Activities, any tree that has been identified in the 'Tree Register' referred to in paragraph 3.6.2 of Exhibit A:
- (i) is removed; or
 - (ii) is damaged or harmed.

other than to the extent that such removal or damage is authorised in accordance with the 'Tree Register', the Contractor must pay to the Principal the sum of \$10,000 per tree. Such payment may, if the Contractor fails to pay any such amount prior to the date on which the next Payment Claim is lodged in accordance with clause 11.2, the Principal will be entitled to set that amount off against any payment referred to in clause 11.4.

2.16 Commissioning and Operational Readiness

The Contractor acknowledges that:

- (a) Commissioning and Operational Readiness are part of the Contractor's Activities; and
- (b) Commissioning and Operational Readiness must be completed as a condition precedent to Completion of the Works.

2.17 Contemporaneous Work

- (a) The Contractor must:
 - (i) inspect all Contemporaneous Work within the periods set out in Item 29 of Schedule 1 after the Principal's Representative gives written notice to the Contractor to do so;
 - (ii) if it discovers any defects, omissions or other matters in or connected with any Contemporaneous Work that in its opinion will render or are likely to render the Contemporaneous Work unsuitable, unsatisfactory or detrimental in any way to the proper execution of the Works or carrying out of the Contractor's Activities, within 10 Business Days of the inspection notify the Principal's Representative in writing providing:
 - (A) full particulars of the defects, omissions or other matters identified; and
 - (B) the reasons for the opinion formed by it in respect to the defects, omissions or matters identified;

- (iii) not commence or continue with the execution of any part of the Contractor's Activities dependent upon or appreciably affected by the Contemporaneous Work that is the subject of the notice referred to in clause 2.17(a)(i), until the Principal's Representative issues a Variation Order under clause 2.17(b)(i) or issues a direction under clause 2.17(b)(ii); and
 - (iv) commence or continue with all other parts of the Contractor's Activities and mitigate any additional costs and delays resulting from the matters notified.
- (b) On receipt of the Contractor's notice under clause 2.17(a)(i), the Principal's Representative will investigate the Contemporaneous Work that is the subject of the Contractor's notice, and within 10 Business Days of the receipt of the notice:
- (i) if the Principal's Representative agrees that the defect, omission or other matter in relation to the Contemporaneous Work necessitates a Variation in order for the proper execution of the Works and carrying out of the Contractor's Activities, issue a Variation Order to the Contractor pursuant to clause 6.2 directing it to carry out a Variation; or
 - (ii) if the Principal's Representative disagrees with the Contractor, issue a direction to the Contractor to commence or continue with the Contractor's Activities, whereupon the Contractor must nevertheless take such steps as may be necessary to ensure that the part of the Works or Contractor's Activities dependent upon or appreciably affected by the Contemporaneous Work complies with the requirements of this Contract.
- (c) If the Contractor fails to:
- (i) inspect any Contemporaneous Work as required by this clause 2.17; or
 - (ii) notify the Principal's Representative of any defects, omissions or other matters that should have been detected at the time of such inspection by a competent and experienced contractor and that may render the Contemporaneous Work unsuitable, unsatisfactory or detrimental in any way for the proper execution of the Works or for carrying out the Contractor's Activities,

and the Contemporaneous Work subsequently proves to be unsuitable, unsatisfactory or detrimental for the proper execution of the Works or the carrying out of the Contractor's Activities, then:

- (iii) any work that is required to be executed in order to render the Contemporaneous Work suitable, satisfactory and non-detrimental for the proper execution of the Works or the carrying out of the Contractor's Activities must be performed by the Contractor at its own cost and expense; and
- (iv) the Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with any work carried out or to be carried out by the Contractor under clause 2.17(c)(iii).



2.18 RMS Works

The Contractor must, within five Business Days of the date of this Contract execute and deliver to RMS, with a copy to the Principal, the RMS Deed Poll.

2.19 Third Party Works

The Third Party Works:

- (a) form part of the Contractor's Activities;
- (b) have separate Defects Rectification Periods as specified in Item 30 of Schedule 1;
- (c) are subject to processes in relation to completion set out in the relevant Third Party Agreements;
- (d) to the extent that the Third Party Works form part of a Portion, that Portion will not achieve Completion until it has achieved completion pursuant to the relevant Third Party Agreement;
- (e) must be programmed and constructed in accordance with any programming constraints contained in the relevant Third Party Agreement; and
- (f) will be subject to the design processes set out in the relevant Third Party Agreement, and to the extent of any inconsistency between the design process or requirements in this Contract, and the process or requirements under the Third Party Agreement, the more onerous process and requirements will apply.

2.20 Planning Approval

- (a) The Contractor acknowledges and agrees that:
 - (i) the Principal has prepared the 'Environmental Impact Statement' dated 22 August 2017 and has provided copies of the document to the Contractor as an Information Document;
 - (ii) the Principal has provided a copy of the Planning Approval dated 29 May 2018 to the Contractor;
 - (iii) the Contractor must:
 - (A) comply with, satisfy, carry out and fulfil the conditions and requirements of the Planning Approval that are allocated to the Contractor in the Planning Approval Matrix;
 - (B) comply with any reasonable directions of the Principal's Representative in relation to compliance with the relevant conditions and requirements of the Planning Approval as set out in the Planning Approval Matrix;
 - (C) not do, or omit to do, anything which may cause the Principal to be in breach of its obligations under the Planning Approval;
 - (D) provide the Principal with all reasonable assistance in preparing and providing to the Principal all information that the Principal is required (or reasonably proposes) to

provide to any relevant Authority in connection with the Works:

- (E) alert the Principal to steps to be taken, decisions to be made and events scheduled to occur during the following month which are material or which might materially affect the Principal's rights and obligations under the Planning Approval;
- (b) The Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with the Planning Approval.

2.21 Works after Completion

- (a) The Principal may direct the design and construction of additional works ("New Portion") at any time prior to the Date of Completion of the last Portion to achieve Completion.
- (b) If the Principal directs a New Portion pursuant to clause 2.21(a), then:
 - (i) **(Defects Rectification Period)** the Defects Rectification Period for the New Portion will commence on the completion of those works, and the Defects Rectifications Period for the other Works under this Contract will remain unaffected;
 - (ii) **(Security)** the Contractor must provide the Principal with Security in respect of the New Portion, for an amount equal to 5% of the value of the New Portion;
 - (iii) **(Liquidated Damages)** the rate of liquidated damages in respect of the New Portion will be as agreed between the parties (or failing agreement, as reasonably directed by the Principal's Representative) and will be capped at an amount not exceeding 10% of the value of the New Portion;
 - (iv) **(Control of the Site)** if directed by the Principal, the Contractor will remain as principal contractor of the Site, and must satisfy its obligations under this Contract in relation to work, health and safety on the Site;
 - (v) **(Insurance)** the Contractor must maintain or take out all additional insurances which are reasonably required by the Principal; and
 - (vi) **(Pricing)** the parties will agree the Reimbursable Work Price for the New Portion, or in the absence of agreement, the Reimbursable Work Price for the New Portion will be as reasonably directed by the Principal's Representative.
- (c) Any Contractor's Activities or Works carried out under this clause 2.21 must:
 - (i) be carried out diligently and within time frames agreed by the parties;
 - (ii) be completed to the standards stipulated in this Contract, as if the New Portion is "Works" under this Contract; and
 - (iii) be otherwise in compliance with this Contract.

- (d) If the Principal's Representative issues a direction in relation to the pricing or rate of liquidated damages pursuant to this clause and the Contractor disagrees with such a direction, the Contractor may refer the matter to dispute in accordance with clause 15.

2.22 Joint Venture Agreement obligations

- (a) The Contractor is an unincorporated joint venture comprised of Diona Pty Ltd and Ward Civil & Environmental Engineering Pty Ltd (each a **Joint Venturer**) which has been constituted by the joint venture agreement dated on or about the date of this Contract (**Joint Venture Agreement**).
- (b) The Joint Venture Agreement can be dissolved in certain circumstances.
- (c) The Principal has entered into this Contract on the basis that the Contractor will be made up of the Joint Venturers.
- (d) Both of the Joint Venturers agree:
 - (i) to provide immediate written notice to the Principal of:
 - (A) any matter that has been referred to the "Executive Committee" under clause 5(11) of the Joint Venture Agreement;
 - (B) any "Deadlock" of the Executive Committee under clause 5(12) of the Joint Venture Agreement; and
 - (C) the occurrence of any event of default under clause 9.2 of the Joint Venture Agreement;
 - (ii) that they may not terminate the Joint Venture Agreement or exercise any of the rights contained in clause 5(11) or 9 of the Joint Venture Agreement without providing the Principal with 20 Business Days prior written notice of their intention to do so; and
 - (iii) a breach of this clause, the termination of the Joint Venture Agreement and the exercise by either of the Joint Venturers of the rights contained in clause 5(11) or 9 of the Joint Venture Agreement will be immediate termination events under clause 14.4.

3 The Site and location of the Works

3.1 Access

- (a) The Contractor acknowledges and agrees that access to the Site will be provided progressively to the Contractor as set out in Schedule 31 and this Contract.
- (b) Subject to clause 3.1(c) and any other provision of this Contract affecting access, the Principal must:
 - (i) give, or ensure the Contractor has, access to the Site by the dates set out in Schedule 31 (and if a period is specified in relation to access to a part of the Site, then by the last day of that period); and

- (ii) once access to a part of the Site is provided to the Contractor, thereafter continue to allow, or ensure that the Contractor is continued to be allowed, access to that part of the Site.
- (c) The Contractor acknowledges and agrees that:
- (i) access to the Site or any part thereof will only confer on the Contractor a right to such management and control as is necessary to enable the Contractor to execute the Contractor's Activities in accordance with this Contract and to discharge its responsibilities under the WHS Legislation, including to discharge its responsibilities as principal contractor;
 - (ii) the Principal is not obliged to give the Contractor access to any part of the Site until the Contractor has:
 - (A) complied with clause 2.7(a) of this Contract;
 - (B) submitted the plans required under Annexure C of the TfNSW Standard Requirements, to the Principal's Representative and the Independent Certifier under clause 9.8 and no further changes are required pursuant to clause 9.8;
 - (C) effected the insurance policies required under clause 13.5;
 - (D) complied with clause 13 with respect to each insurance policy; and
 - (E) complied with the requirements of and matters set out in Schedule 31;
 - (iii) the Principal is not obliged to provide, and the Contractor may not be given, exclusive access to the Site;
 - (iv) the Principal is not obliged to carry out any work or provide any facilities to the Contractor which may be necessary to enable the Contractor to obtain access to the Site or carry out the Contractor's Activities; and
 - (v) the Principal and others will engage Other Contractors to work upon or in the vicinity of the Site and Extra Land at the same time as the Contractor.
- (c) The Principal's obligations under clause 3.1(a) and 3.1(b) in respect of each part of the Site will cease upon the issue of a Notice of Completion in respect of the last Portion occupying that part of the Site, except to the extent required to allow the Contractor to comply with its obligations during the Defects Rectification Periods.
- (e) Failure by the Principal to give access as required by clause 3.1(b) will not be a breach of this Contract but will entitle the Contractor to:
- (i) an extension of time to any relevant Date for Completion under clause 10.10 if the requirements of that clause are satisfied; and
 - (ii) have the Contract Sum increased by the costs reasonably incurred by the Contractor as a direct result of the failure of the Principal to give access as required by clause 3.1(b) as determined by the Principal's Representative who must, where

If they are applicable, use the rates and prices in Item 31 of Schedule 1.

- (f) The Contractor's entitlement under clause 3.1(e)(i) will be its only right to payment of money arising out of or in any way in connection with the Principal's failure to give access as required by clauses 3.1(a), 3.1(b)(i) or 3.1(b)(ii).

3.2 No double up

The Contractor will not be entitled to Claim under any clause of this Deed to the extent that the payment has been included in the Approved Actual Utilities Cost, the Utilities Margin or any other payment made under this Deed.

3.3 Temporary Works

The Contractor must carry out all Temporary Works required to execute the Contractor's Activities so that the Temporary Works will be fit for their intended purpose.

3.4 Management and Control of the Site

At all times after being given access to the Site or a part of the Site under clause 3.1 and before the Date of Completion of the Last Portion to reach Completion, the Contractor:

- (a) without limiting any right of the Principal or the Principal's Representative under this Contract, and subject to clause 2.14, will be responsible for the management and control of the Site, including under the conditions set out in Schedule S1;
- (b) must control access to, and the security and maintenance of, the Site or that part, except where the Principal's Representative advises otherwise;
- (c) must ensure public safety on and adjacent to the Site or that part;
- (d) must provide for the continuous safe passage of the public, road users on existing roads, footpaths, access ways, cycleways affected by the Contractor's Activities in accordance with this Contract;
- (e) must, subject to clauses 3.1 and 3.11 and the TINSW Standard Requirements, and any relevant Law, limit access to the Site to its employees, Subcontractors and their employees and Subcontractors, and those with a legitimate interest in being on the Site as part of the Contractor's Activities;
- (f) must not impede access or Utility Services to private property without the consent of the Principal's Representative and the relevant owner or occupier;
- (g) must ensure that existing buildings (including residences, whether occupied or unoccupied) on the Site are preserved and protected from damage (including from theft and vandalism) until (where relevant) they are due for demolition by the Contractor if that forms part of the Contractor's Activities;
- (h) must obtain the prior written approval of the Principal's Representative to the removal of any trees;

- (i) must comply with the Planning Approval, all other Authority Approvals, the Contract Management Plan, the TfNSW Standard Requirements and this Contract in relation to vehicle access to and from the Site, including the location of all entrances, points of access, turning restrictions, slip lanes, traffic volumes and weight limits on local streets, hours of work and the like;
- (j) must provide the site office facilities for the Principal when, and in the places, required by the Principal's Representative and as otherwise required as per TfNSW Standard Requirements (Exhibit A);
- (k) must ensure that protection and reinstatement of the condition and features of the Site, including any Temporary Lands, comply with the Planning Approval and all other Authority Approvals;
- (l) must comply with the conditions of all leases, licences and easements under which the Principal is entitled (as against the owner of a part of the Site) to have access to a part of the Site (including any Third Party Agreements);
- (m) must protect all existing Utility Services within and adjacent to the Site in accordance with the requirements of the respective utility companies;
- (n) acknowledges that the Site may include vehicular driveways or access and egress points that are shared with property owners, their tenants and/or Other Contractors. The Contractor must not impede or interfere with the function and use of these driveways or access and egress points;
- (o) acknowledges that the Contractor must reinstate all Temporary Lands as a condition precedent to Completion of the Portion to which those Temporary Works relate; and
- (p) acknowledges that the completion of all Temporary Works including site disestablishment is a condition precedent to Completion of each Portion

3.5 Land in Addition to the Site

- (a) The Contractor must notify the Principal's Representative:
 - (i) as soon as the Contractor becomes aware; and
 - (ii) no less than 12 months prior to the date which the relevant permanent property rights are required.

that any additional permanent property rights over any land or buildings in addition to the Site, are necessary for the purposes of carrying out the Contractor's Activities and completing the Works ("Extra Land").
- (b) The Contractor must, when notifying the Principal's Representative of any requirement for Extra Land under clause 3.5(a), provide notice to the Principal's Representative in writing, containing the details of any such request.
- (c) TfNSW may, in its absolute discretion:
 - (i) acquire the Extra Land, at TfNSW's cost; or
 - (ii) provide such assistance to the Contractor in acquiring the Extra Land.

or decline to acquire, or provide assistance with, the Extra Land pursuant to this clause 3.5(c).

- (d) If TNSW declines to acquire Extra Land, pursuant to clause 3.5(c), the Contractor must procure for itself and at its own cost the occupation or use of or relevant rights over any land or buildings in addition to the Site which is necessary or which it may require for the purpose of carrying out the Contractor's Activities.
- (e) The Contractor must (regardless of whether the Extra Land was acquired by TNSW, or the Contractor):
 - (i) at its own cost carry out all activities and procure all Utility Services necessary to make the Extra Land suitable for use by the Contractor; and
 - (ii) as a condition precedent to Completion of the Works or any Portion:
 - (A) rehabilitate any Extra Land in accordance with the requirements of all relevant Authorities and other relevant persons, and
 - (B) unless not required by the Principal's Representative, provide to the Principal's Representative a properly executed certificate in the form of Schedule 13 or a release on terms otherwise satisfactory to the Principal's Representative from all claims or demands (whether for damages or otherwise howsoever arising) from the owner or occupier of, and from other persons having an interest in, such Extra Land.
- (f) The Contractor must indemnify the Principal against any damage, expense, Loss, cost or liability suffered or incurred by the Principal arising out of or in any way in connection with a claim by the owner or occupier of, or any other person having any interest in any Extra Land, provided that the Contractor's liability to indemnify the Principal will be reduced proportionally to the extent that an act or omission of the Principal, an Other Contractor or an agent of the Principal contributed to the damage, expense, Loss, cost or liability.
- (g) The Contractor will have no entitlement to any increase in the Contract Sum or otherwise to make any Claim against the Principal in respect of any thing arising out of this clause 3.5.

3.6 Latent Conditions

- (a) Subject to clause 3.6(e), Latent Conditions are physical conditions on the Site or its surroundings (including artificial things) which differ materially from the physical conditions which should reasonably have been anticipated by a competent and experienced contractor at the time of the Contractor's Tender if such a contractor had:
 - (i) examined all information made available in writing by the Principal to the Contractor for the purpose of tendering (including the Reports);
 - (ii) examined all information (including the Reports) relevant to the risks, contingencies and other circumstances having an effect on the Tender and obtainable by the making of reasonable enquiries; and

- (i) inspected the Site and its surroundings;

Latent Conditions exclude Utility Services, weather conditions or physical conditions which are a consequence of weather conditions at the Site.

- (b) If during the execution of the Contractor's Activities, the Contractor becomes aware of a Latent Condition the Contractor must:

- (i) promptly; and
- (ii) where possible before the physical conditions are disturbed.

give written notice thereof to the Principal's Representative.

- (c) The Contractor must provide in that notice to the Principal's Representative a statement specifying:

- (i) the conditions encountered and in what respects the Contractor considers they constitute a Latent Condition;
- (ii) the additional work and additional resources which the Contractor estimates to be necessary to deal with the Latent Condition;
- (iii) the time the Contractor anticipates will be required to deal with the Latent Condition and the expected delay in achieving Completion (if any) as a result of dealing with the Latent Condition;
- (iv) the Contractor's estimate of the cost of the measures necessary to deal with the Latent Condition; and
- (v) other details reasonably required by the Principal's Representative.

- (d) If a Latent Condition:

- (i) has a direct effect on the Contractor carrying out the Contractor's Activities; and
- (ii) directly results in an increase in the Contractor's costs of carrying out the Contractor's Activities,

which a competent and experienced contractor could not have avoided or mitigated, and could not reasonably have anticipated at the date of this Contract, the Contract Sum will be increased by the additional costs (including the costs referred to in clause 3.8 in relation to Hazardous Materials which constitute a Latent Condition and the costs referred to in clause 3.10(f) in relation to Contamination which constitutes a Latent Condition) determined by the Principal's Representative:

- (iii) on the basis of the rates set out in Schedule 10; or
- (iv) to the extent that such rates do not apply, those costs reasonably incurred by the Contractor in carrying out the Contractor's Activities as a result of the Latent Condition as determined by the Principal's Representative together with the percentage referred to in Item 34 of Schedule 1 in respect of clause 6.4(b)(i) applied to those additional costs

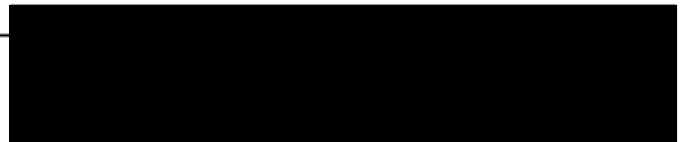
- (e) In making a valuation pursuant to clause 3.6(d), regard will not be had to any Contractor's Activities, additional costs or delays suffered or incurred more than 14 days before the date on which the Contractor gives the written notice required by clause 3.6(b)

(f)



3.7 Information Documents and Materials and Nominated Documents

- (a) Whether or not any Information Documents and Materials or any part thereof form an Exhibit to this Contract, the Contractor acknowledges that:
 - (i) the Information Documents and Materials or part thereof do not form part of this Contract and that clause 3.7(c) applies to the Information Documents and Materials or part thereof; and
 - (ii) where Information Documents and Materials or any part thereof form an Exhibit to this Contract, they do so only for the purposes of identification of that document or part thereof.
- (b) Without limiting clause 3.7(c):
 - (i) the Contractor acknowledges that the Principal does not warrant, guarantee, assume any duty of care or other responsibility for or make any representation about the accuracy, adequacy, suitability or completeness of the Information Documents and Materials, and the Information Documents and Materials do not form part of this Contract;
 - (ii) subject to clause 3.7(a), the Principal will not be liable upon any Claim by the Contractor arising out of or in any way in connection with:
 - (A) the provision of, or the purported reliance upon, or use of the Information Documents and Materials to or by the Contractor or any other person to whom the Information Documents and Materials are disclosed; or
 - (B) a failure by the Principal to provide any other information, data or documents to the Contractor.
- (c) The Contractor:
 - (i) warrants that it did not in any way rely upon:
 - (A) any information, data, representation, statement or document made, or provided to the Contractor, by the Principal or anyone on behalf of the Principal or any other information, data, representation, statement or document for which the Principal is responsible or may be responsible whether or not obtained from the Principal or anyone on behalf of the Principal; or
 - (B) the accuracy, adequacy, suitability or completeness of such information, data, representation, statement or document.



for the purposes of entering into this Contract except to the extent that any such information, statement or document forms part of this Contract;

- (i) warrants that it enters into this Contract based on its own investigations, interpretations, deductions, information and determinations; and
 - (ii) acknowledges that it is aware that the Principal has entered into this Contract relying upon the warranties, acknowledgements and agreements in clauses 3.7(c)(i) and 3.7(c)(ii).
- (d) Subject to clause 3.7(c), the Contractor releases and indemnifies the Principal from and against:
- (i) any claim against the Principal by, or liability of the Principal to, any person; or
 - (ii) (without being limited by clause 3.7(d)(i)) any costs, expenses, losses or damages suffered or incurred by either the Contractor or the Principal,
arising out of or in any way in connection with:
 - (iii) the provision of, or the purported reliance upon, or use of the Information Documents and Materials, as referred to in clauses 3.7(b) and 3.7(c)(i), to or by the Contractor or any other person to whom the Information Documents and Materials are disclosed or a failure by the Principal to provide any information, data or documents to the Contractor (other than any information, data or documents which the Principal is required to provide to the Contractor by the terms of this Contract);
 - (iv) any breach by the Contractor of this clause 3.7; or
 - (v) the Information Documents and Materials being relied upon or otherwise used in the preparation of any information or document, including any information or document which is "misleading or deceptive" or "false or misleading" (within the meaning of those terms in sections 18 and 29 of schedule 2 of the *Competition and Consumer Act 2010* (Cth) or any equivalent provision of State or Territory legislation.
- (e) The acknowledgements, warranties, releases and indemnities referred to in clauses 3.7(a) to 3.7(d) do not affect the Contractor's rights under clauses 3.6(d), 3.8 and 3.10.
- (f) The Principal does not warrant the accuracy or completeness of the Nominated Documents.
- (g) If:
- (i) information contained in a Nominated Document is inaccurate; and
 - (ii) that inaccuracy:
 - (A) prevents the Contractor from fulfilling its obligations under this Deal;
 - (B) causes the Contractor to be delayed; or

(C) causes the Contractor to incur additional costs.

then,

- (iii) the Principal's Representative must issue a Variation Order under clause 6.2 to overcome the inaccuracy; and
- (iv) the Contractor will be entitled to claim an extension of time, with delay costs to the extent that it is delayed as a result of the inaccuracy.

3.8 Hazardous Material

- (a) The parties acknowledge and agree that:
 - (i) there may be Hazardous Material in structures which are located on, in or under the Site; and
 - (ii) the Contractor's Activities include taking the appropriate steps referred to in this clause 3.8 in respect of any Hazardous Material the Contractor discovers on the Site, regardless of whether the Contractor provides the report and notice referred to in clause 3.8(c) and 3.8(e) (respectively).
- (b) Without limiting clause 3.8(a), the Principal does not make any representation or warranty (express or implied) as to the nature or extent of any Hazardous Material that may be present in structures on, in or under the Site.
- (c) The Contractor must provide for the management of any Hazardous Material in any structures in the Construction Environmental Management Plan and Project Work Health and Safety Management Plan and take all measures required to protect workers and others from Hazardous Material in accordance with Law, the WHS Guidelines and the TNSW Standard Requirements.
- (d) Without limiting clauses 2.3(a)(i) and 3.8(a), the Contractor must carry out a Hazardous Material audit prior to commencing any demolition work or construction work on structures which could potentially contain Hazardous Material and provide a copy of the audit report to the Principal's Representative.
- (e) Without limiting any obligation of the Contractor to comply with the Authority Approvals, the Contractor must submit a notice for the review of the Principal's Representative and the Independent Certifier under clause 9.8 containing details of the works necessary to remove and dispose of any Hazardous Material identified in accordance with clause 3.8(d).
- (f) After the Principal's Representative has had the period referred to in clause 9.8(a) (or such shorter period as the Principal's Representative may advise to the Contractor in writing) and has not rejected the Contractor's notice under clause 3.8(e) the Contractor must comply with the notice and remove and dispose of any Hazardous Material in structures on, in or under the Site in accordance with relevant Laws, Authority Approvals and any direction of a relevant Authority where applicable.
- (g) The Contractor acknowledges and agrees that:

- (i) the Contractor will not be entitled to any increase in the Contract Sum or to make any Claim for payment, save in circumstances where Hazardous Material constitutes a Latent Condition and to the extent not otherwise paid or compensated under clause 3.10(f)(i):
 - (A) for the costs of complying with this clause 3.8;
 - (B) in respect of carrying out the Hazardous Material audit required by clause 3.8(d);
 - (C) for any costs incurred arising out of or in connection with any delay or disruption to the Contractor's Activities resulting from the presence of any Hazardous Material; or
 - (D) in respect of any investigation of structures on the Extra Land and any removal and disposal of Hazardous Material from such structures
- (ii) Where Hazardous Material constitutes a Latent Condition, any increase in the Contract Sum or Claim for payment will be determined by the Principal's Representative on the basis of:
 - (A) the nature of the Contaminated material being disposed of; and
 - (B) the rates set out in Schedule 2 Part 3, or to the extent that such rates do not apply, in accordance with clause 3.6(d)(iv), and
- (iii) the Contractor will not be entitled to an extension of time in respect of any delay arising out of or in connection with the discovery of Hazardous Material or the discharge of the obligations under this clause 3.8.

3.9 Things of Value Found

- (a) All valuable minerals, fossils, coins, articles or objects of value or antiquity, and other remains or things of geological, archaeological, anthropological, or other special interest found on the Site (all "Valuable Finds") are, and will as between the Contractor and the Principal be and remain, the property of the Principal.
- (b) The Contractor must:
 - (i) immediately notify the Principal's Representative if it discovers a Valuable Find;
 - (ii) ensure the Valuable Find is protected and not lost, removed, disturbed or damaged; and
 - (iii) comply with any directions of the Principal's Representative in relation to the Valuable Find.
- (c) Upon receipt of notice from the Contractor under clause 3.9(b)(i), the Principal's Representative must issue a direction in relation to the Valuable Find within 15 Business Days, including in relation to a reasonable measures to be undertaken by the Contractor under clause 3.9(b)(ii)



- (c) Despite the acknowledgements, warranties, releases and indemnities referred to in clauses 3.7(a) to 3.7(d):
- (i) the Contract Sum will be increased by the extra costs reasonably incurred by the Contractor as determined by the Principal's Representative in complying with the Principal's Representative's directions under this clause 3.9; and
 - (ii) the Contractor will be entitled to make a claim for an extension of time under clause 10.7 in respect of any delays the Contractor suffers in complying with the Principal's Representative's directions,

but only to the extent that a competent and experienced contractor could not have avoided or mitigated the effects of the Valuable Find, as determined by the Principal's Representative.

3.10 Contamination

- (a) The parties acknowledge and agree that:
- (i) there may be Contamination on, in, under or migrating from the Site, surface soils generally and locations which have been filled;
 - (ii) the Principal does not make any representation or warranty (express or implied) as to the nature or extent of any Contamination; and
 - (iii) part of the Contractor's Activities include taking the appropriate steps referred to in this clause 3.10:
 - (A) in respect of any Contamination the Contractor discovers on the Site; and
 - (B) regardless of whether the Contractor provides the notice referred to in clause 3.10(d).
- (b) The Contractor must provide for the management of any Contamination that may be present on, in, under or migrating from the Site in the Construction Environmental Management Plan and the Project Work Health and Safety Management Plan, and take all measures required to protect workers and others in accordance with the Law, the WHS Guidelines and the TINSW Standard Requirements.
- (c) Without limiting clauses 2.3(a)(i) and 3.10(a), the Contractor must undertake any other investigations it considers reasonable or necessary, undertake any investigation to delineate the nature and extent of any Contamination on, in, under or migrating from the Site prior to commencing any part of the Contractor's Activities on the Site in order to identify the steps necessary to deal with any Contamination as part of the Contractor's Activities.
- (d) Without limiting any obligation of the Contractor to comply with all Authority Approvals, the Contractor must in respect of all Contamination:
- (i) notify the Principal's Representative in writing within 5 Business Days of becoming aware of the existence of any Contamination on, in, under or migrating from the Site, and thereafter provide the Principal's Representative with such further written details as

the Principal's Representative may request including a copy of any investigation report prepared pursuant to clause 3.10(c);

(ii) promptly after providing a notice under clause 3.10(d)(i), submit a notice for the review of the Principal's Representative and the Independent Certifier under clause 9.8 containing:

(A) details of the steps which the Contractor proposes to take to:

(aa) investigate, remediate, dispose of, manage, monitor, contain or otherwise deal with the Contamination so that the Site is remediated to a standard suitable for the proposed use of the Site ("**Remediation Steps**"). For the avoidance of doubt, the Contractor is permitted to incorporate Remediation Steps to address the Contamination which was present on, in or under or migrating off the Site prior to the date of this Contract into the Works where such incorporation is specified in the Works Brief;

(ab) unless the Principal's Representative directs otherwise, incorporate the Contamination into the Works in preference to its disposal off-site where this is technically and economically feasible;

(ac) dispose of Contamination off-site to a licensed waste disposal facility in accordance with clause 3.14 if

(i) this more economically viable than remediating and or otherwise dealing with the Contamination in situ; or

(ii) the Principal's Representative has directed the Contractor to do so; and

(ad) report to all relevant Authorities if required to do so,

in each case in accordance with any relevant Law, Authority Approvals and any written direction from a relevant Authority; and

(B) a plan documenting the Remediation Steps determined pursuant to the criteria in clause 3.10(d)(i)(A) ("**Remediation Action Plan**");

(ii) only after the Principal's Representative has had the period referred to in clause 9.8(a) (or such shorter period as the Principal's Representative may advise to the Contractor in writing) and has not rejected the Contractor's notice under clause 3.10(d)(i), implement the Remediation Action Plan in accordance with relevant Laws, Authority Approvals and any direction of a relevant Authority where applicable; and

(iv) in dealing with any Contamination:

- (A) take all measures necessary to protect workers and others in accordance with Law and the WHS Guidelines;
 - (B) take all reasonable steps to ensure that the Contamination is quarantined from other in-situ or excavated materials so as to prevent cross-contamination; and
 - (C) provide waste classification reports and documents demonstrating that cross-contamination has not occurred.
- (e) The Contractor must indemnify the Principal against any claim, damage, expense, Loss, liability, fine or penalty suffered or incurred by the Principal arising out of or in any way in connection with any failure by the Contractor to comply with any obligation under this clause 3.10, provided that the Contractor's liability to indemnify the Principal will be reduced proportionally to the extent that an act or omission of the Principal, Other Contractors or an agent of the Principal may have contributed to the claim, damage, expense, Loss, liability, fine or penalty.
- (f) The Contractor acknowledges and agrees that:
- (i) the Contractor will not be entitled to any increase in the Contract Sum or to make any other Claim for payment, save in circumstances where the Contamination constitutes a Latent Condition:
 - (A) for complying with this clause 3.10;
 - (B) in respect of carrying out investigations of the Site or Extra Land to determine the presence and extent of any Contamination present on, in, under or migrating from the Site or Extra Land;
 - (C) in respect of any costs incurred in the management, handling and disposal of the following types of General Solid Waste (non-putrescible) as defined in the Department of Environment, Climate Change and Water NSW Waste Classification Guidelines dated November 2014:
 - (aa) glass, plastic, rubber, plasterboard, ceramics, bricks, concrete or metal;
 - (ab) paper and cardboard;
 - (ac) household waste from municipal clean ups that does not contain food waste;
 - (ad) grit, sediment, litter and gross pollutants from stormwater treatment devices that does not contain free liquids;
 - (ae) building and demolition waste;
 - (af) green waste;
 - (ag) virgin excavated natural materials; and



- (ah) wood waste;
 - (D) for any costs incurred arising out of or in connection with any delay or disruption to the Contractor's Activities resulting from the presence of any Contamination on, in, under or migrating from the Site or Extra Land including arising out of or in connection with complying with its obligations under this clause 3.10; or
 - (E) for managing the remediation works on the Site or Extra Land;
- (ii) where the Contractor disposes of material which is Non-VENM Material, the Contract Sum will be increased by the amount of the costs of such disposal as determined by the Principal's Representative on the basis of the rates set out in Schedule 2 Part 3,
 - (iii) where Contamination constitutes a Latent Condition and to the extent not otherwise paid or compensated under clause 3.10(f)(ii), any increase in the Contract Sum or Claim for payment will be determined by the Principal's Representative on the basis of the rates set out in Schedule 2 Part 3, or to the extent that such rates do not apply, in accordance with clause 3.6(d)(iv); and
 - (iv) the Contractor will not be entitled to an extension of time in respect of any delay arising out of or in connection with the discovery of Contamination or the discharge of its obligations under this clause 3.10.

3.11 Principal's Right to Access and Inspect

Subject to clause 3.15, the Contractor must:

- (a) without limiting clauses 3.4 and 3.5, minimise disruption or inconvenience to:
 - (i) the Principal, occupiers, tenants and potential tenants of the Site, Extra Land or any other land or buildings on or adjacent to the Site or any Extra Land or a part thereof in their occupation or use of, or attendance upon, any part of the Site and Extra Land, including any occupation or use of the Works, a Portion or a part thereof under clause 12.6; and
 - (ii) others having a right of access to the Site, Extra Land or any other land or buildings on or adjacent to the Site or any Extra Land; and
- (b) at all times:
 - (i) give the Principal's Representative, the Principal and any person authorised by either the Principal's Representative or the Principal access to:
 - (A) the Works;
 - (B) the Site; or

- (C) any other areas where the Contractor's Activities are being carried out,

Including unobstructed vehicular access through the Site; and

- (ii) provide the Principal and the Principal's Representative with every reasonable facility necessary for the inspection of the Contractor's Activities, including the Contractor's compliance with the Authority Approvals.

3.12 Works to be constructed within Site

The Contractor must ensure that the Works are constructed within the relevant boundaries of the Site stipulated in Item 37 of Schedule 1.

3.13 Condition Surveys

The Contractor must:

- (a) identify and prepare a condition survey of all property (including any road) that could be affected or damaged by the Contractor's Activities and as required by the Planning Approval and the TNSW Standard Requirements;
- (b) prepare this condition survey a minimum of two weeks prior to commencing any work on the Site, or on any other land which is necessary for performing the Contractor's Activities or undertaking the Works, where that work could damage property on or off the Site; and
- (c) in preparing this condition survey must use suitably skilled, qualified, and experienced personnel or Subcontractor.

3.14 Waste Disposal

- (a) The Contractor must remove from the Site and Extra Land and dispose of any Hazardous Material, Contamination or other waste pursuant to its obligations under this Contract to a licensed waste facility in accordance with all relevant Law and Authority Approvals.
- (b) The Contractor must:
 - (i) ensure that the entity that carries out the storage, treatment, transport and disposal of the Hazardous Material, Contamination or other waste from the Site holds all relevant Authority Approvals that are necessary; and
 - (ii) procure and provide evidence of such Authority Approvals to the Principal's Representative upon request.
- (c) The Contractor must ensure that its employees and agents, as applicable, are suitably trained in correct and safe methods of loading, unloading and handling any Hazardous Material, Contamination or other wastes and that they comply with all applicable Laws.
- (d) The Contractor must indemnify the Principal against any claims, damage, expense, Loss, liability, fine or penalty suffered or incurred by the Principal arising out of or in any way in connection with any failure by the Contractor to comply with any obligation under this clause, provided that the Contractor's liability to indemnify the Principal will be reduced proportionally to the extent that an act or omission of the Principal, Other

Contractors or an agent of the Principal may have contributed to the claim, damage, expense, Loss, liability, fine or penalty.

3.15 Principal not in Control

The Contractor and Principal acknowledge that nothing in this Contract including the right to inspect pursuant to clause 3.11 or any audit by the Principal or the Principal's Representative at any time will be construed to mean or imply that:

- (a) the Principal has any management or control over the Contractor's Activities on the Site or Extra Land; or
- (b) the Principal has any responsibility for any act or omission by the Contractor or its Subcontractors or agents including compliance or non-compliance with any relevant Laws, Authority Approvals or this Contract.

4 Compliance

4.1 Quality of Work

The Contractor must in carrying out the Contractor's Activities:

- (a) use the materials and standard of workmanship required by this Contract (including the requirements of the Works Brief);
- (b) comply with this Contract in the execution of the Contractor's Activities;
- (c) in the absence of any other requirement, the Contractor must use suitable new materials;
- (d) ensure that all workmanship and materials are safe and fit for their intended purpose; and
- (e) undertake the Contractor's Activities to a standard which is consistent with Best Industry Practice.

4.2 TfNSW Standard Requirements

The Contractor must comply with the requirements of the TfNSW Standard Requirements.

4.3 Environmental Management

The Contractor must:

- (a) hold and maintain an environmental management system which complies with the requirements of the TfNSW Standard Requirements for so long as any Contractor's Activities are carried out;
- (b) as part of the Contract Management Plan, document, implement and maintain a contract specific Construction Environmental Management Plan for the management of environmental matters in accordance with the TfNSW Standard Requirements;
- (c) carry out the Contractor's Activities in accordance with the Construction Environmental Management Plan;
- (d) supervise Subcontractor's activities and ensure that they are complying with all relevant Law, Authority Approvals and the TfNSW Standard

Requirements in relation to environmental management on the Site and Extra Land; and

- (e) use, and be able to demonstrate the use of, ecologically sustainable development principles (including any TfNSW sustainability initiatives) in the design and construction of the Works, Temporary Works and all other Contractor's Activities.

4.4 WHS Management

The Contractor must:

- (a) hold and maintain an WHS management system for so long as any Contractor's Activities are carried out that complies with the WHS Guidelines and the TfNSW Standard Requirements;
- (b) as part of the Contract Management Plan, develop, document and implement a contract specific Project Work Health and Safety Management Plan in accordance with the WHS Guidelines and the TfNSW Standard Requirements;
- (c) carry out the Contractor's Activities in accordance with the Project Work Health and Safety Management Plan;
- (c) create a safe working environment for ensuring the safety of all authorised personnel on the Site and Extra Land and that no unauthorised individual gains access to the Site; and
- (e) supervise any Subcontractor's activities and ensure that they are complying with all relevant Law, Authority Approvals and the TfNSW Standard Requirements in relation to the WHS management on the Site and Extra Land.

4.5 No Relief from Obligations

The Contractor will not be relieved from any of its liabilities or responsibilities under this Contract (including under clause 8 or otherwise according to law) nor will the rights of the Principal whether under this Contract or otherwise according to law be limited or otherwise affected, by:

- (a) the implementation of, and compliance with, any management system or plan by the Contractor;
- (b) compliance with the Contract Management Plan by the Contractor;
- (c) any release, authorisation, approval or agreement by the Principal's Representative, or any other person acting on behalf of the Principal or the Principal's Representative, particularly those concerning or relating to the Contractor proceeding past any hold point or witness point identified in the Works Brief, the TfNSW Standard Requirements or otherwise directed by the Principal's Representative;
- (c) any failure by the Principal, the Principal's Representative or any other person acting on behalf of the Principal or engaged by the Principal to detect any Defect, particularly whilst participating in any hold point or witness point procedure, including where such a failure is the result of a negligent act or omission; or
- (e) any inspections arranged by the Principal's Representative under the Contract or any related discussions between the Contractor's Representative and the Principal's Representative.

5 Design and Design Documentation

5.1 Contractor's Design

The Contractor:

- (a) must prepare and complete the design of the Temporary Works (including any relevant Design Documentation), so that it is:
 - (i) fit for its intended purpose;
 - (ii) incorporates the requirements of the Works Brief;
 - (iii) satisfies the requirements of the Third Party Agreements; and
 - (iv) otherwise complies with the requirements of this Contract;
- (b) subject to clause 5.2 and without derogating from the Principal's responsibility for the Concept Design under clause 5.1(d)(i), must complete the design of the Works by preparing for construction drawings and specifications that are consistent with the Concept Design (including the Design Documentation), so that it:
 - (i) incorporates the requirements of the Works Brief;
 - (ii) satisfies the requirements of the Third Party Agreements; and
 - (iii) otherwise complies with the requirements of this Contract; and
- (c) subject to clause 5.1(d) to the extent of the Contractor's design obligations, warrants that:
 - (i) it has fully and carefully reviewed the Works Brief including any Concept Design;
 - (ii) the completed design of the Works and the Temporary Works as represented in the Design Documentation will:
 - (A) satisfy the requirements of the Works Brief, (including any Concept Design) and the other requirements of this Contract;
 - (B) in relation to the Temporary Works be fit for their intended purposes; and
 - (C) comply with Law; and
 - (iii) construction in accordance with the completed design of the Works and the Temporary Works will satisfy the requirements of the Works Brief (including any Concept Design) and the other requirements of this Contract.
- (d) For the avoidance of doubt:
 - (i) the Principal is responsible for the Concept Design; and
 - (ii) the Contractor must prepare all further Design Documentation required in order to fulfil its obligations under the Contract and must ensure that such Design Documentation is fit for its intended purpose.

5.2 Prior Design Work

- (a) The Contractor:
- (i) must construct the Works and undertake the Contractor's Activities in accordance with the Concept Design; and
 - (ii) subject to clause 5.2(c), the Contractor must not depart from the Concept Design without the consent of the Principal's Representative.
- (b) Without limiting clause 5.1, the Contractor:
- (i) acknowledges and agrees that, prior to the date of this Contract, the Concept Design was created by the Principal and the Principal's agents and consultants and that it is aware that the Concept Design is incomplete and may contain ambiguities, errors, inconsistencies, discrepancies or omissions; and
 - (ii) warrants that, prior to the date of this Contract, it checked and carefully reviewed and considered the Concept Design to ensure that it complied with the requirements of the Contract.
- (c) If the Concept Design is unsuitable, except to the extent relating to or arising from any Utilities Service, for the proper execution of the Works or carrying out of the Contractor's Activities then:
- (i) the Contractor must promptly notify the Principal's Representative in writing as soon as practicable after becoming aware of the inherent deficiency in the Concept Design;
 - (ii) if any additional work is required to be executed in order to:
 - (A) make the Concept Design suitable, for the proper execution of the Works; or
 - (B) carry out of the Contractor's Activitiesthen:
 - (C) the Contractor must comply with any directions issued by the Principal's Representative;
 - (D) the cost incurred in complying with the Principal's Representative's directions will be valued as a Variation under clause 6.4; and
 - (E) any resulting delay will be deemed to be a qualifying cause of delay under clause 10.13(a);
 - (iii) the Contractor will not be entitled to a Variation under clause 17.1 and will not be entitled to make any Claim against the Principal in relation to re-work or wasted work to the extent that a contractor exercising Best Industry Practice would have detected such deficiency in the Concept Design:
 - (A) prior to the date of the Contract; or
 - (B) prior to the time that the Contractor actually detected the deficiency.

- (d) The parties acknowledge and agree that any discussions regarding the Concept Design during the tender process will not prejudice the Contractor's ability to notify the Principal's Representative in accordance with clause 5.2(c)(i).

5.3 Design Documentation

The Contractor must:

- (a) prepare and submit via the Electronic Portal to the Principal's Representative and the Independent Certifier, with copies to the Third Parties and relevant Authorities (as applicable) all Design Documentation at each Design Stage in accordance with the:
- (i) Contract Management Plan;
 - (ii) requirements of clause 9.8; and
 - (iii) this Contract;
- (b) in relation to Design Documentation prepared in accordance with clause 5.3(a):
- (i) ensure all Design Documentation is of a level of detail appropriate for that Design Stage which is sufficient to permit the Independent Certifier, the Principal's Representative, the Third Parties and any relevant Authorities (as applicable) to comment whether:
 - (A) the Design Documentation complies with the requirements of:
 - (aa) the Works Brief;
 - (ab) the Third Party Agreements;
 - (ac) all Laws;
 - (ad) the Concept Design; and
 - (ae) this Contract; and
 - (B) the Works which will be constructed in accordance with the Design Documentation will comply with:
 - (aa) the Works Brief;
 - (ab) the Third Party Agreements;
 - (ac) all Laws;
 - (ad) the Concept Design; and
 - (ae) this Contract; and
- (c) the Design Documentation prepared for each Design Stage, or part thereof must:
- (i) include all Design Documentation for the Works and the Temporary Works that are relevant to that Design Stage;

- (ii) be submitted progressively in accordance with the Contract Management Plan, the requirements of clause 9.8 and this Contract;
 - (iii) be submitted in a manner which, having regard to the volume of Design Documentation submitted, will allow the Independent Certifier, the Principal's Representative, the Third Parties and relevant Authorities (as applicable) a reasonable opportunity to review the Design Documentation having regard to the time period allowed by this Contract for them to review the Design Documentation;
 - (iv) include all Design Documentation for the Works and the Temporary Works that are relevant to that Design Stage; and
 - (v) be submitted at the times set out in:
 - (A) the Works Brief;
 - (B) the TNSW Standard Requirements;
 - (C) the Third Party Agreements; and
 - (D) the Contractor's Program,
 or as otherwise required under this Contract and clause 2.15(a)(v).
- (d) Upon each submission of the Design Documentation to the Independent Certifier, the Principal's Representative, the Third Parties and any relevant Authorities (including at the completion of the design of each design package):
- (i) provide the Design Documentation under cover of a written notice entitled "Submit for Review", which identifies:
 - (A) the Document; and
 - (B) the provision of this Contract under which the Document is submitted;
 - (ii) ensure that the Design Documentation is accompanied by the following documents:
 - (A) the Contractor's Certificate of Design Compliance in the form of Schedule 19;
 - (B) a register of records of design verification and reviews applicable to the design package and other compliance records required by this Contract (all records being satisfactorily completed and signed);
 - (C) a register of any outstanding design non-conformities and unresolved issues;
 - (D) a register of deficiency notices and evidence of their close out; and
 - (E) a register of concessions (if any) granted for non-conforming Design Documentation.

5.4 Review of Design Documentation

- (a) The Design Documentation must be submitted to the Independent Certifier, the Principal's Representative, the Third Parties and any relevant Authorities.
- (b) Clause 9.8 applies to all Design Documentation.

5.5 Copies of Design Documentation

- (a) The Contractor must, in accordance with clause 5.3, progressively submit to the Principal's Representative the number of copies specified in Item 32 of Schedule 1 of all Design Documentation, whether complete or work in progress, which it intends to use for design or construction purposes
- (b) The Contractor must give the Principal's Representative the number of copies specified in Item 32 of Schedule 1 of:
 - (i) all survey information used in the design of the Works and the Temporary Works; and
 - (ii) all final Design Documentation,

5.6 Availability of Design Documentation

The Contractor must keep available for the use of the Principal's Representative, the Independent Certifier, Third Parties, and any relevant Authorities and any person authorised by the Principal's Representative.

- (a) on the Site, at least one complete set of all Design Documentation that the Contractor is entitled to use for construction purposes pursuant to clauses 5.4 and 9.8, and any construction related documents provided by the Principal; and
- (b) at any area on or off the Site where the Contractor's Activities are being carried out, one copy of each of those items specified in clause 5.6(a) insofar as they are relevant to the Contractor's Activities being carried out in that area.

5.7 Ownership of Contract Documentation and Methods of Working

- (a) Subject to clause 5.7(c)(vii):
 - (i) title to and Intellectual Property in or in relation to the Contract Documentation prepared by the Contractor will vest upon its creation for the purposes of this Contract in the Principal;
 - (ii) to the fullest extent permitted by Law, the Contractor hereby assigns to the Principal all of its rights, titles, and interests in, and to, all Intellectual Property in or in relation to the Contract Documentation prepared by the Contractor, whenever created; and
 - (iii) upon request by the Principal, the Contractor must do all things necessary to vest that title or that Intellectual Property in the Principal.
- (b) The Principal grants to the Contractor a licence to use and reproduce the Contract Documentation for the Contractor's Activities.

(c) The Contractor:

- (i) warrants and must ensure that the Contract Documentation and any methods of working do not and will not infringe any Intellectual Property;
 - (ii) must indemnify the Principal against any claims against, and costs, expenses, Losses and damages suffered or incurred by the Principal arising out of, or in any way in connection with, any actual or alleged infringement of any Intellectual Property in connection with the Works, the Temporary Works, the Contractor's Activities or the Contract Documentation, except to the extent that such actual or alleged infringement arises as a direct result of:
 - (A) the Principal having provided the Contractor with material which this Contract permits the Contractor to use for the purpose of the Works, the Contractor's Activities or the Contract Documentation; and
 - (B) the provision of that material to the Contractor being an infringement of a third party's Intellectual Property rights;
 - (iii) must ensure that all Subcontracts between the Contractor and all Subcontractors for design and documentation contain provisions to the same effect as clause 5.7(a);
 - (iv) must obtain confirmation of the inclusion of such provisions in the form of a signed acknowledgement from such Subcontractors for design and documentation;
 - (v) must, where requested by the Principal's Representative, obtain such an acknowledgement from other Subcontractors;
 - (vi) must obtain an assignment to the Principal from any third party who owns any Intellectual Property right in the Contract Documentation;
 - (vii) must if it is unable to obtain the assignment referred to in clause 5.7(c)(vi), grant or have granted to the Principal an irrevocable licence:
 - (A) to use the Contract Documentation for the completion of the Works;
 - (B) which arises immediately upon the creation of the Contract Documentation;
 - (C) which extends to any subsequent repairs to, maintenance or servicing of, or additions or alterations to the Works; and
 - (D) which will survive the termination of this Contract on any basis; and
- (vii) must ensure that the Intellectual Property created for the purposes of this Contract is not used, adapted or reproduced other than for the purposes of this Contract without the prior written approval of the Principal (which will not be unreasonably withheld, but may be given subject to terms and conditions).

- (d) This clause 5.7 does not apply to any Intellectual Property (including any Intellectual Property in any designs) provided by the owner or providers of Utility Services or Utility Services assets over the Site.
- (c) The Principal warrants to the Contractor in respect of any Intellectual Property in the Concept Design or Contract Documentation in relation to the Concept Design:
 - (i) the Principal having provided the Contractor with material which this Contract permits the Contractor to use for the purpose of the Works, the Contractor's Activities or the Contract Documentation; and
 - (ii) the provision of that material to the Contractor not being an infringement of a Third Party's Intellectual Property rights.

5.8 Delivery Up of Contract Documentation

If this Contract is frustrated or terminated the Contractor must:

- (a) immediately deliver the original and all sets and copies of all Contract Documentation (whether complete or not), including fully detailed electronic versions in unlocked native format (with all logic links intact and nothing hidden or protected), then in existence to the Principal; and
- (b) provide such details, memoranda, explanations, documentation and other assistance as the Principal reasonably requires in relation to the Contract Documentation.

5.9 Moral Rights

- (a) The Contractor:
 - (i) warrants that the Principal's use of the Contract Documentation, or any other work provided by the Contractor under this Contract, will not infringe any author's moral rights under the Copyright Act 1968 (Cth) or similar legislation in any jurisdiction; and
 - (ii) must indemnify the Principal against any claims against, or costs, expenses, Losses or damages suffered or incurred by the Principal arising out of, or in any way in connection with, any actual or alleged infringement of any author's moral rights under the Copyright Act 1968 (Cth) or similar legislation in any jurisdiction in connection with the Works, the Contractor's Activities or the Contract Documentation.
- (b) For the purposes of clause 5.9(a), the Principal's use of the Contract Documentation includes the Principal's right to reproduce, publish, copy, adapt, communicate to the public, materially distort, destroy, mutilate or in any way change the Contract Documentation or part of the Works to which the Contract Documentation or any other work provided by the Contractor under this Contract relates:
 - (i) with or without attribution of authorship;
 - (ii) in any medium; and
 - (iii) in any context and in any way it sees fit.

5.10 Third Party Works

Design Documentation that relates to the Third Party Works must:

- (a) comply with the requirements of the relevant Third Party Agreements; and
- (b) where required by the Third Party Agreements, be accompanied by the relevant certifications.

5.11 RMS Departures

- (a) The Contract Sum is based on the departures from the RMS usual requirements specified in Item 33 of Schedule 1 ("RMS Departures").
- (b) If RMS does not consent to any of the RMS Departures in any amendments to the Design Documentation and the Works required to make the Works conform with the RMS requirements will be deemed to be a Variation issued by the Principal under clause 6.2.

6 Variations

6.1 Proposed Variations

- (a) At any time prior to the Date of Completion of the last Portion to reach Completion (but without limiting clauses 8 and 13.3) the Principal's Representative may issue a document titled "Variation Proposal Request" to the Contractor, which will set out details of a proposed Variation that the Principal is considering.
- (b) Within 10 Business Days of the receipt of a Variation Proposal Request, or at such other time as is approved by the Principal's Representative, the Contractor must provide the Principal's Representative with a written notice in which the Contractor sets out such details as may be reasonably required by the Principal's Representative.
- (c) The Principal will not be obliged to proceed with any proposed Variation that is the subject of a "Variation Proposal Request".

6.2 Variation Orders

- (a) Whether or not the Principal's Representative has issued a Variation Proposal Request under clause 6.1, the Principal's Representative may at any time prior to the Date of Completion of the last Portion to reach Completion (but without limiting clauses 8 and 13.3) direct the Contractor to carry out a Variation by issuing a written document titled "Variation Order", in which the Principal's Representative will state one of the following:
 - (i) The proposed adjustments to the Contract Sum and the Payment Breakdown Schedule set out in the Contractor's notice under clause 6.1 are agreed and the Contract Sum and Payment Breakdown Schedule will be adjusted accordingly;
 - (ii) any adjustment to the Contract Sum will be determined under clause 6.4(b); or
 - (iii) the Variation is to be carried out as daywork and any adjustment to the Contract Sum will be determined under clause 6.7.

- (b) There is no limitation on the power of the Principal's Representative to direct a Variation, and no Variation or direction to carry out a Variation will invalidate this Contract.
- (c) The Contractor must comply with a Variation Order irrespective of:
 - (i) the nature, extent or value of the work the subject of the Variation;
 - (ii) the location or timing (including the impact on any Date for Completion) of the work involved in the Variation; or
 - (iii) any Dispute related to the Variation.
- (d) The Contractor's entitlement (if any) to an extension of time and delay costs arising out of or in connection with a Variation will be dealt with under clause 10 and not this clause 6. The valuation of Variations under clause 6.4 and clause 6.7 will exclude any amount for costs incurred by the Contractor as a result of any delay or disruption caused by the Variation.

6.3 Options

- (a) The Principal's Representative may, by written notice given to the Contractor at any time within the period stated in Schedule 15, exercise any Option. Commencing upon the issue of such a notice by the Principal's Representative, the Principal and the Contractor must perform their obligations under this Contract on the basis that the Contract Sum, the Works Brief and the provisions of this Contract will be adjusted as set out in Schedule 15 for the relevant Option.
- (b) For the avoidance of doubt:
 - (i) the Principal is not under any obligation whatsoever to exercise; and
 - (ii) the Contractor is not entitled to make, nor will the Principal be liable upon, any Claim in respect of the Principal not exercising, any Option.
- (c) Where the Principal does not exercise its discretion to exercise an Option, the Principal may, either by itself or by third parties, undertake the work contemplated by the relevant Option.
- (d) The exercise of an Option by the Principal's Representative under this clause 6.3 will not:
 - (i) relieve the Contractor from its liabilities or obligations (including those arising out of any warranties given under this Contract);
 - (ii) limit or otherwise affect the Principal's rights against the Contractor or the Contractor's rights against the Principal (including those arising out of any warranties given under this Contract); or
 - (iii) entitle the Contractor to an extension of time, whether under this Contract or otherwise according to any Law.

6.4 Valuation

Subject to clauses 11.9, 15 and 17, the Contract Sum and the Payment Breakdown Schedule will be adjusted for all Variations that have been directed by the Principal's Representative by:

- (a) to the extent that clause 6.2(a)(i) applies, the agreed amount as specified in the Variation Order;
- (b) to the extent that clause 6.2(a)(i) applies:
 - (i) an amount in respect of the Variation to be determined by the Principal's Representative on the basis of (where applicable or where it is reasonable to use them for valuing the Variation):
 - (A) the prices and rates set out in Schedule 10; and
 - (B) any other applicable data in this Contract; or
 - (ii) to the extent clause 6.4(b)(i) does not apply, an amount determined by the Principal's Representative on the basis of reasonable prices and rates (which are to be exclusive of any amount for preliminaries, Overhead Costs or profit) to be agreed between the parties, or failing agreement, determined by the Principal's Representative, which will be increased by the following percentage of that amount:
 - (A) where the adjustment to the Contract Sum is to be an increase, the relevant percentage set out in Item 34 of Schedule 1 which will be in total satisfaction of all the Contractor's preliminaries, Overhead Costs and profit; or
 - (B) where the adjustment to the Contract Sum is to be a decrease, the relevant percentage set out in Item 34 of Schedule 1 of the total amount for off-site Overhead Costs described in section 2 of Part B of Schedule 10 and profit,provided however that where the Principal's Representative has issued a Variation Proposal Request, the Contractor's entitlement under this clause 6.4(b) will not be greater than any amount set out in the Contractor's notice under clause 6.1; or
 - (iii) to the extent that clause 6.2(a)(ii) applies, the amount determined by the Principal's Representative under clause 6.7.

6.5 Omissions

If a Variation the subject of a direction by the Principal's Representative requires the omission or deletion of any part of the Works:

- (a) the Principal may thereafter either perform this work itself or employ or engage any other person or persons to carry out and complete the omitted or deleted work;
- (b) the Principal will not be liable upon any Claim by the Contractor arising out of or in any way in connection with any work being omitted or deleted from the Contractor's Activities whether or not the Principal thereafter performs this work itself or employs or engages any other person or persons to carry out and complete the omitted or deleted work; and

- (c) the adjustment to the Contract Sum arising from the work that has been omitted or deleted will be valued in accordance with clause 6.4.

6.6 Daywork

- (a) If the Contractor is given a direction under clause 6.2(a)(iii) to carry out work as daywork, the Contractor must
 - (i) carry out the daywork in an efficient manner; and
 - (ii) after the direction, each day provide the Principal's Representative with a written report in respect of that day signed by the Contractor that:
 - (A) records particulars of all resources used by the Contractor for the execution of the daywork; and
 - (B) includes those particulars reasonably required by the Principal's Representative that evidence the cost of the daywork.
- (b) The Principal's Representative may direct the manner in which the matters referred to in clause 6.6(a)(ii) are to be recorded.

6.7 Valuation of Daywork

in valuing the adjustment to the Contract Sum arising from any work that the Principal's Representative directs to be carried out as daywork, the Principal's Representative will have regard to:

- (a) the amount of wages and allowances paid or payable by the Contractor for the hours reasonably worked in respect of the daywork at the rates:
 - (i) set out in Schedule 10 (which rates will apply to all labour whether employed by the Contractor, a Subcontractor or otherwise);
 - (ii) where the rates in Schedule 10 do not apply, as established by the Contractor to the satisfaction of the Principal's Representative; or
 - (iii) determined by the Principal's Representative;
- (b) the amount paid or payable by the Contractor in accordance with any statute or award applicable to labour additional to the amount determined under clause 6.7(a);
- (c) the reasonable amount of hire charges and associated fuel and other operating costs in respect of Construction Plant approved by the Principal's Representative for use on the work in accordance with such hiring rates and conditions as may be:
 - (i) agreed between the Principal's Representative and the Contractor; or
 - (ii) failing agreement, determined by the Principal's Representative;
- (d) the reasonable amounts paid by the Contractor for Subcontract work, including professional fees; and

- (e) the reasonable actual cost to the Contractor at the Site of all materials supplied and required for the daywork.

to which will be added to the extent that the rates set out in Schedule 10 are not already expressed to be inclusive of the Contractor's non-time related preliminaries, Overhead Costs and profit, the relevant percentage specified in Item 34 of Schedule 1 of the amounts determined under clauses 6.7(a)-(b), which will be in total satisfaction of all the Contractor's non-time related preliminaries, Overhead Costs and profit.

6.8 Contractor's Entitlements

This clause 6 is an exhaustive code of the Contractor's rights in any way in connection with any Variation. The Contractor waives all rights at Law to make any Claim against the Principal in any way in connection with any of the matters set out in this clause 6 otherwise than in accordance with the terms of this Contract.

7 Construction

7.1 Construction

- (a) The Contractor must construct and handover to the Principal the Works and construct the Temporary Works:
 - (i) in accordance with:
 - (A) subject to clause 7.1(b), the Works Brief (including any Concept Design), the TINSW Standard Requirements and any Design Documentation that has been prepared by the Contractor in accordance with the requirements of the Contract and not rejected under clause 9.8;
 - (B) any direction of the Principal's Representative given or purported to be given under a provision of this Contract; and
 - (C) the other requirements of this Contract; and
 - (ii) so that the Works and Temporary Works are:
 - (A) safe;
 - (B) fit for their intended purpose;
 - (C) in accordance with Best Industry Practice; and
 - (D) fulfil the requirements of this Contract.
- (b) if there is any ambiguity, discrepancy or inconsistency between this Contract (including the Works Brief and any Concept Design) and any Design Documentation which has been prepared by the Contractor and not rejected under clause 9.8, then, unless otherwise directed by the Principal's Representative, the requirements of this Contract will prevail.
- (c) At monthly intervals during the construction work and at the Completion of the Works or each Portion, the Contractor must submit to the Principal's Representative a Certificate of Construction Compliance in the form of Schedule 20.

- (d) The Contractor must not commence construction of the RMS Works until the relevant preconditions to commencement of those works in the Roads Act Approval respectively have been satisfied.

7.2 All Work Included

The Contractor:

- (a) warrants it has allowed for the provision of;
- (b) must undertake and provide, and
- (c) will not be entitled to make, and the Principal will not be liable upon, any Claim except as otherwise provided for in this Contract, relating to the provision of,

all Construction Plant, Temporary Works, labour, materials and other work necessary to execute the Contractor's Activities, whether or not expressly mentioned in this Contract or anticipated by the Contractor, and agrees that all such Construction Plant, Temporary Works, labour, materials and work forms part of the Contractor's Activities.

7.3 Provisional Sum Work

- (a) For each item of Provisional Sum Work, the Principal's Representative will give the Contractor a direction either requiring the Contractor to proceed with the item of Provisional Sum Work or deleting the item of Provisional Sum Work.
- (b) Where the Principal's Representative gives the Contractor a notice requiring the Contractor to proceed with an item of Provisional Sum Work, the Contract Sum will be adjusted for the item of Provisional Sum Work by the difference between:
 - (i) the amount allowed for the item of Provisional Sum Work in Item 35 of Schedule 1; and
 - (ii) either:
 - (A) an amount agreed between the Contractor and the Principal's Representative; or
 - (B) if they fail to agree:
 - (aa) an amount determined by the Principal's Representative on the basis set out in clause 6.4(b) as if the item of Provisional Sum Work were a Variation excluding:
 1. the percentage referred to in clause 6.4(b)(ii)(A) or 6.4(b)(ii)(B); or
 2. any other amount for the Contractor's Overhead Costs or profit; or
 - (ab) if the amount determined under clause 7.3(b)(ii)(B)(aa) ("Amount") is less than the amount allowed for that item of Provisional Sum Work in Item 35 of Schedule 1, then:
 1. the 7.3(b)(ii)(B)(aa) Amount; plus

2. a reasonable amount for the Contractor's Overhead Costs and profit applicable to the 7.3(b)(i)(B)(aa) Amount (but only to the extent not included within the 7.3(b)(i)(A) Amount), as determined by the Principal's Representative, which amount must not exceed an amount calculated using the percentage set out in Item 36 of Schedule 1.

- (c) Where the Principal's Representative gives the Contractor a direction deleting an item of Provisional Sum Work:
- (i) the Contract Sum will be reduced by the amount allowed for the item of Provisional Sum Work in Item 36 of Schedule 1;
 - (ii) the Principal may thereafter either carry out the Provisional Sum Work itself or engage any other person or persons to carry out the item of Provisional Sum Work; and
 - (iii) the Principal will not be liable upon any Claim by the Contractor arising out of the deletion of the item of Provisional Sum Work.

7.4 Co-operation with Other Contractors

Without limiting or being limited by clause 2.12, the Contractor must:

- (a) permit Other Contractors to carry out their work;
- (b) fully co-operate with Other Contractors;
- (c) carefully coordinate and interface the Contractor's Activities with the work carried out or to be carried out by Other Contractors; and
- (d) carry out the Contractor's Activities so as to minimise any interfering with, disrupting or delaying the work of Other Contractors.

The Principal shall procure that each of its Other Contractors that undertakes work on part of the Site during any period in which the Contractor has been engaged as principal contractor in respect of that part of the Site executes a deed poll in favour of the Contractor, as principal contractor, and the Principal in the form set out in Schedule 23 and provide the Contractor with an executed copy of each such deed poll.

7.5 Setting Out

The Contractor must:

- (a) set out the Works in accordance with the requirements of this Contract, based on information and survey marks (including any survey peg, bench mark, reference mark, signal, alignment, level mark or any other mark for the purpose of setting out, checking or measuring work) identified by the Contractor that are suitable for their purposes;
- (b) carry out any survey (including providing all instruments and things) that may be necessary for this purpose; and
- (c) for this purpose keep all survey marks in their true positions.

If the Contractor discovers an error in the position, level, dimensions or alignment of any part of the Works, the Contractor must immediately notify the Principal's Representative and, unless the Principal's Representative otherwise directs, the Contractor must at its cost rectify the error.

7.6 Survey

The Contractor must, as a condition precedent to Completion of the Works or any Portion, and as otherwise required by the Principal's Representative, submit to the Principal's Representative and the Independent Certifier:

- (a) for its review under clause 9.8 a Survey Plan for the Works or the relevant Portion that:
 - (i) has regard to the setback requirements in the Building Code of Australia;
 - (ii) has regard to any stratum lots whether above or below ground;
 - (iii) shows the location of all Monuments, and their relation to horizontal and vertical boundaries;
 - (iv) shows all internal title boundaries;
 - (v) shows all easements, and
 - (vi) shows the location of the Works and all Services, and
- (b) a Survey Certificate which complies with all Law addressed to the Principal and signed by a land surveyor registered under the *Surveying and Spatial Information Act 2002 (NSW)* stating that:
 - (i) the whole of the Works or the Portion has been constructed within the relevant boundaries of the Site stipulated in Item 97 of Schedule 1;
 - (ii) the elements of the Works or the Portion are in the positions and within the tolerances required by Law and this Contract;
 - (iii) the survey information included in the configuration materials provided pursuant to the TINSW Standard Requirements complies with the requirements of this Contract; and
 - (iv) any other matter identified by the Principal's Representative, complies with the requirements of this Contract.

7.7 Cleaning Up

In carrying out the Contractor's Activities, the Contractor must:

- (a) keep the Site, Extra Land and the Works clean and tidy and free of refuse;
- (b) regularly remove rubbish, litter, graffiti and surplus material from the Site and Extra Land; and
- (c) as a condition precedent to Completion of a Portion, remove all rubbish, surplus materials, Construction Plant and Temporary Works from the Site and Extra Land or the part of the Site or Extra Land relevant to the Works or the Portion.

7.8 Safety

- (a) The Contractor must carry out the Contractor's Activities:
 - (i) safely and in a manner that does not put the health and safety of persons at risk; and
 - (ii) in a manner that protects property
- (b) If the Principal's Representative reasonably considers there is a risk to the health and safety of people or damage to property arising from the Contractor's Activities, the Principal's Representative may direct the Contractor to change its manner of working or to cease working.
- (c) The Contractor must:
 - (i) ensure that in carrying out the Contractor's Activities:
 - (A) it complies with all Law, including the WHS Law, and other requirements of this Contract for work health, safety and rehabilitation management;
 - (B) all Subcontractors comply with the requirements referred to in this clause 7.8 and their respective obligations under the WHS Legislation; and
 - (C) it complies with its obligations under the WHS Legislation to consult, cooperate and coordinate activities with all other persons who have a work health and safety duty in relation to the same matter;
 - (ii) notify the Principal's Representative immediately (and in the event within 12 hours of such matter arising) of all work health, safety and rehabilitation matters arising out of, or in any way in connection with, the Contractor's Activities, unless otherwise directed by the Principal;
 - (iii) institute systems to obtain regular written assurances from all Subcontractors about their ongoing compliance with the WHS Legislation including the due diligence obligation contained therein;
 - (iv) provide the Principal's Representative with the written assurances obtained pursuant to clause 7.8(c)(iii), together with written assurance(s) from the Contractor about the Contractor's ongoing compliance with the WHS Legislation;
 - (v) provide the Principal's Representative with a written report at each meeting in accordance with clause 9.5, on all work health, safety and rehabilitation matters (including matters concerning or arising out of, or in any way in connection with, this clause 7.8), or any other relevant matters as the Principal's Representative may require from time to time, including a summary of the Contractor's compliance with the WHS Legislation;
 - (vi) consult, cooperate and coordinate with all Other Contractors and the Principal to ensure that all parties are able to comply with their respective obligations under the WHS Legislation;

- (vii) exercise a duty of the utmost good faith to the Principal in carrying out the Works to enable the Principal to discharge the Principal's duties under the WHS Legislation;
 - (viii) ensure that it does not do anything or fail to do anything that would cause the Principal to be in breach of the WHS Legislation; and
 - (ix) ensure its Subcontracts include provisions equivalent to the obligations of this clause 7.6.
- (d) Without limiting clause 16.14 the Principal may take any action necessary to protect or to prevent or minimise risks to, the Works, the Environment, other property or the health or safety of people.
- (e) If the action taken by the Principal is action which the Contractor was required to take under this Contract but did not take, the amount of any penalty, fine, damage, expense, cost (including any reasonable legal fees), Loss or liability that the Principal suffers or incurs arising out of or in any way in connection with:
- (i) taking the action contemplated in this clause 7.8(c), or
 - (ii) the Contractor's failure to take that action,
- will, except to the extent prohibited by Law, be a debt due from the Contractor to the Principal.
- (f) Where clause 16.28 applies, the Contractor:
- (i) warrants that it is accredited under the WHS Accreditation Scheme; and
 - (ii) must comply with all the requirements of, and maintain accreditation under, the WHS Accreditation Scheme while "building work" (as defined in section 5 of the *Fair Work (Building Industry) Act 2012* (Cth)) is carried out.

7.9 Construction Plant and Materials Removal

Except for the purpose of achieving Completion as contemplated by clause 7.7(c), the Contractor must not remove from the Site or the Contractor's Activities any:

- (a) significant materials or major items of Construction Plant, or
- (b) materials or Construction Plant specified in any written notice issued by the Principal's Representative,

without the prior written approval of the Principal's Representative, which approval will not be unreasonably withheld.

7.10 Principal Supplied Items

- (a) The Principal must:
 - (i) make available the Principal Supplied Items to the Contractor:
 - (A) at its own cost;
 - (B) at the respective places referred to in Schedule 27; and

- (C) by the respective date referred to in Schedule 27; and
 - (ii) use its best endeavours to procure that the Contractor has the benefit of any warranty obtained by the Principal in respect of any Principal Supplied Item.
- (b) The Contractor:
- (i) agrees that, in respect of Principal Supplied Items, the:
 - (A) Contractor:
 - (aa) warrants that it has reviewed the Works Brief and any relevant specification, and made whatever other enquiries and investigations it considers necessary relating to each of the Principal Supplied Items and is satisfied that they satisfy and will allow the Contractor to satisfy the requirements of this Contract;
 - (ab) will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with any Principal Supplied Item except under clause 10 if a Principal Supplied Item is not made available by the relevant date set out in Schedule 27; and
 - (ac) is not relieved from and remains liable for complying with, all of its obligations under this Contract, despite the Principal making available the Principal Supplied Items; and
 - (B) *Sale of Goods Act 1923 (NSW)* does not apply to the Principal's obligations under clause 7.10(a) and the Principal makes no representation as to the quality, performance, merchantability or fitness of the Principal Supplied Items; and
 - (ii) must:
 - (A) at its own cost and risk, transport each Principal Supplied Item from the respective place referred to in Schedule 27 to the Site or Extra Land (as applicable); and
 - (B) as part of the Contractor's Activities, incorporate each Principal Supplied Item into the Works.

7.11 Not Used

7.12 Independent Certifier

- (a) The Principal will enter into the Umbrella Independent Certifier Deed (as contemplated by the Independent Certifier Deed) with the Independent Certifier after the execution of this Contract.
- (b) For the purposes of this Contract, the Independent Certifier will be engaged on terms substantially in the form of the Independent Certifier Deed contained in Schedule 29.

- (c) The Contractor agrees to execute the Independent Certifier Deed upon being presented with it by the Principal for execution provided that the form of the Independent Certifier Deed is in accordance with this clause 7.12.
- (d) If the Contractor refuses to execute the Independent Certifier Deed in accordance with clause 7.12(c) upon being presented with it for execution by the Principal, then the Principal may elect to:
- (i) have the Principal's Representative perform the "Services" (as set out in Schedule 1 of the Independent Certifier Deed) in which case the Principal must ensure that the Principal's Representative acts reasonably; or
 - (ii) terminate the Contract under clause 14.9.
- (e) An act or omission (including negligence) of the Independent Certifier will not:
- (i) relieve a party from, or alter or affect, a party's liabilities, obligations or responsibilities to the other party whether under this Contract or otherwise according to Law; or
 - (ii) prejudice or limit a party's rights against the other party whether under this Contract or otherwise according to Law.
- (f) The Principal and the Contractor acknowledge and agree that each certification, determination and confirmation given by the Independent Certifier pursuant to the Independent Certifier Deed and this Contract, in the absence of an express provision in this Contract to the contrary, or manifest error of fact or Law, are final and binding on the Principal and the Contractor under the Independent Certifier Deed and this Contract. If a party believes a manifest error of fact or Law has been made by the Independent Certifier, that party must comply with the provisions of clause 7 of the Independent Certifier Deed. Nothing in this clause 7.12(f) will limit the Contractor's ability to dispute (in accordance with clause 18 of the Independent Certifier Deed) any determination or certification of the Independent Certifier under this Contract.
- (g) The Principal and the Contractor must provide the Independent Certifier with all information and documents and allow the Independent Certifier:
- (i) to attend meetings; and
 - (ii) access to the Site;
- as may be necessary or reasonably required by the Independent Certifier to allow the Independent Certifier to perform its obligations under the Independent Certifier Deed.
- (h) All notices and documents provided by a party to the Independent Certifier must be copied to the other party. If a party is required to provide a notice or document to the Independent Certifier within a specified time period, that notice or document must be provided to the other party within the same time period.
- (i) The Principal must appoint a Replacement Certifier as the successor to the Independent Certifier within 10 Business Days of termination of the Independent Certifier Deed.

8 Defects

8.1 Defects Liability

- (a) Subject to clause 8.2, the Contractor must rectify all Defects whether or not they are identified and notified by the Principal's Representative.
- (b) Without limiting clause 8.1(a), the Contractor must rectify any Defects in the Works or any Portion which existed at Completion of the Works or that Portion as soon as possible after Completion of the Works or that Portion.
- (c) When rectifying Defects which existed at Completion, the Contractor must do so at times and in a manner which causes as little inconvenience to the occupants or users of the Works or Other Contractors as is reasonably possible.

8.2 Defect Notification

- (a) If at any time prior to the expiration of any Defects Rectification Period (including for the avoidance of doubt prior to Completion of the Works or any Portion), the Principal's Representative discovers or believes there is a Defect, the Principal's Representative may give the Contractor a direction which identifies the Defect and does one or more of the following:
 - (i) requires the Contractor to rectify the Defect, or any part of it, and specifying the time within which this must occur;
 - (ii) advises the Contractor that the Principal will accept the work, or any part of it, despite the Defect; or
 - (iii) in respect of any Defect (including one to which clause 8.3(b) applies) advising the Contractor that an Other Contractor will rectify (or has rectified) the Defect, or any part of it, or carry out (or has carried out) a Variation to overcome the Defect, or any part of it.
- (b) The Contractor acknowledges that
 - (i) the Independent Certifier may issue a list of defects to the Principal's Representative pursuant to the Roads Act Approval ('RAA Defects');
 - (ii) RAA Defects will be deemed to be Defects for the purposes of this Deed; and
 - (iii) the Principal's Representative will issue to the Contractor the list of RAA Defects which will be deemed to be a direction issued under clause 8.2(a).

8.3 Rectification of Defect

If a direction is given under clause 8.2(a)(i):

- (a) the Contractor must rectify the Defect (or the part of it notified):
 - (i) within the times specified in the Principal's Representative's direction, which will generally be limited to the periods during

which the rectification work will cause minimal or no inconvenience to the operators and occupants of the Works; and

- (ii) if after Completion of the Works or relevant Portion:
 - (A) at other times otherwise agreed with the Principal's Representative;
 - (B) in accordance with the requirements of the operators of the Works and any other relevant Authority;
 - (C) so as to minimise the impact on the use of the Works or the Portion; and
 - (D) in a manner which causes as little inconvenience as possible to users of the Works or the Portion or the public, any Service or any access to the Works or the Portion; and
- (b) if the Contractor does not comply with clause 8.3(a)(i), the Principal's Representative may, without prejudice to any other rights that the Principal may have against the Contractor with respect to the Defect under this Contract or otherwise at Law, give the Contractor a direction under clause 8.2(a)(iii) and have the rectification work carried out at the Contractor's expense, and the cost of the rectification work incurred by the Principal will be a debt due from the Contractor to the Principal.

The Contractor must pay the Principal all costs incurred by the Principal in providing access to the Works, or arranging the availability of any resources, as may be necessary for the Contractor to rectify any Defect during the Defects Rectification Period.

8.4 No Claim for Correction of Defect

Where a direction is given under clause 8.2(a)(i), the Contractor will not be entitled to make a Claim against the Principal for rectifying the Defect (or the part notified) and must bear all costs, Losses and expenses suffered or incurred in rectifying the Defect.

8.5 Acceptance of Work

If a direction is given under clause 8.2(a)(ii):

- (a) where the value to the Principal of the Works is reduced (which will include having regard to any additional operating or maintenance costs) arising out of or in any way in connection with the Defect (or the part notified), the Contract Sum will be reduced by the amount determined by the Principal's Representative as the higher of the cost of rectifying the Defect (or the part notified) and the diminution in the value to the Principal of the Works; or
- (b) where the value to the Principal of the Works increases because of the acceptance of the Defect (or the part notified):
 - (i) the Principal's Representative will determine an amount by subtracting the cost of rectifying the Defect from the increased value of the Works; and
 - (ii) the Contract Sum will:

- (A) be reduced by the amount determined by the Principal's Representative, where that amount is negative; and
- (B) not be changed where the amount determined by the Principal's Representative is positive.

8.6 Extension of Defects Rectification Period

If:

- (a) the Principal's Representative gives the Contractor a notice under clause 8.2(a)(i) during any Defects Rectification Period; and
- (b) the Contractor rectifies the Defect (or the part notified),

the relevant Defects Rectification Period for the work required by the notice will be extended by the period set out in Item 38 of Schedule 1, commencing upon completion of the rectification of the Defect (or the part notified).

8.7 Defect Rectification by Other Contractor

Where a direction is given under clause 8.2(a)(ii):

- (a) without limiting or otherwise affecting clauses 2.12 or 7.4, the Contractor must not impede the Other Contractor from having sufficient access to the Site or Extra Land to rectify the Defect or carrying out the Variation; and
- (b) any costs, Losses or damages suffered or incurred by the Principal arising out of or in any way in connection with, the Other Contractor rectifying the Defect or carrying out the Variation, will be a debt due from the Contractor to the Principal.

8.8 Rights Not Affected

Neither the Principal's rights, nor the Contractor's liability, whether under this Contract or otherwise according to Law in respect of Defects, whether before or after the expiration of any relevant Defects Rectification Period, will be in any way affected or limited by:

- (a) the rights conferred upon the Principal or the Principal's Representative by this clause 8 or any other provision of this Contract;
- (b) the exercise of, or the failure by the Principal or the Principal's Representative to exercise, any such rights; or
- (c) any notice or direction of the Principal's Representative under clause 8.2.

9 Administration

9.1 Principal's Representative

- (a) The Principal must ensure that at all times until Final Completion there is a Principal's Representative. The Contractor acknowledges and agrees that the Principal's Representative will give directions and carry out all its other functions under this Contract as the agent of the Principal (and not as an independent certifier, assessor or valuer) and is subject to the directions of the Principal.

- (b) A discretion (including an absolute or sole discretion), power or decision of the Principal's Representative is validly and properly exercised or made for the purposes of this Contract if exercised or made (or if it is not exercised or made) by the Principal's Representative:
 - (i) independently;
 - (ii) after consultation with the Principal and its advisers; or
 - (iii) as directed by the Principal.
- (c) Any control or influence exercised by the Principal over the Principal's Representative does not:
 - (i) affect the valid and proper exercise of any power or discretion (including an absolute or sole discretion) or the making of a decision by the Principal's Representative; or
 - (ii) entitle the Contractor to make any Claim against the Principal's Representative or the Principal, or to challenge the effect or validity of the discretion (including an absolute or sole discretion), power, or decision.
- (d) The Contractor must comply with any direction by the Principal's Representative given or purported to be given under a provision of this Contract.
- (e) Except where this Contract otherwise provides, the Principal's Representative may give a direction orally but will as soon as practicable confirm it in writing.
- (f) The parties acknowledge that any direction by the Principal's Representative under one of the clauses referred to in Item 51 of Schedule 1 is an interim position only and that, without limiting the rights of the Principal's Representative under clause 11.3, either party may seek to have any such direction opened up, reviewed, decided and substituted pursuant to clause 15 by giving a notice of dispute to the other party and the Principal's Representative in accordance with clause 15.1.
- (g) The Principal will not be liable upon any Claim by the Contractor arising out of or in connection with any such direction by the Principal's Representative in circumstances where it is incorrect, subsequently overturned pursuant to clause 15 or is unreasonable (other than in accordance with the corrected determination). The Contractor acknowledges and agrees that its sole means of redressing any errors contained in or associated with any such direction by the Principal's Representative is by giving a notice of dispute in accordance with clause 15.1.

9.2 Replacement of the Principal's Representative

- (a) The Principal may at any time replace the Principal's Representative, in which event the Principal must appoint another person as the Principal's Representative and notify the Contractor of that appointment.
- (b) Any substitute Principal's Representative appointed under this clause 9.2 will be bound by anything done by the former Principal's Representative to the same extent as the former Principal's Representative would have been bound.

9.3 Delegation of Functions

- (a) The Principal's Representative may:
 - (i) by written notice to the Contractor appoint persons to exercise any of the Principal's Representative's functions under this Contract;
 - (ii) not appoint more than one person to exercise the same function under this Contract; and
 - (iii) revoke any appointment under clause 9.3(a)(i) by notice in writing to the Contractor.
- (b) The Principal's Representative may continue to exercise a function under this Contract despite appointing another person to exercise the function under clause 9.3(a)().
- (c) All references in this Contract to the Principal's Representative include a reference to an appointee appointed under clause 9.3(a)(i).

9.4 Contractor's Personnel

- (a) The Contractor must notify the Principal's Representative in writing of the name of the Contractor's Representative (who at the date of this Contract is the relevant person listed in Item 39 of Schedule 1) and of any subsequent changes.
- (b) The Contractor must:
 - (i) employ the individuals nominated by the Contractor and listed in Item 39 of Schedule 1 in the positions specified in Item 39 of Schedule 1 or equivalent positions;
 - (ii) subject to clause 9.4(b)(iii), not replace the individuals referred to in clause 9.4(b)(i) without the Principal's Representative's prior written approval which will not be unreasonably withheld; and
 - (iii) if any of the individuals referred to in clause 9.4(b)(i):
 - (A) dies;
 - (B) becomes unable to continue in their positions due to illness;
 - (C) resigns from the employment of the Contractor (other than to accept other employment with the Contractor or any "related body corporate" of the Contractor (as that term is defined in section 9 of the Corporations Act 2001 (Cth)); or
 - (D) becomes the subject of a direction under clause 9.4(c),replace them with personnel of at least equivalent experience, ability, knowledge and expertise approved by the Principal's Representative.
- (c) The Principal's Representative may, at its absolute discretion and without being obliged to give any reasons, by notice in writing direct the Contractor to remove any person (including a person referred to in

clause 9.4(a) or clause 9.4(b)) from the Site and the Contractor's Activities. The Contractor must then cease to engage that person in the Contractor's Activities and must appoint a replacement.

- (d) The Contractor must ensure that any person the subject of a direction under clause 9.4(c) is not again employed in the Contractor's Activities or on the Site.
- (e) Any direction under clause 9.1(a) will be deemed to have been given to the Contractor if given to the Contractor's Representative. Matters within the knowledge of the Contractor's Representative will be deemed to be within the knowledge of the Contractor.

9.5 Site Meetings

The Contractor must convene meetings on the Site or such other place (or places) as the Principal's Representative may direct at:

- (a) prior to the Date of Completion of the last Portion to reach Completion, weekly or such longer intervals as may be directed in writing by the Principal's Representative; and
- (b) monthly intervals after the Date of Completion of the last Portion to reach Completion until all Defects Rectification Periods (including any extension under clause 8.6), have expired or at such other intervals as may otherwise be agreed.

9.6 Environmental Representative

The Contractor acknowledges and agrees that:

- (a) the Principal has appointed the Environmental Representative as required by an Authority Approval;
- (b) the Environmental Representative:
 - (i) is independent of the parties;
 - (ii) shall oversee the implementation of all environmental management plans and monitoring programs required under the Planning Approval, and shall advise the Principal upon achievement of the outcomes contemplated in the Planning Approval;
 - (iii) shall advise the Principal and the Principal's Representative on the Contractor's compliance with the Planning Approval; and
 - (iv) shall have the authority and independence to:
 - (A) direct the Contractor as to; or
 - (B) advise the Principal's Representative to direct the Contractor as to,

reasonable steps the Contractor must take to avoid or minimise unintended or adverse environmental impacts;
- (c) it must comply with the directions of the Environmental Representative or the Principal's Representative as contemplated by clause 9.6(b)(iv); and



- (d) it bears the full risk of complying with any directions given by the Environmental Representative or the Principal's Representative as contemplated by clause 9.6(c) and none of the Principal, the Principal's Representative or the Environmental Representative will be liable upon any Claim arising out of or in any way in connection with such directions.

9.7 Industrial Relations

The Contractor must in carrying out the Contractor's Activities:

- (a) assume sole responsibility for and manage all aspects of industrial relations for the Contractor's Activities;
- (b) ensure all Subcontractors manage all aspects of the industrial relations with their employees appropriately;
- (c) ensure that the rates of pay and conditions of employment specified in all relevant industrial, enterprise and project based agreements and awards, and any relevant Law, for all employees engaged in any capacity by any person in connection with the Contractor's Activities, are always observed in full;
- (d) keep the Principal's Representative fully and promptly informed of industrial relations problems or issues that affect or are likely to affect the carrying out of the Contractor's Activities and Other Contractors' activities;
- (e) without limiting clauses 2.3 and 20, comply with all the requirements of the NSW Code and the NSW Guidelines;
- (f) conduct its industrial relations affairs in accordance with the Workplace Relations Management Plan developed and submitted by the Contractor as part of the Contract Management Plan, in accordance with the TfNSW Standard Requirements and clause 9.8;
- (g) prepare, document and implement a project Workplace Relations Management Plan which must be based on the draft outline Industrial Relations Management Plan (if any) submitted with the Contractor's Tender;
- (h) not commence any work on the Site or Extra Land until the Workplace Relations Management Plan has been submitted to the Principal's Representative and approved under clause 9.8;
- (i) submit to the Principal's Representative, before beginning work on the Site or Extra Land, a statement detailing:
 - (i) the location of time and wage records and other documents that are required to be kept to verify ongoing compliance with all employment and legal obligations;
 - (ii) the names of each award or enterprise agreement that is likely to cover the Contractor and Subcontractors involved in the Contractor's Activities; and
 - (iii) the names of those responsible for coordinating industrial relations for the Contractor's Activities;
- (j) not do, or omit to do, anything that is, or is likely to be, prejudicial to the performance of the Contractor's Activities;

- (k) before beginning work on the Site or Extra Land, submit a statement on the Contractor's letterhead and signed by an authorised person, attesting to the Contractor's compliance, in the preceding twelve months, with all employment and legal obligations, including:
- (i) payment of remuneration to employees;
 - (ii) annual leave provisions;
 - (iii) Long Service Leave Payment Scheme registration;
 - (iv) obligations to register workers under the *Building and Construction Industry Long Service Payments Act 1986* (NSW);
 - (v) Workers' Compensation Insurance, including self-insurance arrangements;
 - (vi) superannuation fund membership and contributions; and
 - (vi) over-award payments such as redundancy fund contributions; and
- (l) continue to provide during the Contractor's Activities appropriate information to verify compliance with the awards, enterprise and workplace agreements and all other legal obligations relating to the employment of people for the Contractor's Activities.

If the Contractor engages an independent industry or employer association or other specialist organisation to audit and verify compliance with employment and legal obligations, a statement or declaration from that organisation may be submitted instead of the statement by the Contractor under clause 9.7(l)(i).

The industrial relations requirements contained in this Contract, the NSW Code and the NSW Guidelines;

- (m) are in addition to, but are not in substitution for, any requirements of Law; and
- (n) do not limit the powers of the Principal or the liabilities and responsibilities of the Contractor.

The Contractor warrants and acknowledges that it has allowed in the Original Contract Price for all the costs and expenses involved with complying with all the requirements of this Contract relating to industrial relations and all relevant awards, enterprise and industrial agreements and project specific agreements and awards.

9.8 Submission for Review

- (a) For each Design Stage, the Principal's Representative, Third Parties, and any relevant Authority may within:
- (i) 15 Business Days for Design Documentation submitted in accordance with clause 5.3; or
 - (ii) such other period as stipulated in a Third Party Agreement;
- (as applicable), review the Design Documentation, and notify the Independent Certifier (copied to the Contractor) in writing of any comments which the Principal, the Third Parties or relevant Authority (as the case may be) has in respect of the Design Documentation.



- (b) At every Design Stage, the Independent Certifier will within 5 Business Days of receipt of a notification from the Principal, the Third Parties or relevant Authority under clause 9.8(a):
- (i) collate and check all notified comments against this Contract, the Works Brief, TfNSW Standard Requirements, and Third Party Agreements;
 - (ii) provide a consolidated register of comments to the Contractor and the Principal's Representative with a proposed action for how and when each comment will be closed out, and
 - (iii) direct the Contractor whether such comments are to be addressed in the next Design Stage.
- (c) The Contractor must within 10 Business Days notify the Independent Certifier, the Principal, the relevant Third Parties or any relevant Authority (as the case may be) whether it disagrees with any comment that has been made and conveyed by the Independent Certifier pursuant to clause 9.8(b):
- (d) If the Contractor disagrees with any comment that has been made pursuant to clause 9.8(b) then within 15 Business Days:
- (i) the Principal's Representative must determine whether the Contractor must amend the Design Documentation;
 - (ii) the Contractor may, if it disagrees with the Principal's Representative's determination, refer the matter to the Independent Certifier for determination;
 - (iii) the Independent Certifier must determine whether the Contractor must amend the Design Documentation to reflect the comment; and
 - (iv) the Contractor must, if it disagrees with the Independent Certifier's determination, issue a Notice of Dispute.
- (e) To the extent that the Contractor does not deliver a notification pursuant to clause 9.8(c), the Contractor will be deemed to have agreed with the Independent Certifier's comments and must amend the Design Documentation to reflect them.
- (f) In the case of Design Documentation received at the "Approved for Construction" Design Stage, the Independent Certifier will within 5 Business Days of receipt of a notification from the Principal's Representative, the Third Parties or relevant Authority under clause 9.8(a) either:
- (i) collate the comments received from the Principal's Representative, the Third Parties or relevant Authority;
 - (ii) undertake an independent review of whether the Design Documentation complies with this Contract;
 - (iii) notify the Contractor and the Principal in writing of any deficiencies in the relevant Design Documentation; or
 - (iv) issue an Independent Certifier's Certificate of Compliance for the relevant Design Documentation.

- (g) If any Design Documentation is rejected by the Independent Certifier under clause 9.8(f)(i):
- (i) the Contractor must promptly amend the relevant part of the Design Documentation which was defective or non-compliant and re-submit it, along with any other information reasonably required by the Independent Certifier, in accordance with clause 5.3; and
 - (ii) the process in this clause 9.8 will be reapplied to the amended Design Documentation.
- (h) All certifications and other determinations by the Independent Certifier will be final and binding on the parties except for instances of manifest error of fact or Law.
- (i) Certification by the Independent Certifier under this clause 9.8 will not relieve the Contractor of any of its obligations under this Contract.
- (j) The Contractor may not issue comments to the Independent Certifier in relation to the "Approved for Construction" Design Documentation at any time.
- (k) The Contractor must not commence construction of any part of the Works to which any Document (other than the Contractor's Program) submitted to the Principal's Representative, Independent Certifier, Third Parties, and any relevant Authority applies, unless the process in this clause 9.8 has been followed.
- (l) If the Contractor wishes to amend the "Approved for Construction" Design Documentation prior to the Date of Completion:
- (i) the Contractor must submit the amended Design Documentation to the Independent Certifier (with a copy to the Principal's Representative, Third Parties and relevant Authorities) together with an explanation as to why it is seeking to amend the "Approved for Construction" Design Documentation; and
 - (ii) clause 9.8 will apply as if the Design Documentation is in the final Design Stage.
- (m) The Principal's Representative and Independent Certifier do not assume or owe any duty of care or other responsibility to the Contractor to review, or in reviewing, a Document submitted by the Contractor, including for errors, omissions or non-compliance with this Contract.
- (n) The Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of or in any way in connection with the Principal's Representative or Independent Certifier not detecting and notifying the Contractor of any errors, omissions or non-compliance with the requirements of this Contract in any Document submitted.
- (o) No review of, comment upon or rejection of, or failure to review or comment upon or reject, a Document prepared by the Contractor, by the Principal's Representative or Independent Certifier in connection with the Document, will:
- (i) constitute a direction to carry out a Variation pursuant to clause 6.2, unless it is in a written document titled "Variation Order" and describes the nature of the Variation in accordance with clause 6.2(a);

- (ii) relieve the Contractor from or alter its liabilities or obligations, whether under this Contract or otherwise according to any Law, or
 - (iii) limit or otherwise affect the Principal's rights against the Contractor, whether under this Contract or otherwise according to any Law
- (p) In considering any Document, the Principal's Representative and the Independent Certifier may consult with and take into account any views or requirements of any relevant Authority and any relevant Third Party.
- (q) Unless otherwise advised by the Principal's Representative, the Contractor must submit the number of copies of a Document stated in this Contract, or if no number is stated then:
- (i) an electronic version on CD (in both pdf and native formats), which must be virus free;
 - (ii) a printed original; and
 - (iii) 3 printed copies (2 bound and 1 unbound).

9.9 Work Method

Whether or not this Contract prescribes a particular work method or a work method is otherwise a part of this Contract or reviewed or approved (expressly or impliedly) by the Principal's Representative, the fact that any work method that the Contractor adopts or proposes to adopt is impractical or impossible or that the Contractor, with or without the approval of the Principal's Representative, uses another work method will:

- (a) not entitle the Contractor to make any Claim against the Principal arising out of or in any way in connection with the work method proving to be impractical or impossible or any change in the work method; and
- (b) not cause the Contract to be frustrated.

9.10 Exchange of Information between Government Agencies

- (a) The Contractor authorises the Principal, its employees and agents to make information concerning the Contractor (including any information provided under clause 9.11) available to NSW government departments or agencies. Such information may include, but need not be limited to, any information provided by the Contractor to the Principal and any information relating to the Contractor's performance under this Contract.
- (b) The Contractor acknowledges that any information about the Contractor from any source, including but not limited to substantiated reports of unsatisfactory performance, may be taken into account by the Principal and NSW government departments and agencies in considering whether to offer the Contractor future opportunities for NSW government work.
- (c) The Contractor also acknowledges that the Principal has in place processes for assessing the performance of its contractors, that these processes will apply to the Contractor's performance under this Contract and that it will participate in the Principal's "Contractor Performance Reporting" process.

9.11 Financial Assessment

Without limiting or otherwise restricting clause 9.10, the Contractor acknowledges and agrees that:

- (a) the Principal may, during the term of the Contract, either itself, or through the engagement of private sector service providers, undertake ongoing financial assessments ("Financial Assessment") of the Contractor and any Subcontractors;
- (b) the Financial Assessment may be undertaken at three monthly (or longer) intervals from the date of commencement of the Works; and
- (c) it must, if requested by the Principal's Representative, within 10 Business Days of receiving such request, provide any documents, information and evidence as is reasonably required by the Principal's Representative under, out of, or in connection with the Financial Assessment.

9.12 Employment of Aboriginal People

The Contractor must:

- (a) comply with the requirements of the NSW Government Policy on Aboriginal Participation in Construction (May 2015) Category 2;
- (b) within 60 days of the execution of this Contract, provide to the Principal an Aboriginal Participation Plan in accordance with the NSW Government Policy on Aboriginal Participation in Construction (May 2015) Category 2; and
- (c) provide, to the Principal, an Aboriginal Participation Report every 3 months in accordance with the format detailed in the NSW Government Policy on Aboriginal Participation in Construction (May 2015).

9.13 Waste Reduction and Purchasing Policy

The Contractor must:

- (a) use its best endeavours to reduce wastage and increase the use of recycled materials in accordance with the GREP;
- (b) address as part of the Construction Environment Management Plan the measures to be taken to reduce wastage and increase the use of recycled materials in the areas of paper products, office consumables, vegetation and landscaping materials, and construction and demolition materials; and
- (c) provide reports to the Principal's Representative in such format and within such times as may be required by the Principal's Representative for the use by the Principal in complying with its GREP obligations to report performance.

9.14 Training of apprentices and trainees

- (a) Subject to the express provisions of the Contract, the Contractor must comply with the NSW Procurement Board direction PBD-2016-02 Construction Apprenticeships (PBD-2016-02).
- (b) Training management requirements specified in the Contract and compliance with PBD-2016-02 may be in addition to, but are not in

substitution for, any training obligations of the Contractor under statute, industrial award, enterprise or workplace agreement, or other workplace arrangements approved under Commonwealth or NSW law.

- (c) Where applicable, as indicated in Item 40 of Schedule 1, at least 14 days before starting work on the Site the Contractor must document and submit a Project Training Management Plan which complies with PBD-2016-02.
- (d) The Contractor must systematically manage its training management processes in accordance with the systems, plans, standards and codes specified in the Contract.
- (e) The Contractor must demonstrate to the Principal, whenever requested, that it has met and is meeting at all times its obligations under this clause 9.14.
- (f) The Contractor:
 - (i) acknowledges that the target for the engagement of apprentices and trainees engaged by the Contractor to perform the Contractor's Activities is as specified in Item 41 of Schedule 1 ("Training Target");
 - (ii) must make reasonable endeavours to achieve the Training Target;
 - (iii) provide written reports to the Principal quarterly, in a format set out in Schedule 28, and at such other times as may be requested by the Principal, detailing the number of apprentices and trainees engaged by the Contractor in the Contractor's Activities against the Training Target; and
 - (iv) provide the Principal with all other assistance and information it requires in relation to the Contractor's performance against the Training Target in order for the Principal to comply with its reporting obligations at Law, including promptly making all relevant records available to the Principal after any written request by the Principal.

9.15 National Greenhouse and Energy Reporting Act 2007 (Cth)

The Contractor acknowledges and agrees that:

- (a) if any of the Contractor's Activities, or the activities of any of the Contractor's personnel, in connection with the Contractor's Activities (the "Relevant Matters") constitute a "facility" within the meaning of the NGER Legislation, then, for the purposes of the NGER Legislation, the Contractor has operational control of that facility and will comply with any obligations arising in respect of the Principal's activities under the NGER Legislation;
- (b) if, despite the operation of clause 9.15(a), the Principal incurs, or (but for this clause) would incur, a liability under or in connection with the NGER Legislation as a result of or in connection with any of the Relevant Matters, and the NGER Legislation provides that such liability can be transferred by the Principal or the NSW Government or any of its agencies to the Contractor, the Contractor must, on the written request of the Principal, do all things reasonably necessary to ensure the liability is transferred to the Contractor;

- (c) if the Principal requests it, the Contractor must provide Greenhouse Data to the Principal:
 - (i) to the extent that, in a manner and form that, and at times that, will enable the Principal to comply with the NGER Legislation (irrespective of whether the Principal or the Contractor or any other person has an obligation to comply with the NGER Legislation in connection with any Relevant Matters); and
 - (ii) otherwise as requested by the Principal from time to time;
- (d) the Contractor must also provide to the Principal all Greenhouse Data and other information which the Contractor provides to any other person under the NGER Legislation in connection with any Relevant Matters, at the same time as the Contractor provides that Greenhouse Data or other information to that other person;
- (e) the Contractor must:
 - (i) collect and record all such Greenhouse Data as may be required to enable reporting under the NGER Legislation or enable the Contractor to discharge its obligations under this clause 9.15, and keep that Greenhouse Data for at least 7 years after the end of the year in which the Relevant Matters occur; and
 - (ii) permit any persons appointed or authorised by the Principal to examine, monitor, measure, copy, audit and/or verify the Greenhouse Data and co-operate with and provide all reasonable assistance to any such persons (including by doing such things as giving access to premises, plant and equipment, producing and giving access to documents and answering any relevant questions);
- (f) the Principal may provide or otherwise disclose the Greenhouse Data and any other information which the Principal obtains under this clause 9.15 to any other person, and may otherwise use the Greenhouse Data and other information for any purpose as the Principal sees fit, and
- (g) nothing in this clause 9.15 is to be taken as meaning that the Principal has agreed to perform any statutory obligation that the Contractor may have regarding the provision of Greenhouse Data to any Authority.

10 Time and Progress

10.1 Rate of Progress

- (a) The Contractor must:
 - (i) immediately commence, and thereafter regularly and diligently progress the Contractor's Activities;
 - (ii) proceed with the Contractor's Activities with due expedition and without delay, and
 - (iii) achieve Completion of a Portion by the relevant Date for Completion for that Portion.
- (b) Without limiting the Contractor's rights under the SOP Act, the Contractor must not suspend the progress of the whole or any part of

Contractor's Activities except where directed by the Principal's Representative under clause 10.14.

- (c) Without limiting clauses 10.1(d)-(g) or clause 10.4, the Contractor must give the Principal's Representative reasonable advance notice of any information, documents or directions required by the Contractor to carry out the Contractor's Activities in accordance with this Contract.
- (d) The Principal and the Principal's Representative will not be obliged to furnish information, documents or directions earlier than the Principal or the Principal's Representative, as the case may be, should reasonably have anticipated at the date of this Contract.
- (e) The Principal's Representative may, by written notice expressly stated to be pursuant to this clause 10.1, direct in what order and at what time the various stages or parts of the Contractor's Activities must be performed. If the Contractor can reasonably comply with the direction, the Contractor must do so. If the Contractor cannot reasonably comply, the Contractor must notify the Principal's Representative in writing, giving reasons. For the avoidance of doubt, no direction by the Principal's Representative will constitute a direction under this clause 10.1 unless the direction is in writing and expressly states that it is a direction under this clause 10.1.
- (f) If compliance with a written direction expressly stated to be pursuant to this clause 10.1 causes the Contractor to incur more or less cost than otherwise would have been incurred, the difference will be dealt with and valued as if it were a Variation except where the direction was necessary because of, or arose out of or in any way in connection with, a failure by the Contractor to comply with its obligations under this Contract.
- (g) Such costs shall be the Contractor's sole entitlement, and the Contractor will not be entitled to make, and the Principal will not be liable upon, any other Claim, arising out of or in any way in connection with any direction pursuant to this clause 10.1.

10.2 The Contractor's Programming Obligations

The Contractor must:

- (a) prepare and provide a Contractor's Program that complies with and includes the details required by this Contract and any requirements of the Principal's Representative;
- (b) submit the Contractor's Program to the Principal's Representative for its review in accordance with clause 9.8 within the earlier of:
 - (i) 10 Business Days of the date of this Contract; or
 - (ii) any time required by the TfNSW Standard Requirements;
- (c) when directed to do so by the Principal's Representative, prepare and submit to the Principal's Representative specific detailed programs and schedules for the Contractor's Activities within 5 Business Days of receipt of such a direction;
- (c) update, revise and submit to the Principal's Representative an updated Contractor's Program:
 - (i) to allow for delays to non-critical activities, extensions of time granted by the Principal's Representative to any Date for

Completion, the actual progress made by the Contractor, Variations and any other changes to the Contractor's Activities but excluding claims for extensions of time to any Date for Completion which have been submitted by the Contractor to the extent that they have not been granted by the Principal's Representative; and

- (i) on a monthly basis or whenever directed to do so by the Principal's Representative;
- (e) prepare and provide for the Principal's Representative's information only versions of all Contractor's Programs prepared in accordance with clause 10.2(d) that also allow for those claims for an extension of time to any Date for Completion that have been made by the Contractor in accordance with clause 10.8 but to which the Principal's Representative has not yet responded in accordance with clause 10.10;
- (f) comply with the requirements of the Principal's Representative and its other obligations under this Contract in preparing and using programs, including the requirements in clause 9.8; and
- (g) not depart from the current version of the Contractor's Program that has been submitted to the Principal's Representative for review under clause 9.8 and not been rejected by the Principal's Representative within 15 Business Days.

10.3 Contractor not Relieved

Without limiting clause 9.8, no submission of, review of or comment upon, acceptance or rejection of, or any failure to review or comment upon or reject, a program (including the Contractor's Program) prepared by the Contractor, by the Principal's Representative in connection with the program, will:

- (a) relieve the Contractor from or alter its liabilities or obligations under this Contract, including the obligation under clause 10.1;
- (b) evidence or constitute notification of a delay or the claiming of or the granting of an extension of time to any Date for Completion or a direction by the Principal's Representative to compress, disrupt, prolong or vary any, or all, of the Contractor's Activities; or
- (c) affect the time for the performance of the Principal's or the Principal's Representative's obligations under this Contract.

10.4 Compression by Contractor

If the Contractor chooses to compress the Contractor's Activities or otherwise accelerate progress:

- (a) neither the Principal nor the Principal's Representative will be obliged to take any action to assist or enable the Contractor to achieve Completion before any Date for Completion;
- (b) the time for carrying out the obligations of the Principal or the Principal's Representative will not be affected; and
- (c) the Contractor does so at its own cost and risk.

10.5 Importance of Completion on Time

The Contractor acknowledges:

- (a) the importance of complying with its obligations under clause 10.1; and
- (b) that a Date for Completion will only be extended in accordance with clause 10.10 or clause 10.12, or when so determined under clause 15.

10.6 Risk and Notice of Delay

- (a) Except as expressly provided for in clause 10.10, the Contractor accepts the risk of all delays in, and disruption to, the carrying out of the Contractor's Activities and performance of its obligations under this Contract both before and after any Date for Completion.
- (b) The Contractor must within 5 days of the commencement of an occurrence causing any delay or which is likely to cause delay, give the Principal's Representative written notice of any delay or likely delay to the carrying out of the Contractor's Activities, details of the cause and how any Date of Completion is likely to be affected (if at all).

10.7 Entitlement to Claim Extension of Time

- (a) If the Contractor is, or will be, delayed on or prior to the Date for Completion of a Portion, by reason of:
 - (i) an Act of Prevention; or
 - (ii) a cause set out in Item 42 of Schedule 1,in a manner that will delay it in achieving Completion of the Works or the Portion by the relevant Date for Completion, the Contractor may claim an extension of time to the relevant Date for Completion.
- (b) If the Contractor is, or will be, delayed after the Date for Completion of a Portion, by reason of:
 - (i) an Act of Prevention; or
 - (ii) a cause set out in Item 42 of Schedule 1,in a manner which will delay it in achieving Completion of a Portion, the Contractor may claim an extension of time to the relevant Date for Completion.

10.8 Claim for Extension of Time

- (a) To claim an extension of time the Contractor must:
 - (i) within 14 days of the commencement of the occurrence causing the delay, submit a written claim to the Principal's Representative for an extension of time to the relevant Date for Completion, which:
 - (A) gives detailed particulars of the:
 - (aa) delay and the occurrence causing the delay; and
 - (ab) activities that are critical to the maintenance of progress in the execution of the Contractor's Activities; and

- (B) states the number of days for which the extension of time is claimed together with the basis of calculating that period, including evidence that the:
 - (aa) conditions precedent to an extension of time in clause 10.9 have been met; and
 - (ab) occurrence will delay it in achieving Completion in the manner described in clause 10.7; and
- (ii) if the effects of the delay continue beyond the period of 14 days after the commencement of the occurrence causing the delay and the Contractor wishes to claim an extension of time in respect of the further delay, submit a further written claim to the Principal's Representative.
 - (A) every 14 days after the first written claim, or such other period as may be approved by the Principal's Representative in writing, until after the end of the effects of the delay; and
 - (B) containing the information required by clause 10.8(a)(i).
- (b) The Principal's Representative may, within 14 days of receiving the Contractor's claim or further claim for an extension of time for Completion, by written notice to the Contractor, request additional information in relation to the claim or further claim.
- (c) The Contractor must, within 14 days of receiving such request, provide the Principal's Representative with the information requested.

10.9 Conditions Precedent to Extension of Time

- (a) It is a condition precedent to the Contractor's entitlement to an extension of time to any relevant Date for Completion that:
 - (i) the Contractor gives the notices and claims required by clauses 10.6(b) and 10.8 as required by those clauses;
 - (ii) the Contractor complies with any request for additional information under clause 10.8 within the time required;
 - (iii) the cause of the delay is beyond the reasonable control of the Contractor; and
 - (iv) the Contractor is actually, or will be, delayed:
 - (A) on or prior to the Date for Completion of the Works or the Portion, by reason of one or more of the causes set out in clause 10.7(a) in the manner described in clause 10.7(a); or
 - (B) after the Date for Completion of the Works or the Portion, by reason of an act or omission of the Principal or the Principal's Representative (including any breach of Contract or Change directed by the Principal's Representative) in the manner described in clause 10.7(b).
- (b) If the Contractor fails to comply with the conditions precedent in this clause 10.9:

- (i) the Principal will not be liable upon any Claim by the Contractor; and
- (ii) the Contractor will be absolutely barred from making any Claim against the Principal,

arising out of or in any way in connection with the event giving rise to the delay and the delay involved.

10.10 Extension of Time

- (a) Subject to clause 10.11, if the conditions precedent in clause 10.9 have been satisfied, the relevant Date for Completion will be extended by a reasonable period determined by the Principal's Representative, and notified to the Principal and the Contractor within 28 days after the latest of the:
 - (i) Contractor's written claim under clause 10.8; and
 - (ii) provision by the Contractor of any additional information regarding the claim required under clause 10.8.
- (b) A failure of the Principal's Representative to grant a reasonable extension of time to any Date for Completion or to grant an extension of time to any Date for Completion within the relevant 28 day period will not cause an affected Date for Completion to be set at large, but nothing in this clause 10.10(a) will prejudice any right of the Contractor to damages.

10.11 Reduction in Extension of Time

The Principal's Representative will reduce any extension of time to the relevant Date for Completion it would otherwise have determined under clause 10.10 to the extent that the Contractor:

- (a) contributed to the delay; or
- (b) failed to take all reasonably practicable steps necessary both to preclude the cause of the delay and to avoid or minimise the consequences of the delay.

10.12 Unilateral Extensions

- (a) Whether or not the Contractor has made, or is entitled to make, a claim for an extension of time to any relevant Date for Completion, or is entitled to be, or has been, granted an extension of time to any relevant Date for Completion, under clause 10.10, the Principal's Representative may, in its absolute discretion, for any reason and at any time, from time to time by written notice to the Contractor and the Principal, unilaterally extend any Date for Completion by any period specified in a notice to the Contractor and the Principal.
- (b) The Principal's Representative is not required to exercise its discretion under this clause 10.12 for the benefit of the Contractor.
- (c) The discretion to grant an extension of time under this clause 10.12 may only be exercised by the Principal's Representative and the exercise or failure to exercise that discretion is not a "direction" which can be the subject of a Dispute pursuant to clause 15 or in any other way opened up, reviewed or exercised by any other person in any forum (including in any expert, arbitration or litigation proceedings).

10.13 Delay Damages

- (a) For each day by which the Date for Completion of a Portion is extended due to:
- (i) a breach of this Contract by the Principal;
 - (ii) a Change in Codes and Standards;
 - (iii) a Change in Authority Approvals;
 - (iv) an Unknown Utilities Services Event; or
 - (v) a Variation the subject of a direction by the Principal's Representative under clause 6.2, except where that Variation is directed in the circumstances described in clause 8.2(a)(iii),

the Contractor will be entitled to be paid the costs reasonably and necessarily incurred by the Contractor as a direct result of the delay the subject of the extension of time (as determined by the Principal's Representative) up to and including the maximum daily amount set out in Item 44 of Schedule 1 for all Portions in the aggregate.

- (b) The valuation of entitlements to money under clauses 3.8(d), 10.1 and 13.3 is not a Variation for the purposes of clause 10.13(a)(ii).
- (c) The amounts payable pursuant to this clause 10.13 will be a limitation upon the Principal's liability to the Contractor for any delay or disruption that:
- (i) the Contractor encounters in carrying out the Contractor's Activities, and
 - (ii) arises out of, or in any way in connection with, the breach of this Contract by the Principal,

and the Contractor will not be entitled to make, nor will the Principal be liable upon, any Claim in these circumstances other than for the amount which is payable by the Principal under this clause 10.13.

10.14 Suspension

- (a) The Principal's Representative may direct the Contractor to suspend and, after a suspension has been directed, to re-commence, the carrying out of all or a part of the Contractor's Activities. Nothing in this clause limits the Principal's rights under clause 2.13.
- (b) If the suspension under this clause 10.14 arises in the circumstance set out in clause 2.13(f) then clauses 2.13(f) and 2.13(h) will apply, otherwise where it arises as a result of:
- (i) the Contractor's failure to carry out its obligations in accordance with this Contract (including where any process, procedure, test method, calculation, analysis or report required by this Contract has resulted in or will result in a non-conformance), the Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of, or in any way in connection with, the suspension; or
 - (ii) a cause other than the Contractor's failure to perform its obligations in accordance with this Contract.

- (A) a direction to suspend under this clause 10.14 will entitle the Contractor to:
 - (aa) be paid by the Principal the extra costs reasonably incurred by it as a direct result of the suspension as determined by the Principal's Representative; and
 - (ab) an extension of time to any relevant Date for Completion where it is otherwise so entitled under this clause 10;
- (B) the Contractor must take all steps possible to mitigate the extra costs incurred by it as a result of the suspension; and
- (C) the Contractor will not be entitled to make, and the Principal will not be liable upon, any Claim arising out of, or in any way in connection with, the suspension other than as allowed under this clause 10.14(b)(ii).

11 Payment

11.1 Contractor's Payment Entitlements

- (a) Subject to clause 16.12 and to any other right to set-off that the Principal may have, the Principal must pay the Contractor the Contract Sum and any other amounts expressly payable by the Principal to the Contractor under this Contract, in accordance with the procedure in this clause 11.
- (b) The Contract Sum is comprised of:
 - (i) in respect of the Utilities Target Cost Scope the sum of:
 - (A) the Approved Actual Utilities Cost; plus
 - (B) the Utilities Margin;
 - (ii) the Advanced Amount; and
 - (iii) in respect of the balance of the Contractor's Activities, including those Contractor's Activities the subject of Provisional Work Items, the Enabling Works Lump Sum.
- (c) Delay Damages, the Utilities Share of Savings and the Incentive do not form part of the Contract Sum.
- (d) The Contract Sum is not subject to rise and fall.

11.2 Payment Claims

- (a) The Contractor may give the Principal's Representative a claim for payment on account of the Contract Sum and any other amount expressly payable by the Principal to the Contractor under the Contract on each Payment Claim Date.
- (b) If the Contractor submits a payment claim before the Payment Claim Date of that payment claim, such early lodgement will not require the Principal's Representative to issue a payment statement in respect of

that payment claim earlier than would have been the case had the Contractor submitted the payment claim in accordance with the Contract

- (c) The Contractor agrees with the Principal that each Payment Claim Date is, for the purposes of section 8 of the SQP Act, a "reference date".
- (d) Each claim for payment must:
 - (i) generally follow the form of the Payment Breakdown Schedule and otherwise be in such form as the Principal's Representative reasonably requires;
 - (ii) include all the evidence reasonably required by the Principal's Representative of the amount of work completed in accordance with this Contract and the amount payable;
 - (iii) for each monthly claim pursuant to clause 11.2 (a "Progress Claim"), set out the amount claimed for work completed in accordance with the Contract and incorporated in the Works or to which clause 11.7 applies, to the end of the previous month and details of how the amount has been calculated;
 - (iv) include such further information and evidence in respect of the payment claim as is reasonably required by the Principal's Representative;
 - (v) be broken down into elements consistent with the Payment Breakdown Schedule that includes a breakdown in relation to:
 - (A) the Approved Actual Utilities Cost;
 - (B) the Utilities Margin; and
 - (C) the balance of Enabling Works Lump Sum; and
 - (vi) include, in relation to the first Progress Claim date after the Date of the Contract, the Advanced Amount.
- (e) The Contractor may not include in any payment claim under this clause 11 any amount:
 - (i) for the provision of Asset Management Information until all of the information has been submitted to the Principal in accordance with the Contract and to the satisfaction of the Principal, or
 - (ii) in respect of a Claim which is barred by clause 17.6 or any other provision of this Contract.

11.3 Payment Statements

- (a) The Principal's Representative must (on behalf of the Principal), within 10 Business Days of receiving a Progress Claim which complies with the requirements of clause 11.2, a Completion Payment Claim under clause 11.9 or a Final Payment Claim under clause 11.12, issue to the Contractor and the Principal a payment statement which, identifies the Progress Claim, Completion Payment Claim or Final Payment Claim to which it relates, and which sets out:
 - (i) its determination of the value of the Contractor's Activities carried out in accordance with this Contract, using the

methodology in clause 11.2(d)(iii) where the payment statement relates to a Progress Claim;

- (ii) the amount already paid to the Contractor;
 - (iii) the amount the Principal is entitled to retain, deduct, withhold or set-off under this Contract;
 - (iv) the amount (if any) which the Principal's Representative believes to be then payable by the Principal to the Contractor on account of the Contract Sum and which the Principal proposes to pay to the Contractor or the amount which the Principal's Representative believes to be then payable by the Contractor to the Principal;
 - (v) if the amount in clause 11.3(a)(iv) is less than the amount claimed in the Progress Claim, Completion Payment Claim or Final Payment Claim:
 - (A) the reason why the amount in clause 11.3(a)(iv) is less than the amount claimed in the relevant Progress Claim, Completion Payment Claim or Final Payment Claim; and
 - (B) If the reason for the difference is that the Principal proposes to retain, deduct, withhold or set-off payment for any reason, the reason for the Principal retaining, deducting, withholding or setting-off payment;
 - (vi) the adjustment (if any) to be made to the Final Payment Claim if there has been any inaccuracy, misrepresentation or misstatement regarding self-performed Utilities Target Cost Scope.
- (b) The issue of a payment statement by the Principal's Representative does not constitute approval of any work nor will it be taken as an admission or evidence that the part of the Works or Contractor's Activities covered by the payment statement has been satisfactorily carried out in accordance with this Contract.
- (c) Failure by the Principal's Representative to set out in a payment statement an amount, or the correct amount, which the Principal is entitled to retain, deduct, withhold or set-off from the amount which would otherwise be payable to the Contractor by the Principal will not prejudice the Principal's right to subsequently exercise its right to retain, deduct, withhold or set-off any amount under this Contract.
- (d) The Contractor agrees that the amount referred to in this payment statement in respect of clause 11.3(a)(iv) for the purposes of section 9 and 10 of the SOP Act, is the amount of the 'progress payment' (as defined in the SOP Act) calculated in accordance with the terms of this Contract to which the Contractor is entitled in respect of this Contract.
- (e) Where the Principal has notified the Contractor in accordance with clause 16(f)(iv) that it no longer proposes to issue a recipient created tax invoice for a taxable supply made by the Contractor for the Principal, the Contractor must, within 1 Business Day after receipt of the payment statement issued by the Principal's Representative give the Principal's Representative a tax invoice (which complies with the GST Legislation) for the amount of the payment statement.

11.4 Payment

- (a) Where, pursuant to clause 11.3(a)(iv), the Principal's Representative sets out in a payment statement an amount payable by the Principal to the Contractor, subject to clauses 11.1, 11.2, 11.6, 11.8, 14.3, 14.7(a) and 16.12, the Principal must, within 15 Business Days of receipt of the payment claim to which the payment statement relates, pay the Contractor the amount set out in the payment statement referred to in clause 11.3.
- (b) Where, pursuant to clause 11.3(a)(iv), the Principal's Representative sets out in a payment statement an amount payable by the Contractor to the Principal, the Contractor must, within 5 Business Days of the Principal's Representative issuing the payment statement under clause 11.3, pay the Principal the amount set out in the payment statement referred to in clause 11.3.

11.5 Payment on Account

A payment of moneys under clause 11.4(a) is not:

- (a) an admission or evidence of the value of work or that work has been satisfactorily carried out in accordance with this Contract;
- (b) an admission of liability; or
- (c) approval by the Principal or the Principal's Representative of the Contractor's performance or compliance with this Contract.

but is only to be taken as payment on account.

11.6 Payment Claim Requirements

Prior to making a payment claim under clause 11.2, the Contractor must have:

- (a) provided the Principal with the unconditional undertakings and the Parent Company Guarantee (if any) required under clause 2.7 and clause 2.10;
- (b) provided the Principal's Representative with:
 - (i) a statutory declaration by the Contractor, or where the Contractor is a corporation, by a representative of the Contractor who is in a position to know the facts asserted to, in the form of Schedule 12, made out not earlier than the date of the payment claim;
 - (ii) a Contractor's Certificate of Design Compliance and a Contractor's Certificate of Construction Compliance in the form of Schedule 19 and Schedule 20;
 - (iii) where clause 11.17(c) applies, the statement and the evidence (if any) required to be provided by the Contractor pursuant to that clause;
 - (iv) in relation to any items forming part of the Utilities Target Cost Scope which the Contractor has self-performed and which the Contractor includes in the payment claim:
 - (A) an itemised schedule of quantities, rates and prices which relate to the individual components of the relevant

Utilities Target Cost Scope and which is sufficient to permit the Principal's Representative to determine the amount payable to the Contractor in the manner described in clause 11.9(d); and

- (8) a statutory declaration signed by a representative of the Contractor with the relevant delegated authority stating that the schedule referred to in clause 11.6(b)(iv)(A) is accurate and truthful; and
- (c) effected or procured to be effected the insurances required to be effected by the Contractor by clause 13 and (if requested) provided evidence of this to the Principal's Representative.

11.7 Unfixed Plant and Materials

- (a) The Contractor is only entitled to make a claim for payment for plant or materials intended for incorporation in the Works but not yet incorporated, and the Principal is only obliged to make payment for such plant or materials in accordance with clause 11.4(a) if:
 - (i) the Contractor provides evidence of:
 - (A) ownership of the plant or materials;
 - (B) identification and labelling of the plant and materials as the property of the Principal; and
 - (C) adequate and secure storage and protection;
 - (ii) security acceptable to the Principal in the form of the unconditional undertaking in Schedule 8 issued by an institution approved by the Principal in an amount equal to the payment claimed for the unfixed plant and materials has been provided by the Contractor to the Principal;
 - (iii) the plant and materials are on the Site or are available for immediate delivery to the Site;
 - (iv) the insurance held and the storage arrangements for the unfixed plant and materials are acceptable to the Principal's Representative;
 - (v) the condition of the unfixed plant and materials has been confirmed in an inspection by the Principal's Representative; and
 - (vi) if the PPS Law applies, the Contractor has registered a Security Interest in the unfixed plant and materials in favour of the Principal in accordance with clause 16.26.
- (b) The only such unfixed plant or materials to be allowed for in a payment statement are those that have become or (on payment) will become the property of the Principal. Upon a payment against a payment statement that includes amounts for unfixed plant and materials, title to the unfixed plant and materials included will vest in the Principal.
- (c) The security provided in accordance with clause 11.7(a)(ii) will be released once the applicable unfixed plant and materials are incorporated into the Works and are fit for their intended purpose.

11.8 Payment of Employees and Subcontractors

- (a) When submitting any Progress Claim, Completion Payment Claim or Final Payment Claim, the Contractor must give the Principal's Representative a statutory declaration in accordance with clause 11.6(b)(i).
- (b) If any moneys are shown as unpaid in the Contractor's statutory declaration under clause 11.6(b)(i), the Principal may withhold the moneys so shown until the Contractor provides evidence to the satisfaction of the Principal's Representative that the moneys have been paid to the relevant persons.
- (c) If an employee or a Subcontractor obtains a court order in respect of the moneys payable to him, her or it in respect of his, her or its employment on, materials supplied for, or work performed with respect to, the Contractor's Activities, and produces to the Principal the court order and a statutory declaration that it remains unpaid, the Principal may (but is not obliged to) pay the amount of the order and costs included in the order to the employee or Subcontractor, and the amount paid will be a debt due from the Contractor to the Principal.
- (d) If the Principal receives notice of any Insolvency Event in relation to the Contractor the Principal will not make any payment to an employee or Subcontractor without the concurrence of the administrator, provisional liquidator, liquidator, trustee or official receiver, as the case may be, of the Contractor.
- (e) Nothing in this clause 11.8 limits or otherwise affects the Principal's right under section 175B(7) of the *Workers Compensation Act 1987 (NSW)*, section 18(6) of schedule 2 of the *Payroll Tax Act 2007 (NSW)* or section 127(5) of the *Industrial Relations Act 1996 (NSW)*.

11.9 Utilities payments

- (a) Subject to clause 11.9(b), the Approved Actual Utilities Cost and the Utilities Margin are the sole consideration payable by the Principal for the performance of the Utilities Target Cost Scope irrespective of whether the works comprised within the Utilities Target Cost Scope were known or unknown as at the date of this Deed.
- (b) The Utilities Target Cost will only be adjusted to the extent that the Approved Actual Utilities Cost is comprised of the cost incurred as a result of a Variation Order issued by the Principal's Representative under clause 6.2(a) directing a change to the Works Brief which changes the Utilities Target Cost Scope.
- (c) The Contractor must provide to the Principal's Representative, on each Payment Claim Date, a written report (**Anticipated Utilities Report**) containing the following:
 - (i) the anticipated works and activities forming part of the Utilities Target Cost Scope which the Contractor intends to undertake during the 2 month period commencing on the Payment Claim Date (**Anticipated Utilities Works**);
 - (ii) the anticipated program and timing for the performance of the Anticipated Utilities Works;
 - (iii) details of any Anticipated Utilities Works which the Contractor intends to be self-performed;

- (iv) the estimated costs for the Anticipated Utilities Works, based upon the costs which the Contractor anticipates would be claimable under clause 11.6 in relation to the Anticipated Utilities Works, including a separate cost breakdown in relation to any Anticipated Utilities Works which will be self-performed;
 - (v) in relation to each Anticipated Utilities Report other than the first Anticipated Utilities Report:
 - (A) any deviations in relation to the estimated costs for the Anticipated Utilities Works based upon previous Anticipated Utilities Reports, where such deviations are of 10% or more; and
 - (B) any deviations of the Approved Actual Utilities Target Cost from the Utilities Target Cost; and
 - (vi) any other details in relation to the Utilities Target Cost Scope which the Principal's Representative may reasonably require.
- (d) The Contractor may self-perform the Utilities Target Cost Scope, provided always that any Claim for such self-performed works will, subject always to 11.9(b), be determined by the Principal's Representative on the basis of the rates set out in Schedule 10 Part A, or to the extent that such rates do not apply, those costs reasonably incurred by the Contractor in carrying out the Utilities Target Cost Scope (subject always to clause 11.9(b)); and
- (e) The Principal may audit the costs claimed by the Contractor in respect of the Approved Actual Utilities Cost (whether self-performed or not) and the Contractor must:
- (i) make available to the Principal's Representative and any person nominated by him (including consultants of the Principal) all materials, records and accounts relating to the Approved Actual Utilities Cost; and
 - (ii) ensure that all Subcontractors who perform the Utilities Target Cost Scope are also obliged to do so.

11.10 Completion Payment Claim

- (a) No later than 28 days after the issue of the Notice of Completion for the Works or the last Portion to reach Completion, but subject to clause 11.6 the Contractor may lodge with the Principal's Representative a payment claim marked "Completion Payment Claim" stating:
- (i) the Contract Sum;
 - (ii) all payments received on account of the Contract Sum; and
 - (iii) the balance, if any, due to the Contractor; and
 - (iv) the Utilities Share of Savings due
- (b) The Completion Payment Claim must be accompanied by such information as the Principal's Representative may reasonably require.

- (c) With the Completion Payment Claim the Contractor must lodge with the Principal's Representative a First Statement of Outstanding Claims. The First Statement of Outstanding Claims must identify all Claims that the Contractor wishes to make against the Principal in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contractor's Activities, the Works or this Contract which occurred prior to the date of submission of the Completion Payment Claim.
- (d) The Completion Payment Claim and First Statement of Outstanding Claims must address all facts, matters or things arising out of, or in any way in connection with, the Contractor's Activities, the Works or this Contract up to the date of submission of the Completion Payment Claim in respect of all Claims included in the Completion Payment Claim and First Statement of Outstanding Claims.

11.11 Release after Completion Payment Claim

The Contractor releases the Principal from any Claim in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contractor's Activities, the Works or this Contract that occurred prior to the date of submission of the Completion Payment Claim, except for any Claim which:

- (a) has been included in the Completion Payment Claim or First Statement of Outstanding Claims which is given to the Principal's Representative within the time required by, and in accordance with clause 11.9; and
- (b) has not been barred under another provision of this Contract.

11.12 Final Payment Claim

- (a) No later than 28 days after the expiration of the last Defects Rectification Period, but subject to clause 11.6 the Contractor may lodge with the Principal's Representative a payment claim marked 'Final Payment Claim' stating:
 - (i) the Contract Sum;
 - (ii) all payments received on account of the Contract Sum; and
 - (iii) the balance, if any, due to the Contractor.
- (b) The Final Payment Claim must be accompanied by such information as the Principal's Representative may reasonably require.
- (c) With the Final Payment Claim the Contractor must lodge with the Principal's Representative a Second Statement of Outstanding Claims. The Second Statement of Outstanding Claims must identify all Claims that the Contractor wishes to make against the Principal in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contractor's Activities, the Works or this Contract which occurred prior to the date of submission of the Final Payment Claim.
- (d) The Final Payment Claim and Second Statement of Outstanding Claims must address all such facts, matters or things arising out of or in any way in connection with the Contractor's Activities the Works or this Contract up to the date of submission of the Final Payment Claim in respect of all Claims included in the Final Payment Claim and Second Statement of Outstanding Claims.

11.13 Release after Final Payment Claim

The Contractor releases the Principal from any Claim in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contractor's Activities, the Works or this Contract that occurred prior to the date of submission of the Final Payment Claim, except for any Claim which:

- (a) has been included in the Final Payment Claim or Second Statement of Outstanding Claims which is given to the Principal's Representative within the time required by, and in accordance with, clause 11.12, and
- (b) has not been barred under another provision of this Contract.

11.14 Interest

- (a) If any moneys due to either party remain unpaid after the date upon which, or the expiration of the period within which, they should have been paid, then interest will be payable thereon from, but excluding the date upon which, or the date at the end of the expiration of the period within which, they should have been paid to and including the date upon which the moneys are paid.
- (b) The rate of interest will be the rate from time to time prescribed for judgement debts under the *Uniform Civil Procedure Rules 2005* (NSW). Interest will be compounded at six monthly intervals.
- (c) This will be the party's sole entitlement to interest, including damages for loss of use of, or the cost of borrowing, money.

11.15 Correction of Payment Statements

The Principal's Representative may, in any payment statement:

- (a) correct any error; and
- (b) modify any assumptions or allowances made,

in any previous payment statement issued by the Principal's Representative

11.16 Costs Allowed by Contractor

- (a) Unless otherwise provided in this Contract, it is agreed that the Contractor has, and will be deemed to have, allowed in the Original Contract Price for and will be wholly responsible for the payment of:
 - (i) without limiting clause 18, all customs duties, tariffs and similar taxes (other than GST) and charges paid or payable on all items that are:
 - (A) intended to be used for, or that are to be incorporated into, the Works; or
 - (B) otherwise used for the Contractor's Activities;
 - (ii) any long service leave levy which may be payable in respect of the Contractor's Activities or the Works;
 - (iii) all royalties, licence fees and similar payments for Intellectual Property in respect of:

- (A) the items that are intended to be used for, or that are to be incorporated into, the Works; and
 - (B) all Contract Documentation; and
 - (w) all fluctuations in the value of the Australian dollar against other currencies
- (b) The Contractor will have no entitlement to any increase in the Contract Sum or otherwise to make any Claim against the Principal in respect of any of those amounts, whatever they may actually be.

11.17 Security of Payment Act

- (a) When an adjudication occurs under the SOP Act and the Principal has paid an adjudicated amount to the Contractor:
- (i) the amount will be taken into account by the Principal's Representative in issuing a payment statement under clause 11.3;
 - (ii) If it is subsequently determined pursuant to the Contract that the Contractor was not entitled under the Contract to payment of some or all of the adjudicated amount that was paid by the Principal ("overpayment"), the overpayment will be a debt due and payable by the Contractor to the Principal which the Contractor must pay to the Principal upon demand and in respect of which the Contractor is not entitled to claim or exercise any set-off, counterclaim, deduction or similar right of defence;
 - (iii) if the adjudicator's determination is quashed, overturned or declared to be void, the adjudicated amount then becomes a debt due and payable by the Contractor to the Principal upon demand and in respect of which the Contractor is not entitled to claim or exercise any set-off, counterclaim, deduction or similar right of defence;
 - (iv) the Principal's Representative:
 - (A) is not bound by the adjudication determination;
 - (B) may reassess the value of the work that was valued by the adjudicator; and
 - (C) may, if it disagrees with the adjudication determination, express its own valuation in any payment statement; and
 - (v) the payment statement referred to in clause 11.17(a)(iv)(C) will be treated as a final determination of the value of the relevant work, subject to the provisions of clause 15.
- (b) For the purposes of section 17(3) of the SOP Act the Contractor irrevocably chooses the Resolution Institute, as the "authorised nominating authority" (as that term is defined in the SOP Act) for any adjudication application it may make under the SOP Act in respect of the subject matter of this Contract.
- (c) Without limiting clauses 11.8 or 16.12, the Principal may withhold any amount that is less than or equal to the amount claimed to be owed

under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act.

(d) If the Principal withholds from money otherwise due to the Contractor any amount that is less than or equal to the amount claimed to be owed under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act, then:

(i) the Principal may plead and rely upon Division 2A of the SOP Act as a defence to any claim for the money by the Contractor from the Principal; and

(ii) the period during which the Principal retains money due to the Contractor pursuant to an obligation under Division 2A of the SOP Act will not be taken into account for the purpose of determining:

(A) any period for which money owed by the Principal to the Contractor has been unpaid; and

(B) the date by which payment of money owed by the Principal to the Contractor must be made.

(e) The Contractor agrees not to commence proceedings to recover any amount withheld by the Principal pursuant to a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act.

(f) Any amount paid by the Principal pursuant to section 26C of the SOP Act will be a debt due from the Contractor to the Principal.

(g) If the Principal withholds money pursuant to a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act and the Contractor:

(i) pays the amount claimed to be due under the adjudication application to which the payment withholding claim relates; or

(ii) becomes aware that the adjudication application to which the payment withholding claim relates has been withdrawn,

then the Contractor must so notify the Principal within 5 days of the occurrence of the event in clauses 11.17(g)(i) or (ii) (as applicable) by providing to the Principal a statement in writing in the form of a statutory declaration together with such other evidence as the Principal may require evidencing that the amount has been paid or the adjudication application has been withdrawn (as the case may be).

11.18 Title

Title in all items forming part of the Works will pass progressively to the Principal on the earlier of payment for or delivery of such items to the Site. Risk in all such items remains with the Contractor until Completion.

11.19 Incentive

(a) As set out in the Performance and Compliance Incentive Payment Scheme, the Principal aims to achieve a high standard of performance and full compliance by the Contractor in respect of the following key results areas:

(i) environmental and sustainability management;

- (ii) communications and stakeholder management; and
- (iii) management of third party interfaces,

(KRAs).

- (b) Without in any way affecting the obligations of the Contractor under any Law, under any Authority Approval or under this Deed, the Principal agrees to pay to the Contractor with each payment by the Principal to the Contractor under clause 11.4 an amount (if any) determined under this clause 11.19 as an incentive to the Contractor's continuing level of performance.
- (c) The amount payable under clause 11.19(b) will be determined by the Principal's representative in its absolute discretion on a monthly basis in accordance with the Incentive Payment Scheme.
- (d) The maximum amount payable under clause 11.19(b) is set out in Schedule 16.
- (e) The Principal's Representative must, at the same time as it issues the payment statement under clause 11.3, issue a supplementary payment statement setting out the amount which it has determined as payable under clause 11.19(b). The determination by the Principal's Representative of the amount payable under clause 11.19(b) will be final and binding and not capable of review in any forum.

12 Completion

12.1 Progressive Inspection and Testing

- (a) At any time prior to Completion of a Portion, the Principal's Representative may direct that any materials or work forming part of the Contractor's Activities in respect of the Works or that Portion be tested. The Contractor must provide such assistance, documentation, records, personnel (including Subcontractors) and samples and make accessible such parts of the Contractor's Activities or Works as may be required. On completion of any test the Contractor must make good the Contractor's Activities or Works so that they fully comply with this Contract.
- (b) The Principal's Representative may direct that any part of the Contractor's Activities or the Works must not be covered up or made inaccessible without the Principal's Representative's prior approval.
- (c) The tests prescribed in this Contract must be conducted by the Contractor as and when provided for in this Contract, or may be conducted by the Principal's Representative or a person (that may include the Contractor) nominated by the Principal's Representative.
- (d) Any testing required to be done by an independent authority must be carried out by an authority recognised by the Joint Accreditation System of Australia and New Zealand.
- (e) Unless otherwise stated in this Contract before conducting a test under this Contract the Principal's Representative or the Contractor must give not less than two Business Days' notice in writing to the other of the time, date and place of the test. If the other party does not then attend, the test may nevertheless proceed.

- (f) Without prejudice to any other rights or remedies under this Contract, if the Contractor or the Principal's Representative delays in conducting a test, the other, after giving reasonable notice in writing of intention to do so, may conduct the test.
- (g) Each party must promptly make the results of tests available to the other and to the Principal's Representative.
- (h) Where the Principal's Representative directs that materials or work be tested, the costs of and incidental to testing must be valued under clause 6.4 and must be borne by the Principal or paid by the Principal to the Contractor unless:
 - (i) this Contract provides that the Contractor must bear the costs of the test is one which the Contractor was required to conduct other than pursuant to a direction under clause 12.1;
 - (ii) the test shows that the material or work is not in accordance with this Contract;
 - (iii) the test is in respect of a part of the Contractor's Activities or the Works covered up or made inaccessible without the Principal's Representative's prior approval where such was required; or
 - (iv) the test is consequent upon a failure of the Contractor to comply with a requirement of this Contract.
- (i) Where the extra costs are not to be borne by the Principal, they will be borne by the Contractor and will be a debt due from the Contractor to the Principal or paid by the Contractor to the Principal on demand.

12.2 Contractor to Notify

- (a) The Contractor must give the Principal's Representative and the Independent Certifier written notice 21 days before it anticipates achieving Completion of a Portion.
- (b) Following the issue by the Contractor of a notice under clause 12.2(a) the Contractor must:
 - (i) prepare a detailed procedure for the progressive inspection by the Principal's Representative and the Independent Certifier of the Works or that Portion; and
 - (ii) unless otherwise required under the TINSW Standard Requirements, provide a draft defects management plan (without identifying any defects in respect of the Works or that Portion).
- (c) The procedure and draft defects management plan referred to in clause 12.2(b) must be submitted to the Principal's Representative and the Independent Certifier and, prior to the inspection under clause 12.3(a) must, if required by the Principal's Representative or the Independent Certifier, be amended to ensure that the:
 - (i) procedure provides the Independent Certifier with sufficient time to properly carry out this progressive inspection and the final inspection which the Independent Certifier is required to undertake under clause 12.3 to determine whether Completion of a Portion (as the case may be) has occurred; and



- (ii) draft defects management plan fully addresses the matters the Principal's Representative or the Independent Certifier directs.

12.3 Inspection before Completion

- (a) The Principal's Representative, the Independent Certifier and the Contractor's Representative must, within 7 days of receipt by the Principal's Representative and the Independent Certifier of the notice referred to in clause 12.2(a), jointly inspect the Works or the Portion at a mutually convenient time.
- (b) Following the joint inspection under clause 12.3(a), the Independent Certifier must issue a notice to the Principal's Representative and the Contractor either:
 - (i) containing a list of the items that are apparent and it believes must be completed before Completion of the Works or the Portion is achieved; or
 - (ii) stating that it believes the Contractor is so far from achieving Completion of the Works or the Portion that it is not practicable to issue a list as contemplated in clause 12.3(b)(i).
- (c) When the Independent Certifier issues a notice under either clause 12.3(b)(i) or clause 12.3(b)(ii), the Contractor must continue to proceed to bring the Works or the Portion to Completion and thereafter when the Contractor considers it has achieved Completion of the Works or the Portion, the Contractor must notify the Principal's Representative and the Independent Certifier in writing by means of a Contractor's Certificate of Completion in the form of Schedule 21.

Thereafter the Principal's Representative, the Independent Certifier and the Contractor's Representative must jointly inspect the Contractor's Activities at a mutually convenient time.

- (d) Following the joint inspection under clause 12.3(c), the Independent Certifier must within 21 days of receipt of a notice under clause 12.3(c), or of receipt of a notice under clause 12.3(e), issue a notice to the Principal's Representative and the Contractor:
 - (i) if satisfied that Completion of the Works or the Portion has been achieved:
 - (A) stating the date on which the Independent Certifier determines Completion of the Works or the Portion was achieved; and
 - (B) containing a list of any minor Defects, of the type described in paragraph (a) of the definition of "Completion" in clause 1.1, that are apparent; or
 - (ii) If not satisfied that Completion of the Works or the Portion has been achieved:
 - (A) containing a list of the items that are apparent and it believes must be completed before Completion of the Works or the Portion is achieved; or
 - (B) stating that it believes the Contractor is so far from achieving Completion of the Works or the Portion that it

is not practicable to issue a list as contemplated by clause 12.3(c)(i)(A).

- (e) If the Independent Certifier issues a notice under either clause 12.3(c)(i)(A) or clause 12.3(d)(i)(B), the Contractor must continue to proceed to bring the Works or the Portion to Completion and thereafter when it considers it has achieved Completion of the Works or the Portion, the Contractor must notify the Principal's Representative and Independent Certifier by notice in writing, after which the second paragraph of clause 12.3(c), clause 12.3(d) and this clause 12.3(e) will reapply.
- (f) Where there are Portions, for the purposes of this Contract and without affecting the Contractor's obligation to achieve Completion of each Portion by the relevant Date for Completion of each Portion:
 - (i) no separate Date for Completion of the Works is specified in this Contract;
 - (ii) Completion of the Works is achieved by achieving Completion of all Portions;
 - (iii) Completion of the Works will be taken to have occurred once Completion of all Portions has occurred; and
 - (iv) the Date of Completion of the Works will be taken to be the Date of Completion of the last Portion to reach Completion.

12.4 Unilateral Issue of Notice of Completion

If at any time a notice required to be given by the Contractor to the Principal's Representative and the Independent Certifier under either of clauses 12.3(c) or 12.3(e) is not given by the Contractor, yet the Principal's Representative is of the opinion that Completion of a Portion has been achieved, the Principal's Representative may at any time and for any reason in its absolute discretion issue a Notice of Completion under clause 12.3(d)(i) for the Works or the Portion.

12.5 Hand Over upon Completion

The Contractor acknowledges that the Principal will require a progressive handover of the Works and that this handover will take place by the Contractor handing over each Portion once that Portion has reached Completion. The Principal's obligations under clause 3.1(b) in respect of the Site will then cease in respect of so much of the Site, access to which was provided for that Portion which is handed over to the Principal.

12.6 Part of the Works or a Portion

- (a) Without limiting clause 12.6(b), further Portions may be created by the Principal's Representative by issuing a written direction to the Contractor which clearly identifies for each, the
 - (i) portion of the Works;
 - (ii) Date for Completion; and
 - (iii) respective amounts for security, delay damages and liquidated damages (which will unless otherwise stated in the Principal's Representative's direction all be calculated pro-rata according to the ratio of the Principal's Representative's valuation of the Portion to the Contract Sum).

- (b) Without limiting clause 12.6(a), the Principal may, after the Contractor is given written notice by the Principal's Representative, occupy or use any part of the Works or a Portion although the whole of the Works or the Portion has not reached Completion.
- (c) If the Principal's Representative gives a notice under clause 12.6(b):
 - (i) the Principal must allow the Contractor reasonable access to the part of the Works or the Portion referred to in the notice and being occupied or used by the Principal, to enable the Contractor to bring the Works or the relevant Portion of which the area being occupied or used forms part to Completion; and
 - (ii) this will not otherwise limit or affect the obligations of the parties under this Contract, including the obligation of the Contractor to achieve Completion of the Works or the relevant Portion of which the area being occupied or used forms part, by the relevant Date for Completion.
- (d) The Principal or the Principal's Representative may waive any of the requirements for Completion in respect of a Portion, by notice in writing to the Contractor.

12.7 Liquidated Damages for Delay in Reaching Completion

- (a) Subject to clause 12.7(f), if Completion of a Portion has not occurred by the Date for Completion for the Portion, the Contractor must pay the Principal liquidated damages at the rates stated in Item 45 of Schedule 1 for every day after the Date for Completion of the Portion up to and including:
 - (i) the Date of Completion of the Portion; or
 - (ii) the date that this Contract is terminated under clause 14,
 whichever is first.
- (b) The Contractor acknowledges and agrees that:
 - (i) the liquidated damages payable under clause 12.7(a) in respect of any Portion are cumulative and payable regardless of the Date for Portion Completion, and the Date of Portion Completion, of any other Portion; and
 - (ii) where, on any single day, liquidated damages are payable in respect of the failure to achieve Portion Completion of more than one Portion, then the liquidated damages for each Portion will be aggregated and the total payable for that day.
- (c) The parties:
 - (i) agree that the amount of liquidated damages provided for in Item 45 of Schedule 1 constitutes a reasonable and good faith pre-estimate of the anticipated or actual loss or damage that will be incurred by the Principal as a result of Completion of a Portion not occurring on or before the relevant Date for Completion (except for amounts referred to in clause 12.7(e));
 - (ii) desire to avoid the difficulties of proving damages in connection with such failure and agree that the liquidated damages payable by the Contractor in accordance with clause 12.7(a) are

reasonable and do not constitute nor are they intended to be a penalty,

- (iii) agree that the amount of liquidated damages payable by the Contractor under clause 12.7(a) will be recoverable from the Contractor as a debt immediately due and payable to the Principal; and
 - (iv) agree that, subject to clause 12.7(e), the payment of the amount of liquidated damages provided for in Item 45 of 1 constitutes the extent of the Principal's entitlement to recover Loss (including as a result of a Claim by any Other Contractor) as a result of Completion of a Portion not occurring on or before the relevant Date for Completion.
- (d) Subject to clause 12.7(c)(iv), the Contractor must indemnify the Principal against any Claim that the Principal must pay to any Other Contractor as a result of a breach of clause 10.1 by the Contractor.
- (e) If clause 12.7(a) is found for any reason to be void, invalid or otherwise inoperative so as to disentitle the Principal from recovering liquidated damages, the Principal will be entitled to recover general damages as a result of the Contractor failing to achieve Completion of a Portion by the relevant Date for Completion, but the Contractor's liability for such damages (whether per day or in aggregate) will not be any greater than the liability which the Contractor would have had if clause 12.7(a) had not been void, invalid or otherwise inoperative.
- (f) The Contractor's aggregate liability under clauses 12.7(a) and 12.7(e) is limited to the amount set out in Item 46 of Schedule 1.

12.8 Final Completion

- (a) The Contractor must give the Principal's Representative and the Independent Certifier written notice two months before it anticipates completing all the work to be completed prior to achieving Final Completion.
- (b) The Principal's Representative, the Independent Certifier and the Contractor's Representative must, within 28 days before the date the Principal's Representative expects Final Completion to occur, but no earlier than 28 days before the end of the latest Defects Rectification Period, jointly inspect the Works at a mutually convenient time.
- (c) Following the joint inspection under clause 12.8(b), the Independent Certifier must issue a notice to the Principal's Representative and the Contractor containing a list of the items that are apparent and it believes must be completed before Final Completion is achieved.
- (d) If the Independent Certifier issues a notice under clause 12.8(c), the Contractor must continue to bring the Works to Final Completion and thereafter when the Contractor considers it has achieved Final Completion, the Contractor must notify the Principal's Representative and the Independent Certifier in writing by means of a Contractor's Certificate of Final Completion in accordance with Schedule 22. Thereafter, the Principal's Representative, the Independent Certifier and the Contractor's Representative must jointly inspect the Works at a mutually convenient time.
- (e) Following the joint inspection under clause 12.8(d), the Independent Certifier must within 21 days of receipt of a notice under clause 12.8(d),

or of receipt of a notice under clause 12.8(f), issue a notice to the Principal's Representative and the Contractor:

- (i) if satisfied that Final Completion has been achieved, stating the date on which the Independent Certifier determines Final Completion was achieved; or
 - (ii) if not satisfied that Final Completion has been achieved:
 - (A) containing a list of the items which it believes must be completed before Final Completion is achieved; or
 - (B) stating that it believes the Contractor is so far from achieving Final Completion that it is not practicable to issue a list as contemplated by clause 12.8(e)(ii)(A).
- (f) If the Independent Certifier issues a notice under clause 12.8(e)(i)(A) or clause 12.8(e)(ii)(B), the Contractor must continue to proceed to bring the Works to Final Completion and thereafter when it considers it has achieved Final Completion of the Works the Contractor must notify the Principal's Representative and the Independent Certifier in writing after which the second sentence of clause 12.8(d), clause 12.8(e) and this clause 12.8(f) will reapply.

12.9 Effect of Notice of Completion or Final Completion

A notice issued under clause 12.3(d)(i) or 12.8(e)(i) will not:

- (a) constitute approval by the Principal or the Principal's Representative of the Contractor's performance of its obligations under this Contract;
- (b) be taken as an admission or evidence that the Works or the Portion complies with the requirements of this Contract; or
- (c) prejudice any rights or powers of the Principal or the Principal's Representative.

13 Care of the Works, Risks and Insurance

13.1 Risk of the Works

Save to the extent that loss or damage is caused by an Excepted Risk, the Contractor will bear the risk of and indemnify the Principal against:

- (a) any loss of or damage to:
 - (i) the Works,
 - (ii) plant, equipment and Work and Temporary Works; and
 - (iii) unfixed goods and materials (whether on or off Site), including anything provided by the Principal to the Contractor or brought onto Site by a Subcontractor, used or to be used in carrying out the Contractor's Activities,
- until:
- (iv) in the case of loss or damage to the Works, a Notice of Completion is issued for the Works; and

- (v) otherwise, a Notice of Completion is issued for the Works to reach Completion; and
- (b) after the issue of a Notice of Completion for the Works, any loss of or damage to the Works arising from any act or omission of the Contractor during the Defects Rectification Period or from an event which occurred prior to the Issue of the Notice of Completion for the Works.

13.2 Contractor's Indemnity

- (a) The Contractor will indemnify the Principal against any Loss incurred by the Principal in respect of:
 - (i) damage to, loss or destruction of, or loss of use or access to (whether total or partial), any real or personal property of the Principal (other than property referred to in clause 13.1(a));
 - (ii) any Claim against the Principal in respect of:
 - (A) any illness, personal injury to or death of any person; or
 - (B) damage to, loss or destruction of, or loss of use of or access to (whether total or partial) any real or personal property,
 caused by, arising out of, or as a consequence of, any act or omission of the Contractor or its Associates; and
 - (iii) any Claims by a third party in respect of loss of or damage to property or injury to or death of persons, caused by, or arising out of, or in any way in connection with, the Contractor's Activities.
- (b) The Contractor's responsibility to indemnify the Principal will be reduced to the extent that an act or omission of the Principal, the Principal's Representative or an Other Contractor contributed to the loss, damage, injury or death.

13.3 Reinstatement

- (a) During the period which the Contractor bears the risk of loss or damage, and while the Contractor is responsible for its care, if loss or damage occurs to anything for which the Contractor is responsible under clause 13.1, the Contractor must:
 - (i) subject to clause 13.3(b), promptly replace or otherwise make good the Loss or repair the damage;
 - (ii) where the loss or damage arises from an Excepted Risk, without fault or omission on the part of the Contractor, only comply with paragraph (a) to the extent directed by the Principal's Representative; and
 - (iii) (if the loss or damage arises as a result of a faulty or flawed design) redesign in accordance with the requirements of this Contract.
- (b) The Contractor will bear the cost of such replacement, making good or repair except to the extent that the loss or damage arises from an act or omission of the Principal, the Principal's Representative or an Other Contractor.

13.4 Insurance by the Principal

- (a) The Principal must, from the date of this Contract, effect the insurance (if any) specified in Item 47 of Schedule 1.
- (b) If the Principal is required under this clause 13.4 to effect any insurance, copies of the relevant insurance policies are included in Exhibit C.
- (c) The insurance required under this clause 13.4 is subject to the exclusions, conditions and excesses noted in the policies, and the Contractor:
 - (i) must satisfy itself of the nature and extent of the Principal's insurance;
 - (ii) acknowledges that the insurances effected by the Principal do not cover every risk to which the Contractor might be exposed and are subject to deductibles and limits, and the Contractor may at its cost, take out insurance to:
 - (A) insure any risks not insured by the Principal's insurance; or
 - (B) cover any such exclusions, conditions or excesses in that insurance,which the Contractor wants to insure against or cover;
 - (iii) where it bears the risk of the relevant loss or damage under clause 13.1 or is required to indemnify the Principal under clause 13.2, must bear the cost of any excesses in the Principal's insurance;
 - (iv) will be responsible for paying or bearing all excesses in relation to insured matters under the insurances effected by the Principal in accordance with the policy terms; and
 - (v) may effect its own insurance to cover the amount of any excess.

13.5 Contractor insurance obligations

The Contractor must:

- (a) from the date of this Contract effect and have in place the following insurance with insurers and on terms satisfactory to the Principal's Representative, unless the Principal is required to effect any such insurance in accordance with clause 13.4:
 - (i) Workers Compensation Insurance;
 - (ii) Construction Plant Insurance which provides cover against all physical loss or damage to any such Construction Plant;
 - (iii) Motor Vehicle Insurance which provides cover against:
 - (A) loss or damage to the Contractor's vehicles whether owner, hired or leased by the Contractor, in connection with the Contractor's Activities;
 - (B) third party property damage and injury or death to persons (other than as required by statute) in respect of

all vehicles used in connection with the Contractor's Activities; and

- (iv) Professional Indemnity Insurance which covers the Contractor's liability in respect of breaches of professional duty (whether owed in contract or otherwise) by the Contractor or its Subcontractors in carrying out the works or the Contractor's Activities,

for at least the amounts specified in Item 48 of Schedule 1;

- (b) in relation to the Workers Compensation Insurance, ensure that each of its Subcontractors has similar insurance to the Workers Compensation Insurance covering the Subcontractors' employees; and
- (c) provide the Principal's Representative with a copy of any required insurance policy and evidence satisfactory to the Principal's Representative that the policy is current as required by the Principal's Representative from time to time.

13.6 Period of insurance

The insurance which the parties are required to have in place under this clause 13 must be maintained:

- (a) in the case of Works Insurance, until the later of:
 - (i) the end of the last Defects Rectification Period, and
 - (ii) the date upon which all Defects have been rectified in accordance with the Contract,
- (b) in the case of Public and Product Liability Insurance and Workers Compensation Insurance, until the later of:
 - (i) the end of the last Defects Rectification Period; and
 - (ii) the date upon which all Defects have been rectified in accordance with the Contract;
- (c) in the case of Construction Plant Insurance, until the later of:
 - (i) the end of the last Defects Rectification Period; and
 - (ii) the date upon which all Defects have been rectified in accordance with the Contract;
- (d) in the case of Motor Vehicle Insurance, until the later of:
 - (i) the end of the last Defects Rectification Period; and
 - (ii) the date upon which all Defects have been rectified in accordance with the Contract;
- (e) in the case of Professional Indemnity Insurance, until the expiration of 7 years following the Date of Completion of the last Portion to achieve Completion;
- (f) in the case of Workers Compensation Insurance, until the later of:
 - (i) the end of the last Defects Rectification Period; and

- (ii) the date upon which all Defects have been rectified in accordance with the Contract.

13.7 Insurers

The insurance which the Contractor is required to have in place under clause 13.5 must be maintained with insurers that:

- (a) are authorised under the *Insurance Act 1973* (Cth) to carry on an insurance business in Australia and are supervised by the Australian Prudential Regulation Authority; and
- (b) have a credit rating of at least A- from Standard & Poor's or an equivalent rating from another internationally recognised rating agency.

13.8 Insurance obligations

- (a) The Contractor must ensure that it:
 - (i) does not do anything which prejudices any insurance;
 - (ii) if necessary, rectifies anything which might prejudice any insurance;
 - (iii) reinstates an insurance policy if it lapses;
 - (iv) does not cancel, vary or allow an insurance policy to lapse without the prior written consent of the Principal's Representative;
 - (v) immediately notifies the Principal's Representative of any event which may result in an insurance policy lapsing or being cancelled; and
 - (vi) gives full, true and particular information to the insurer of all matters and things the non-disclosure of which might in any way prejudice or affect any such policy or the payment of all or any benefits under the insurance.
- (b) The Contractor must ensure that each insurance which is required to be effected by it under this Contract:
 - (i) does not contain any exclusion, endorsement or alteration unless it is first approved in writing by the Principal, which approval by the Principal must not be unreasonably withheld; and
 - (ii) must cover any liability to GST such that the proceeds of any claim under the policy (after payment of GST) are sufficient to fully indemnify the Insured who suffers the loss that is claimed.
- (c) The Insurances referred to in clauses 13.5(a)(ii) must name the Principal and the Contractor and must provide that:
 - (i) all insurance agreements and endorsements (with the exception of limits of liability) name, and operate as if there was a separate policy of insurance covering the Principal and the Contractor;
 - (ii) failure by any insured to observe and fulfil the terms of the policy does not prejudice the insurance of any other insured;

- (ii) any non-disclosure by one insured does not prejudice the right of any other insured to claim on the policy;
- (iv) a notice to the insurer by one insured will be deemed to be notice by all insured parties; and
- (v) the insurer:
 - (A) waives all rights, remedies or relief to which it might otherwise be entitled by way of subrogation against the Principal and the Contractor; and
 - (B) agrees to provide the Principal with a copy.

13.9 Failure to insure

If the Contractor fails to:

- (a) provide copies of any insurance policy together with evidence satisfactory to the Principal's Representative that the policy is current; or
- (b) effect insurance which is with insurers and on terms satisfactory to the Principal's Representative,

as required by clause 13.4, the Principal may, without prejudice to any other rights it may have, effect the insurance and the cost will be a debt due from the Contractor to the Principal.

13.10 Notice of potential Claim

The Contractor must:

- (a) as soon as possible inform the Principal in writing of any occurrence that may give rise to a claim under an insurance policy required by the Contract;
- (b) keep the Principal informed of subsequent developments concerning the claim; and
- (c) ensure that its Subcontractors similarly inform the Contractor and the Principal in respect of occurrences which may give rise to a claim by them.

13.11 Cross liability

Where the Contract requires insurance to be effected in joint names, the party effecting the insurance must ensure that the insurance policy provides that:

- (a) insofar as the policy may cover more than one insured, all insuring agreements and endorsements (with the exception of limits of liability) will operate in the same manner as if there were a separate policy of insurance covering each named insured;
- (b) the insurer waives all rights, remedies or relief to which it might become entitled by subrogation against any of the parties covered as an insured and that failure by any insured to observe and fulfil the terms of the policy will not prejudice the Insurance in regard to any other insured;
- (c) any non-disclosure by one insured does not prejudice the right of any other insured to claim on the policy; and



- (d) a notice to the insurer by one insured will be deemed to be notice by all insured parties.

13.12 Liabilities unaffected

The effecting of insurance by the Contractor or the Principal and the approval of any insurance policy, terms of insurance or insurer by the Principal's Representative does not limit any obligations or liabilities of the Contractor (including the obligation to effect the insurances required by the Contract)

14 Default or Insolvency

14.1 Contractor's Default

- (a) If the Contractor commits a breach of this Contract referred to in clause 14.1(b), the Principal may give the Contractor a written notice.
- (b) The breaches by the Contractor to which this clause applies are:
- (i) not commencing or not progressing the Contractor's Activities regularly and diligently in accordance with the requirements of this Contract, in breach of clause 10.1;
 - (ii) failing to achieve Completion by the Date for Completion;
 - (iii) suspension of work, or failing to proceed with the Contractor's Activities with due expedition and without delay, in breach of clause 10.1;
 - (iv) failing to provide the security, in breach of clause 2.7;
 - (v) failing to provide evidence of insurance, in breach of clause 4.3;
 - (vi) failing to use the materials or standards of workmanship required by this Contract, in breach of clause 4.1;
 - (vii) not complying with any direction of the Principal's Representative made in accordance with this Contract, in breach of clause 9.1(a);
 - (viii) fails to enter into the Independent Certifier Deed in accordance with clause 7.12(c);
 - (ix) not complying with the requirements of this Contract regarding the Contract Management Plan in a material respect;
 - (x) not complying with its obligations under:
 - (A) the TfNSW Standard Requirements with regard to the Contract Management Plan; or
 - (B) the TfNSW Standard Requirements with regard to technical management;
 - (xi) not complying with its environmental obligations under this Contract;
 - (xii) not complying with its obligations under this Contract in relation to the Third Party Agreements;

- (xiii) not complying with its obligations under this Contract regarding work health and safety;
- (xiv) the failure to comply with all applicable Law, including the failure to comply with, carry out and fulfil the conditions and requirements of all Authority Approvals in breach of clause 2.3; or
- (xv) any other failure to comply with a material obligation under the Contract.

14.2 Contents of Notice

A written notice under clause 14.1 must:

- (a) state that it is a notice under clause 14.1 or clause 14.3 (as the case may be);
- (b) specify the alleged breach;
- (c) require the Contractor to remedy the breach or, in the case of a notice by the Principal where the breach is not capable of being remedied, make other arrangements satisfactory to the Principal; and
- (d) specify the time and date by which the Contractor must remedy the breach or make other arrangements satisfactory to the Principal (which time must not be less than 21 clear days after the notice is given).

14.3 Rights of the Principal Following Notice

- (a) Upon giving a notice under clause 14.1, the Principal may suspend payments to the Contractor until the date upon which the Contractor remedies the breach or makes arrangements satisfactory to the Principal.
- (b) If, by the time specified in a notice under clause 14.1, the Contractor fails to remedy the breach or make arrangements satisfactory to the Principal, the Principal may, by notice in writing to the Contractor:
 - (i) take out of the hands of the Contractor the whole or part of the work remaining to be completed; or
 - (ii) terminate this Contract.

14.4 Immediate Termination or Take-Out

If:

- (a) whether or not the Contractor is then in breach of this Contract:
 - (i) an Insolvency Event occurs:
 - (A) to the Contractor;
 - (B) where the Contractor comprises more than one person, any one of those persons; or
 - (C) to a person specified in Item 49 of Schedule 1;

- (ii) the Contractor causes or contributes to the occurrence of an Incident and fails to ensure that the Principal is promptly notified as set out in clause 2.13(d);
- (iii) the Joint Venture Agreement is terminated without the consent of the Principal;
- (iv) there is a breach of clause 2.22(d);
- (v) there is an exercise by either of the Joint Venturers of the rights contained in clause 5.8 or 9 of the Joint Venture Agreement without the consent of the Principal, or
- (vi) there is a misrepresentation in any payment claim made by the Contractor relating to the self-performance of Utilities Target Cost Scope.

then the Principal may, without giving a notice under clause 14.1, exercise the right under clauses 14.3(b)(i) or 14.3(b)(ii).

14.5 Principal's Common Rights After Take-Out or Termination

If:

- (a) the Principal:
 - (i) exercises its rights under clause 14.3(b)(i); or
 - (ii) terminates this Contract under clauses 14.3(b)(ii), 14.4 or 14.9;
- (b) the Contractor repudiates this Contract and the Principal otherwise terminates this Contract; or
- (c) this Contract is frustrated under the Law,

then:

- (d) the Contractor:
 - (i) must novate to the Principal or the Principal's nominee those Subcontracts between the Contractor and its Subcontractors that the Principal directs;
 - (ii) irrevocably appoints (for valuable consideration) the Principal and any authorised representative of the Principal to be the Contractor's attorney to:
 - (A) execute, sign, seal and deliver all notices, deeds and documents; and
 - (B) undertake actions in the name of the Contractor,
 for the purposes referred to in clause 14.5(d)(i); and
 - (iii) must immediately hand over to the Principal's Representative all copies of:
 - (A) any documents provided by the Principal to the Contractor;



- (B) all Contract Documentation prepared by the Contractor to the date on which the Principal exercises its rights under clauses 14.3(b)(i) or 14.3(b)(ii) (whether complete or not); and
 - (C) any other documents or information in existence that is to be provided to the Principal under the terms of this Contract; and
- (e) the Principal:
- (i) will be entitled to require the Contractor to remove from the Site or any area affected by the Works, any Construction Plant and Temporary Works and all materials, equipment and other things intended for the Works;
 - (ii) may complete that work;
 - (iii) may take possession of such of the Construction Plant, Temporary Works and other things on or in the vicinity of the Site or Extra Land as are owned by the Contractor and are reasonably required by the Principal to facilitate completion of the work; and
 - (iv) must, if it takes possession of the items referred to in clause 14.5(e)(iii):
 - (A) for the period during which it retains possession of the Construction Plant, Temporary Works or other things pay to the Contractor rent for the use of the Construction Plant, Temporary Works or other things at a market rate to be agreed by the parties or, failing agreement, to be determined pursuant to clause 15; and
 - (B) maintain the Construction Plant, Temporary Works or other things and, subject to clause 14.6, on completion of the work return to the Contractor the Construction Plant, Temporary Works and any things taken under clause 14.5(e)(iii) which are surplus.

This clause 14.5 will survive the termination or frustration of this Contract.

14.6 Principal's Entitlements after Take-Out

- (a) If the Principal exercises the right under clause 14.3(b)(i), the Contractor will not be entitled to any further payment in respect of the work taken out of the hands of the Contractor unless a payment becomes due to the Contractor under this clause 14.6.
- (b) When work taken out of the hands of the Contractor under clause 14.3(b)(i) is completed, the Principal's Representative will ascertain the cost incurred by the Principal in completing the work and will issue a certificate certifying the amount.
- (c) If the cost incurred by the Principal is greater than the amount that would have been paid to the Contractor if the Contractor had completed the work, the difference will be a debt due from the Contractor to the Principal. If the cost incurred by the Principal is less than the amount that would have been paid to the Contractor if the Contractor had completed the work, the difference will be a cost due to the Contractor from the Principal.

- (d) Without limiting clause 14.5(c), if the Principal exercises the right under clause 14.3(b)(i), the Principal will be entitled to recover from the Contractor any costs, expenses, Losses or damages incurred or suffered by it as a result of, or arising out of, or in any way in connection with, the exercise of such right.
- (e) If the Contractor is indebted to the Principal, the Contractor grants to the Principal a lien over the Construction Plant, Temporary Works or other things taken under clause 14.5 such that the Principal may retain that property until the debt is met. If after reasonable notice, the Contractor fails to pay the debt, the Principal may sell the Construction Plant, Temporary Works or other things and apply the proceeds to satisfaction of the debt and the costs of sale. Any excess will be paid to the Contractor.

14.7 Principal's Rights after Termination

Subject to clause 14.11, if the Principal terminates this Contract under clauses 14.3 or 14.4, or if the Contractor repudiates this Contract and the Principal otherwise terminates this Contract the Principal will:

- (a) not be obliged to make any further payments to the Contractor, including any money that is the subject of a payment claim under clause 11.2 or a payment statement under clause 11.3;
- (b) be absolutely entitled to call upon, convert and have recourse to and retain the proceeds of any unconditional undertaking held under clause 2.7; and
- (c) be entitled to recover from the Contractor any costs, expenses, Losses or damages incurred or suffered by it as a result of, or arising out of, or in any way in connection with, such termination.

This clause 14.7 survives the termination of this Contract.

14.8 Contractor's Rights after Repudiation or Wrongful Termination

- (a) If the Principal:
 - (i) repudiates this Contract and the Contractor terminates this Contract; or
 - (ii) wrongfully:
 - (A) exercises or attempts to exercise any right or power conferred on it by clauses 14.3, 14.4 or 14.9, or
 - (B) determines or purports to determine this Contract at common law.
- then the:
- (i) Principal's actions will be deemed to have been a lawful termination in accordance with clause 14.9 and the Contractor's sole rights in such circumstances will be those set out in clause 14.10; and
 - (iv) Contractor:
 - (A) will not be entitled to the payment of damages;

- (B) will not be entitled to any payment on a quantum meruit basis; and
- (C) waives all other rights it has to make a Claim in such circumstances.

(b) This clause 14.8 will survive the termination of this Contract.

14.9 Termination for Convenience

Without prejudice to any of the Principal's other rights or entitlements or powers under this Contract, the Principal may:

- (a) at any time for its sole convenience, and for any reason, by written notice to the Contractor terminate this Contract effective from the time stated in the notice or if no such time is stated, at the time the notice is given to the Contractor; and
- (b) thereafter, at the Principal's absolute discretion complete the uncompleted part of the Contractor's Activities or the Works either itself or by engaging Other Contractors.

14.10 Payment for Termination for Convenience

If the Principal terminates this Contract under clause 14.9, the Contractor:

- (a) will be entitled to payment of the following amounts as determined by the Principal's Representative:
 - (i) for work carried out prior to the date of termination, the amount which would have been payable if this Contract had not been terminated and the Contractor submitted a payment claim under clause 11.2 for work carried out to the date of termination;
 - (ii) the cost of plant and materials reasonably ordered by the Contractor for the Works and for which it is legally bound to pay provided that:
 - (A) the value of the plant or materials have not been previously paid or included in the amount payable under clause 14.10(a)(i); and
 - (B) title in the plant and materials vests in the Principal upon payment;
 - (iii) the reasonable cost of removing from the Site all labour, Construction Plant, Temporary Works (where required by the Principal) and other things used in the Contractor's Activities that are not part of, or to be part of, the Works;
 - (iv) the costs reasonably incurred by the Contractor in the expectation of completing the whole of the Contractor's Activities and not included in any other payment by the Principal; and
 - (v) the amount specified in Item 50 of Schedule 1, for all overheads and profit associated with, and to the extent not included in, the work and costs determined under clauses 14.10(a)(ii), (iii) and (iv); and
- (b) must take all steps possible to mitigate the costs referred to in clauses 14.10(a)(a)(i) and 14.10(a)(a)(ii).

To the extent it has not had recourse to them, the Principal will return all unconditional undertakings then held by it under clause 2.7 when the Contractor has complied with all its obligations under this clause.

The amount to which the Contractor is entitled under this clause 14.10 will be a limitation upon the Principal's liability to the Contractor arising out of, or in any way in connection with, the termination of this Contract and the Principal will not be liable to the Contractor upon any Claim arising out of, or in any way in connection with, the termination of this Contract other than for the amount payable under this clause 14.10.

This clause 14.10 will survive the termination of this Contract by the Principal under clause 14.9.

14.11 Preservation of Rights

Subject to clause 14.8, nothing in this clause 14 or that the Principal does or fails to do pursuant to this clause 14 will prejudice the right of the Principal to exercise any right or remedy (including recovering damages or exercising a right of set-off under clause 16.12) which it may have where the Contractor breaches (including repudiates) this Contract.

14.12 Termination by Frustration

If under the law this Contract is frustrated the Principal will:

- (a) pay the Contractor the following amounts as determined by the Principal's Representative:
 - (i) an amount calculated in accordance with clause 14.10(a)(i) for work carried out prior to the date of frustration,
 - (ii) the costs calculated in accordance with the terms of, and subject to the conditions in, clauses 14.10(a)(ii); and
 - (iii) the costs calculated in accordance with the terms of clauses 14.10(a)(iii) and 14.10(a)(iv); and
- (b) to the extent it has not had recourse to them, return all unconditional undertakings then held by it under clause 2.7 when the Contractor has complied with its obligations under this clause.

The amount to which the Contractor is entitled under this clause 14.12 will be a limitation upon the Principal's liability to the Contractor arising out of, or in any way in connection with, the frustration of this Contract and the Principal will not be liable to the Contractor upon any Claim arising out of, or in any way in connection with, the frustration of this Contract other than for the amount payable under this clause 14.12.

Without limiting any other provision of this Contract, this clause 14.12 will survive the frustration of this Contract.

14.13 Codification of Contractor's Entitlements

This clause 14 is an exhaustive code of the Contractor's rights arising out of or in any way in connection with any termination and the Contractor:

- (a) cannot otherwise terminate, rescind or treat this Contract as repudiated; and

- (b) waives all rights at Law to terminate, rescind or treat this Contract as repudiated,

otherwise than in accordance with this clause 14.

15 Disputes

15.1 Notice of Dispute

- (a) If a dispute or difference arises between the Contractor and the Principal or between the Contractor and the Principal's Representative in respect of any fact, matter or thing arising out of, or in any way in connection with, the Contractor's Activities, the Works or the subject matter of this Contract, ("Dispute") the Dispute must be determined in accordance with the procedure in this clause 15.
- (b) Where such a Dispute arises, either party may give a notice in writing to the Principal's Representative and the other party ("Notice of Dispute"). The Notice of Dispute must:
 - (i) specify the Dispute,
 - (ii) provide particulars of the party's reasons for being dissatisfied;
 - (iii) set out the position which the party believes is correct; and
 - (iv) in the case of a Dispute in respect of a direction of the Principal's Representative under one of the clauses referred to in Item 51 of Schedule 1 (a "Schedule 1 Dispute"), be given in accordance with clause 15.2.
- (c) Where the notice is given by the Contractor, if the Contractor fails to provide sufficient particulars of the Dispute to enable the Principal's Representative to properly consider the matter, then the Principal's Representative may request the Contractor to provide further particulars of the Dispute in which event the Contractor must provide the further particulars within 14 days of receipt of the request to provide the further particulars

15.2 Time for Submitting Notice Concerning Principal's Representative's Direction

- (a) If the Contractor wishes to have a direction by the Principal's Representative under one of the clauses referred to in Item 51 of Schedule 1 opened up, reviewed, decided and substituted the Contractor must give a Notice of Dispute in respect of the Dispute to the Principal and the Principal's Representative within 14 days of the date of the direction, after which the Principal's Representative may review the Dispute and make a determination in accordance with clause 15.3.
- (b) If the Contractor fails to give such a Notice of Dispute to the Principal and the Principal's Representative within the time period required by this clause 15.2:
 - (i) the direction will be final and binding and will not be capable of being challenged, opened up or reviewed in any forum; and
 - (ii) where the direction relates to the rejection or deemed rejection of a Claim pursuant to clause 17.4, the Claim will be barred in accordance with clause 17.6.

15.3 Determination of Schedule 1 Disputes by the Principal's Representative

- (a) Upon receipt of a Notice of Dispute in respect of a Schedule 1 Dispute which is given in accordance with clause 15.2, the Principal's Representative may review and make a determination in respect of the Dispute
- (b) The determination of the Principal's Representative in respect of any such Notice of Dispute:
 - (i) must be in writing;
 - (ii) must be given within 21 days after the Notice of Dispute is given or where further particulars have been requested under clause 15.1, within 21 days after the further particulars have been provided to the Principal's Representative;
 - (iii) will be substituted for the relevant direction the subject of the Notice of Dispute; and
 - (iv) is to be given effect to by the parties unless and until it is reversed, overturned or otherwise changed under the procedure in the following clauses.
- (c) If the Principal's Representative fails to make a determination as required by this clause 15.3, the direction the subject of the Notice of Dispute will be deemed to be confirmed by the Principal's Representative.

15.4 Response to Notice of Dispute

Where a Notice of Dispute has been given in accordance with clause 15.1 and 15.2 (where applicable), then the party to whom the Notice of Dispute is addressed must:

- (a) if the Notice of Dispute does not relate to a Schedule 1 Dispute, within 21 days of the date of:
 - (i) receipt of the Notice of Dispute; or
 - (ii) if any further particulars have been requested under clause 15.1, receipt of those particulars; or
- (b) if the Notice of Dispute does relate to a Schedule 1 Dispute and if the direction is confirmed, or deemed to have been confirmed, by the Principal's Representative under clause 15.3, within 42 days of the receipt of the Notice of Dispute,

provide a response in writing indicating whether or not it agrees with the position set out in the Notice of Dispute.

15.5 Executive Negotiation

- (a) If the Dispute is not resolved within 14 days of:
 - (i) the date of receipt of the response to the Notice of Dispute pursuant to clause 15.4; or
 - (ii) if no response is received, the date specified for the provision of a response pursuant to clause 15.4,

(the "Referral Date") either party may by notice in writing refer the Dispute to the Executive Negotiators who must:

- (iii) meet on a without prejudice basis and undertake genuine and good faith negotiations with a view to:
 - (A) clarifying and narrowing the issues in dispute in the event that litigation is commenced in respect of the Dispute; and
 - (B) resolving the Dispute; and
 - (iv) if they cannot resolve the Dispute, endeavour to agree upon a procedure to resolve the Dispute.
- (b) If appropriate in the circumstances, at or prior to the meeting referred to in clause 15.5(a) the parties will exchange documents critical to the resolution of the Dispute, on a without prejudice basis.

15.6 Expert Determination

- (a) If a Dispute relating to a Schedule 1 Dispute is referred for resolution under clause 15.5 and it is not resolved within 21 days after the Referral Date, the dispute must be submitted to an expert determination.
- (b) The dispute will be referred to an expert determination whether or not the Executive Negotiators have complied with clauses 15.5(a)(iii), 15.5(a)(iv) and 15.5(b).

15.7 The Expert

The expert determination under clause 15.6 is to be conducted by:

- (a) an independent industry expert agreed by the Principal and the Contractor; or
- (b) where the parties are unable to agree upon an independent industry expert within 42 days after the Referral Date, or where an independent industry expert appointed under this clause 15.7:
 - (i) is unavailable;
 - (ii) declines to act;
 - (iii) does not respond within 14 days to a request by one or both parties for advice as to whether he or she is able to conduct the determination; or
 - (iv) does not make a determination within the time required by clause 15.8(e).

an independent industry expert appointed by the Chair of Resolution Institute.

15.8 Rules of Expert Determination

- (a) An expert determination conducted under this clause 15 is not an arbitration and the expert is not an arbitrator. The expert may reach a decision from his or her own knowledge and expertise.

- (b) The expert determination must be made in accordance with the rules for the expert determination process included in the agreement which appears in Schedule 26 or such other rules as the parties and the expert may agree.
- (c) The expert must:
 - (i) disclose to the parties any interest he or she has in the outcome of the determination; and
 - (ii) not communicate with one party to the determination without the knowledge of the other.
- (d) Each party will,
 - (i) bear its own costs in respect of any expert determination; and
 - (ii) pay one-half of the expert's costs.
- (e) Unless otherwise agreed between the parties, the expert must notify the parties of his or her decision upon an expert determination conducted under this clause 15 within the period set out in the agreement between the parties and the expert.

15.9 Agreement with Expert

- (a) The expert will not be liable to the parties arising out of, or in any way in connection with, the expert determination process, except in the case of fraud.
- (b) The parties must enter into an agreement with the appointed expert on the terms set out in Schedule 26 or such other terms as the parties and the expert may agree.

15.10 Determination of Expert

The determination of the expert:

- (a) must be given to the parties in writing;
- (b) will be:
 - (i) substituted for the relevant direction of the Principal's Representative; and
 - (ii) final and binding.

unless a party gives a notice of appeal to the other party within 21 days of receipt of the determination; and

- (c) is to be given effect to by the parties unless and until it is reversed, overturned or otherwise changed by way of litigation.

Where a party gives a notice of appeal under this clause 15.10, either party may commence litigation in respect of the Dispute.

15.11 Litigation

If a Dispute does not relate to a Schedule 1 Dispute and is referred for resolution under clause 15.1, then whether or not the Executive Negotiators have complied

with clauses 15.5(a)(iii), 15.5(a)(iv) and 15.5(b), if the Dispute is not resolved, or no agreement on a procedure to resolve the Dispute has been reached, within 14 days after the Referral Date, or within such longer period of time as these persons may agree in writing, either party may commence litigation in respect of the Dispute.

15.12 Survive Termination

This clause 15 will survive the termination of this Contract.

15.13 Continuation of Work

Despite the existence of a Dispute between the parties this Contract, the Contractor must:

- (a) continue to carry out the Contractor's Activities; and
- (b) otherwise comply with its obligations under this Contract.

15.14 Urgent Relief

Nothing in this clause 15 will prejudice the right of a party to seek urgent injunctive or declaratory relief from a court.

16 General

16.1 Notices

- (a) At any time and from time to time the Principal's Representative may notify the Contractor of an electronic portal or document management system to be used for the purposes of this Contract ("Electronic Portal"). The Principal's Representative's notice will set out:
 - (i) the relevant Electronic;
 - (ii) the commencement date for the use of the Electronic Portal;
 - (iii) any password, login details or similar information required for the Contractor to use the Electronic Portal;
 - (iv) address details for the Principal, the Principal's Representative and the Contractor; and
 - (v) any other information reasonably necessary for the use and service of notices via the Electronic Portal.
- (b) Any notices contemplated by this Contract must be in writing and must:
 - (i) before the date referred to in clause 16.1(a)(i), be delivered or posted to the relevant address shown in Item 53 of Schedule 1 (or to any new address notified by the intended recipient); and
 - (ii) on and from the date referred to in clause 16.1(a)(ii):
 - (A) in the case of notices by the Contractor:
 - (aa) without limiting clause 16.1(b)(i)(A)(ab), be sent to the Electronic Portal address of the Principal.

or the Principal's Representative (as applicable); and

(ab) under clauses 10, 11, 12, 14, 15 or 17 or concerning a claim for payment, in addition to the copy of the notice sent pursuant to clause 16.1(b)(ii)(A)(aa), also be delivered or posted to the relevant address shown in Item 53 of Schedule 1 (or to any new address notified by the intended recipient); and

(B) in the case of notices by the Principal or the Principal's Representative:

(aa) be delivered or posted to the relevant address shown in Item 53 of Schedule 1 (or to any new address notified by the intended recipient); or

(ab) except in relation to notices by the Principal under clauses 14.3, 14.4, 14.9 or 15.1, be sent to the Electronic Portal address of the intended recipient.

(c) For the avoidance of doubt, no notice referred to in clause 16.1(b)(ii)(A)(ab) shall be effective unless delivered in accordance with both clauses 16.1(b)(ii)(A)(aa) and 16.1(b)(ii)(A)(ab).

(d) Subject to clause 16.1(f), a notice sent by the Electronic Portal will be taken to have been received on the date recorded on the notice on which it was registered on the Electronic Portal.

(e) Subject to clause 16.1(f), a notice sent by post will be taken to have been received:

(i) in the case of international post, 7 Business Days after the date of posting; and

(ii) in the case of posting within Australia, 2 Business Days after the date of posting.

(f) Where clause 16.1(b)(ii)(A)(ab) applies, the relevant notice will be taken to have been received on the later of:

(i) the date determined in accordance with clause 16.1(d); and

(ii) the date determined in accordance with clause 16.1(e).

16.2 Governing Law

This Contract is governed by and will be construed according to the Laws of New South Wales.

16.3 No Waiver

(a) Failure to exercise or enforce or a delay in exercising or enforcing or the partial exercise or enforcement of any right, power or remedy provided by Law or under this Contract by the Principal will not in any way preclude, or operate as a waiver of, any exercise or enforcement, or further exercise or enforcement of that or any other right, power or remedy provided by Law or under this Contract.

- (b) Any waiver or consent given by the Principal under this Contract will only be effective and binding on the Principal if it is given or confirmed in writing by the Principal.
- (c) No waiver by the Principal of:
 - (i) a breach of any term of this Contract; or
 - (ii) any other failure by the Contractor to comply with a requirement of this Contract, including any requirement to give any notice which it is required to give in order to preserve its entitlement to make any Claim against the Principal,

will operate as a waiver of another breach of that term or failure to comply with that requirement or of a breach of any other term of this Contract or failure to comply with any other requirement of this Contract.

16.4 Assignment

The Contractor cannot assign, transfer or novate any of its rights or liabilities under this Contract without the prior written consent of the Principal and except on such terms and conditions as are determined in writing by the Principal.

16.5 Entire Agreement

This Contract constitutes the entire agreement and understanding between the parties and will take effect according to its tenor despite, and supersede:

- (a) any prior agreement (whether in writing or not), negotiations and discussions between the parties in relation to the subject matter of this Contract; and
- (b) any correspondence or other documents relating to the subject matter of this Contract that may have passed between the parties prior to the date of this Contract and that are not expressly included in this Contract.

16.6 Joint and Several Liability

The rights and obligations of the Principal and the Contractor, if more than one person, under this Contract, are joint and several. Each person constituting the Contractor acknowledges and agrees that it will be causally responsible for the acts and omissions (including breaches of this Contract) of the other as if those acts or omissions were its own and the Principal may proceed against any or all of them.

16.7 Severability

If at any time any provision of this Contract is or becomes illegal, invalid or unenforceable in any respect under the Law of any jurisdiction, that will not affect or impair:

- (a) the legality, validity or enforceability in that jurisdiction of any other provision of this Contract; or
- (b) the legality, validity or enforceability under the Law of any other jurisdiction of that or any other provision of this Contract.

16.8 Indemnities to Survive

- (a) Each indemnity in this Contract is a continuing obligation, separate and independent from the other obligations of the parties, and survives termination, completion or expiration of this Contract.
- (b) Nothing in this clause 16.8 prevents any other provision of this Contract, as a matter of interpretation also surviving the termination of this Contract.
- (c) It is not necessary for a party to incur expense or make any payment before enforcing a right of indemnity conferred by this Contract.

16.9 Stamp Duty and Other Fees

The Contractor must pay all stamp duties and other fees payable in respect of the execution of this Contract and the performance of its obligations in respect of this Contract.

16.10 Taxes

Without limiting clause 2.3 but subject to clause 18, the Contractor must pay all Taxes that may be payable in respect of the Contractor's Activities, including any customs duty or tariff, and primage applicable to imported materials, plant and equipment required for the Contractor's Activities.

16.11 Confidentiality

- (a) Subject to clause 16.11(b), the Contractor must:
 - (i) keep confidential this Contract and any information relating to the Contractor's Activities and any discussions concerning this Contract;
 - (ii) not use the information referred to in clause 16.11(a)(i) except as necessary for the performance of the Contractor's Activities; and
 - (iii) ensure that each of its officers, employees and Subcontractors complies with the terms of clauses 16.11(a)(i) and 16.11(a)(ii).
- (b) The Contractor is not obliged to keep confidential any information:
 - (i) which is in the public domain through no default of the Contractor; or
 - (ii) the disclosure of which is:
 - (A) required by Law;
 - (B) consented to in writing by the Principal; or
 - (C) given to a court in the course of proceedings to which the Contractor is a party.
- (c) The Contractor must:
 - (i) execute and submit to the Principal within 14 days of this Contract a Confidentiality Underlaking;

- (ii) ensure that all employees of the Contractor that have access to the information described in the Confidentiality Undertaking are aware of their obligations under the terms of the Confidentiality Undertaking; and
 - (iii) ensure that each Subcontractor, including suppliers and consultants, to the Contractor execute and submit a Confidentiality Undertaking to the Principal.
- (d) The Contractor acknowledges that the Principal may disclose this Contract (and information concerning the terms of this Contract) under or in accordance with any one or more of the following:
- (i) the *Government Information (Public Access) Act 2009 (NSW)*;
 - (ii) to satisfy the disclosure requirements of the New South Wales Auditor General or to satisfy the requirements of Parliamentary accountability; and
 - (iii) any other Law.
- (e) The Contractor must provide to the Principal any other information which the Principal reasonably requires to comply with its obligations under the items referred to in clause 16.11(d).

16.12 Right of Set-Off

The Principal may at any time withhold, set-off or deduct from moneys otherwise due to the Contractor:

- (a) any debt or other moneys due from the Contractor to the Principal (including any debt due from the Contractor to the Principal pursuant to section 26C of the SOP Act);
- (b) any amount that is less than or equal to the amount claimed to be owed under a payment withholding request served on the Principal pursuant to Division 2A of the SOP Act; or
- (c) any Claim to money which the Principal may have against the Contractor whether for debts (including liquidated damages),

whether under this Contract or otherwise at Law.

If those moneys are insufficient, the Principal can have recourse to the security held under clause 2.7.

16.13 Entire Contract

Despite any progress payments that may be made to the Contractor under clause 11.4, this Contract is an entire contract.

16.14 Principal may Act

- (a) The Principal may, either itself or by a third party, perform an obligation under this Contract that the Contractor was obliged to perform but which it failed to perform. The costs, Losses, expenses and damages suffered or incurred by the Principal in so performing such an obligation will be a debt due from the Contractor to the Principal.
- (b) Where the Principal or the Principal's Representative is entitled under this Contract to exercise any right or power to:



- (i) direct or instruct the Contractor to; or
- (ii) itself step in to,

take any action or omit to take any action, it is not obliged to exercise that right or power, and may do so in their absolute discretion.

- (c) Where the Principal or the Principal's Representative does exercise any such right or power, the Contractor remains responsible for, controls and assumes the risk of all environmental, health and safety issues relating to the Works.

16.15 Process Agent

If the Contractor is a foreign company (as defined in the *Corporations Act 2001* (Cth)), the Contractor must:

- (a) appoint a local process agent acceptable to the Principal as its agent to accept service of process under or in any way in connection with this Contract. The appointment must be in a form acceptable to the Principal and may not be revoked without the Principal's consent, and
- (b) obtain the process agent's consent to the appointment.

16.16 Indemnity

The Contractor must indemnify the Principal against:

- (a) any liability to or claim by any other person; and
- (b) all costs, expenses, Losses, damages, fines and penalties suffered or incurred by the Principal,

arising out of, or in any way in connection with:

- (c) the Contractor's breach of a term of this Contract; and
- (c) any Defect or the consequence of any Defect,

provided that the Contractor's liability to indemnify the Principal will be reduced proportionally to the extent that an act or omission of the Principal, an Other Contractor or an agent of the Principal may have contributed to the liability claim, costs, Losses, damages, fines or penalties.

16.17 Variations

Subject to clause 6.3, this Contract may only be varied by a document signed by or on behalf of both the Principal and the Contractor.

16.18 Provisions Limiting or Excluding Liability

Any provision of this Contract which seeks to limit or exclude a liability of the Principal or the Contractor is to be construed as doing so only to the extent permitted by Law.

16.19 Limit of Liability

- (a) Subject to clause 16.21, the liability of the Contractor to the Principal, whether arising under or in connection with this Contract or the performance or non-performance thereof or anything incidental thereto,

and whether by way of indemnity, by statute (to the extent that it is possible to exclude such liability), in tort (for negligence or otherwise) or on any basis in Law or equity, is limited to the Contract Sum.

- (b) The liability of the Principal to the Contractor, whether arising under or in connection with this Contract or the performance or non-performance thereof or anything incidental thereto, and whether by way of indemnity, by statute (to the extent that it is possible to exclude such liability), in tort (for negligence or otherwise) or on any basis in Law or equity, is limited to the Contract Sum.

16.20 Economic or Consequential Loss

Subject to clause 16.21, neither party will have any liability whatsoever to the other party for Consequential or Indirect Loss.

16.21 Qualification on Limitation of Liability

Clauses 16.19 and 16.20 do not apply to limit or restrict in any way:

- (a) any liability to the extent to which the Contractor is (or will be) entitled to be indemnified pursuant to an insurance policy that is required to be maintained by this Contract in respect of that liability;
- (b) any liability for which, but for a failure by the Contractor to comply with its obligations under this Contract or under an insurance policy, the Contractor would have received payment or been indemnified under an insurance policy effected in accordance with this Contract;
- (c) the Contractor's liability to pay liquidated damages under clause 12.7(a) or general damages under clause 12.7(e);
- (d) the Contractor's liability to indemnify the Principal under clauses 2.14(d), 3.5(f), 3.7(d), 3.10(e), 3.14(d), 5.7(c)(i), 5.9(a)(i) or 13.2;
- (e) the Contractor's liability for costs, Losses and damage caused by the malicious or fraudulent acts of employees of the Contractor or its Subcontractors or its agents;
- (f) liability which is otherwise limited by another provision of this Contract;
- (g) the Contractor's liability where it abandons the performance of its obligations under this Contract; or
- (h) liability out of which by Law the Contractor cannot contract.

16.22 Proportionate Liability

- (a) To the extent permitted by law, Part 4 of the *Civil Liability Act 2002* (NSW) (and any equivalent statutory provision in any other state or territory) is excluded in relation to all and any rights, obligations or liabilities of either party under or in any way in connection with this Contract whether such rights, obligations or liabilities are sought to be enforced in contract, tort or otherwise.
- (b) Without limiting the above, the rights, obligations and liabilities of the Principal and the Contractor under this Contract with respect to proportionate liability are as specified in this Contract and not otherwise, whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, in tort or otherwise.

- (c) To the extent permitted by Law:
- (i) the Contractor must not seek to apply the provisions of Part 4 of the *Civil Liability Act 2002 (NSW)* in relation to any claim by the Principal against the Contractor (whether in contract, tort or otherwise); and
 - (ii) if any of the provisions of Part 4 of the *Civil Liability Act 2002 (NSW)* are applied to any claim by the Principal against the Contractor (whether in contract, tort or otherwise), the Contractor will indemnify the Principal against any Loss, damage, cost or expense that forms part of a claim by the Principal against the Contractor which the Principal is not able to recover from the Contractor because of the operation of Part 4 of the *Civil Liability Act 2002 (NSW)*
- (d) The Contractor must:
- (i) in each subcontract into which it enters for the carrying out of the work under this Contract or for the supply of materials or services, include a term that (to the extent permitted by law) excludes the application of Part 4 of the *Civil Liability Act 2002 (NSW)* in relation to all and any rights, obligations or liabilities of either party under or in any way in connection with each Subcontract whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, tort or otherwise; and
 - (ii) require each Subcontractor or supplier of materials or services to include, in any further contract that it enters into with a third party for the carrying out of the work under this Contract, a term that (to the extent permitted by law) excludes the application of Part 4 of the *Civil Liability Act 2002 (NSW)* in relation to all and any rights, obligations or liabilities of either party under or in any way in connection with each further agreement whether such rights, obligations or liabilities are sought to be enforced by a claim in contract, tort or otherwise.
- (e) The Contractor must ensure that all policies of insurance covering third party liability it is required by this Contract to effect or maintain (including the professional indemnity policy referred to in clause 13.5):
- (i) cover the Contractor for potential liability to the Principal assumed by reason of the exclusion of Part 4 the *Civil Liability Act 2002 (NSW)*; and
 - (ii) do not exclude any potential liability the Contractor may have to the Principal under or by reason of this Contract.
- (f) The powers conferred and restrictions imposed on a court by Part 4 of the *Civil Liability Act 2002 (NSW)* are not conferred on an expert appointed in accordance with the provisions of this Contract.
- (g) An expert has no power to make a binding or non-binding determination or any award in respect of a claim by applying or considering the provisions of Part 4 of the *Civil Liability Act 2002 (NSW)* (and any equivalent statutory provisions in any other state or territory) which might, in the absence of this provision, have applied to any dispute referred to the expert.

16.23 Prior Work

The Contractor agrees that the work in connection with the Contractor's Activities carried out by the Contractor prior to the date of this Contract will be deemed to be governed by the provisions of this Contract and will be deemed to be part of the Contractor's Activities and any payments made to the Contractor by the Principal prior to the date of this Contract in respect of the Contractor's Activities will be treated as part payments of the amount required to be paid by the Principal under this Contract.

16.24 Not Used

16.25 Counterparts

This Contract may be executed in any number of counterparts. All counterparts together will be taken to constitute one instrument.

16.26 Personal Property Securities Act

- (a) By signing this Contract, the Contractor acknowledges and agrees that if this Contract and the transactions contemplated by it, operate as, or give rise to, a security interest for the purposes of the PPS Law ("Security Interest"), the Contractor shall do anything (including amending this Contract or any other document, executing any new terms and conditions or any other document, obtaining consents, getting documents completed and signed and supplying information) that the Principal considers necessary under or as a result of the PPS Law for the purposes of:
- (i) ensuring that the Security Interest is enforceable, perfected or otherwise effective and has the highest priority possible under PPS Law;
 - (ii) enabling the Principal to apply for any registration, or give any notification, in connection with the Security Interest, including the registration of a financing statement or financing change statement; or
 - (iii) enabling the Principal to exercise rights in connection with the Security Interest and this Contract.
- (b) If Chapter 4 of the PPS Act applies to the enforcement of the Security Interest, the Contractor agrees that sections 95, 120, 121(4), 125, 130, 132(3)(d), 132(4), 135, 142 and 143 of the PPS Act will not apply to the enforcement of the Security Interest.
- (c) The Contractor:
- (i) acknowledges that the Security Interests created under or pursuant to this Contract relate to collateral and all proceeds in respect of that collateral (until the Principal is paid in full for the collateral);
 - (ii) acknowledges that to the maximum extent permitted by law, it waives any right to receive a verification statement under the PPS Law in respect of the Security Interest; and
 - (iii) undertakes it will not register a financing change statement without the prior written consent of the Principal.

- (d) The parties agree that neither of them will disclose information of the kind referred to in section 275(1) of the PPS Act and that this clause constitutes a confidentiality agreement within the meaning of the PPS Law.
- (e) The Contractor agrees to waive any right it may have, or but for this clause may have had, under section 275(7)(c) of the PPS Act to authorise the disclosure of the above information.

16.27 Vienna Convention

The United Nations Convention on Contracts for the International Sale of Goods does not apply to this Contract.

16.28 Australian Government Requirements

- (a) This clause 16.28 applies if so stated in Item 54 of Schedule 1.
- (b) The Building Code is applicable to the Works.
- (c) The Contractor must comply, and ensure that its Subcontractors comply, in the performance of this Contract, with the requirements of the Building Code.
- (d) Copies of the Building Code are available at
www.deewr.gov.au/BuildingCode.
- (e) Compliance with the Building Code will not relieve the Contractor from its responsibility to perform this Contract, or from liability for any Defect in the Works arising from compliance with the Building Code.
- (f) Where a change in this Contract is proposed and that change would affect compliance with the Building Code, the Contractor must submit a report to the Commonwealth specifying the extent to which the Contractor's compliance with the Building Code will be affected.
- (g) The Contractor must maintain adequate records of the compliance with the Building Code by:
 - (i) the Contractor;
 - (ii) its Subcontractors; and
 - (iii) the Contractor's related entities (as defined in section 3(2) of the Building Code).
- (h) If the Contractor does not comply with the requirements of the Building Code in the performance of this Contract such that a sanction is applied by the Minister for Employment and Workplace Relations, the Code Monitoring Group or the Commonwealth, without prejudice to any rights that would otherwise accrue, those parties will be entitled to record that non-compliance and take it, or require it to be taken, into account in the evaluation of any future tenders that may be lodged by the Contractor or a related entity in respect of work funded by the Commonwealth or its agencies.
- (i) While acknowledging that value for money is the core principle underpinning decisions on Government procurement, when assessing tenders, the Contractor may give preference to Subcontractors that have a demonstrated commitment to:

- (i) adding and/or retaining trainees and apprentices;
 - (ii) increasing the participation of women in all aspects of the industry; or
 - (iii) promoting employment and training opportunities for Indigenous Australians in regions where significant indigenous populations exist.
- (j) The Contractor must not appoint a Subcontractor in relation to the Works where:
- (i) the appointment would breach a sanction imposed by the Minister for Employment and Workplace Relations; or
 - (ii) the Subcontractor has had an adverse court or tribunal decision (not including decisions under appeal) for a breach of workplace relations law, work health and safety law, or workers' compensation law and the Subcontractor has not fully complied, or is not fully complying with the order.
- (k) The Contractor must provide, and must ensure its Subcontractors and related entities (as defined in section 3(2) of the Building Code) provide, the Commonwealth or any person authorised by the Commonwealth, including a person occupying a position in the Fair Work Building Industry Inspectorate, with access to:
- (i) inspect any work, material, machinery, appliance, article or facility;
 - (ii) inspect and copy any record relevant to the Works and the Contractor's Activities; and
 - (i) interview any person,
- as is necessary to demonstrate compliance with the Building Code.
- (l) The Contractor agrees that it and its related entities (as defined in section 3(2) of the Building Code) will agree to a request from the Commonwealth or any person authorised by the Commonwealth, including a person occupying a position in the Fair Work Building Industry Inspectorate, to produce a specified document within a specified period, in person or by post.
- (m) The Contractor must ensure that all Subcontracts impose obligations on Subcontractors equivalent to the requirements of this clause 16.28.

16.29 No Merger

Terms contained in this Contract which are capable of taking effect, or capable of continuing after Completion, will remain in full force and effect and will not merge on Completion.

17 Notification of Claims

17.1 Notice of Variation

If a direction by the Principal's Representative, other than a Variation Order under clause 6.2, constitutes or involves a Variation, the Contractor must, if it

wishes to make a Claim against the Principal arising out of, or in any way in connection with, the direction.

- (a) within the time specified in Item 55 of Schedule 1 of receiving the direction and before commencing work on the subject matter of the direction, give notice to the Principal's Representative, that it considers the direction constitutes or involves a Variation;
- (b) within the time specified in Item 56 of Schedule 1 of giving the notice under clause 17.1(a), submit a written Claim to the Principal's Representative, which includes the details required by clause 17.3(b); and
- (c) continue to carry out the Contractor's Activities in accordance with this Contract and all directions of the Principal's Representative, including any direction in respect of which notice has been given under this clause 17.1.

17.2 Notice of Other Claims

If the Contractor wishes to make any Claim (other than an Excluded Claim) against the Principal in respect of any direction of the Principal's Representative or any other event, circumstance, act, omission, fact, matter or thing (including a breach of this Contract by the Principal) under, arising out of, or in any way in connection with, this Contract, the Contractor's Activities or the Works, including anything in respect of which:

- (a) it is otherwise given an express entitlement under this Contract; or
- (b) this Contract expressly provides that:
 - (i) specified costs are to be added to the Contract Sum; or
 - (ii) the Contract Sum will be otherwise increased or adjusted,as determined by the Principal's Representative,

the Contractor must give the Principal's Representative the notice required by clause 17.3(a) and a Claim in accordance with clause 17.3(c).

17.3 Prescribed Notices

- (a) Any written notice referred to in clauses 17.1(a) and 17.2 must:
 - (i) be provided not later than the time specified in Item 55 of Schedule 1 after the first occurrence of the direction, event, circumstance, act, omission, fact, matter or thing which gave rise to the alleged entitlement; and
 - (ii) expressly specify:
 - (A) that the Contractor proposes to make a Claim; and
 - (B) the direction event, circumstance, act, omission, fact, matter, or thing, which gave rise to the alleged entitlement in the Claim.
- (b) Any written Claim referred to in clause 17.1(b) must include:

- (i) detailed particulars, including the date or dates, of the direction, including any related event, circumstance, act, omission, fact, matter or thing upon which the Claim is based;
 - (ii) the provisions of this Contract or other legal basis upon which the Claim is based; and
 - (iii) details of the amount claimed and how it has been calculated.
- (c) Any written Claim referred to in clause 17.2 must:
- (i) be provided not later than the time specified in Item 56 of Schedule 1 of giving the written notice under clause 17.3(a); and
 - (ii) include:
 - (A) detailed particulars, including the date or dates, of the direction, event, circumstance, act, omission, fact, matter or thing upon which the Claim is based;
 - (B) the legal basis for the Claim, whether based on a term of this Contract or otherwise, and if based on a term of this Contract, clearly identifying the specific term;
 - (C) the facts relied upon in support of the Claim in sufficient detail to permit verification; and
 - (D) details of the amount claimed and how it has been calculated.

17.4 Submission of Claims

- (a) Claims submitted by the Contractor under clauses 17.1(b) and 17.2 will be considered in the first instance by the Principal's Representative who may accept or reject the Claim in part or in full.
- (b) If within 28 days after first receipt of a Claim the Principal's Representative has not made a decision on the Claim, the Claim will be deemed to have been rejected on that 28th day.

17.5 Continuing Events

If the direction, event, circumstance, act, omission, fact, matter or thing upon which a Claim is based, or their consequences are continuing, the Contractor must continue to give the information required by clause 17.3(b) or 17.3(c) every 28 days after the written Claim under clause 17.1(b) or 17.2 (as the case may be) was submitted or given to the Principal's Representative, until after the direction, event, circumstance, act, omission, fact, matter or thing or the consequences thereof have ceased.

17.6 Bar

if the Contractor fails to comply with clauses 2.3(e), 15.2, 17.1, 17.2, 17.3 or 17.5:

- (a) the Principal will not be liable upon any Claim by the Contractor; and
- (b) the Contractor will be absolutely barred from making any Claim against the Principal.

arising out of or in any way in connection with the relevant direction, event, circumstance, act, omission, fact, matter or thing (as the case may be) to which those clauses apply.

17.7 Other Provisions Unaffected

Nothing in clauses 17.1 to 17.6 will limit the operation or effect of any other provision of this Contract that requires the Contractor to give notice to the Principal's Representative in order to preserve an entitlement to make a Claim against the Principal.

18 General Provisions Relating to GST

- (a) The parties acknowledge that unless otherwise expressly stated all amounts of monetary consideration in this Contract are exclusive of GST.
- (b) If GST is or becomes payable on a supply made by a party ("Supplier") under or in connection with this Contract, including the Contractor's Activities or the Works, the party providing consideration for the supply ("Recipient") must pay an additional amount to the Supplier equal to the GST payable by the Supplier (or representative member of a GST group of which the Supplier is a member) in relation to the supply.
- (c) Any amount payable under clause 18(b) will be paid to the Supplier at the same time as the consideration for the supply is paid to the Supplier.
- (d) If any party is required under this Contract to reimburse or pay to the other party an amount (other than any payment on account of the Contract Sum) calculated by reference to a cost, expense, or an amount paid or incurred by that party, the amount of the reimbursement or payment will be reduced by the amount of any input tax credits to which that party (or representative member of a GST group of which that party is a member) is entitled in respect of any acquisition relating to that cost, expense or other amount.
- (e) Notwithstanding any other provision of this Contract, where the Recipient is the Contractor, it will not be obliged to pay any amount in respect of GST to the Principal (whether under this clause 18 or otherwise) in respect of a taxable supply made by the Principal unless the Principal issues to the Contractor a tax invoice that complies with the GST Legislation in respect of that taxable supply.
- (f) The parties agree that unless otherwise agreed in writing, the following will apply to all taxable supplies made by the Contractor to the Principal under or in connection with this Contract:
 - (i) the Principal will issue to the Contractor a recipient created tax invoice ("RCTI") for each taxable supply made by the Contractor to the Principal under this Contract;
 - (ii) the Principal will issue to the Contractor an adjustment note for any adjustment event;
 - (iii) the Contractor will not issue a tax invoice in respect of any taxable supply it makes to the Principal; and
 - (iv) the Principal may notify the Contractor that it will no longer issue a RCTI for each taxable supply made by the Contractor under this Contract, in which case, from that point in time, the Principal

will not be required to issue RCTIs in respect of such supplies and the Contractor will be required to issue tax invoices to the Principal (including under clause 11.3) as a condition precedent to the Principal being obliged to pay any amount in respect of GST to the Contractor in respect of any such taxable supply

- (g) Each party acknowledges and warrants that at the time of entering into this Contract it is registered for GST and will notify the other party if it ceases to be registered for GST or ceases to comply with any of the requirements of any taxation ruling issued by a taxation authority relating to the creation of RCTIs.
- (h) If the GST payable in relation to a supply made by the Supplier under this Contract varies from the additional amount paid by the other party under this clause 18 in respect of that supply, then the Supplier will provide a corresponding refund or credit to or will be entitled to receive the amount of that variation from the other party (as appropriate).
- (i) In clauses 11.3 and 11.16 and this clause 18:
 - () "GST" or "Goods and Services Tax" means the tax payable on taxable supplies under the GST Legislation;
 - (ii) "GST Legislation" means *A New Tax System (Goods and Services Tax) Act 1999* and any related Act imposing such tax or legislation that is acted to validate, recapture or recoup such tax;
 - (iii) terms defined in GST Legislation have the meaning given to them in GST Legislation; and
 - (iv) any part or progressive or periodic component of a supply that is treated as a separate supply for GST purposes (including attributing GST to tax periods) will be treated as a separate supply.

19 TfNSW's Statement of Business Ethics

- (a) The Contractor must at all times comply with TfNSW's Statement of Business Ethics, a copy of which is available at www.transport.nsw.gov.au.
- (b) Prior to the engagement of any Subcontractor by the Contractor, the Contractor must obtain a written acknowledgement from such Subcontractor that it has received, read, understood and will comply with TfNSW's Statement of Business Ethics

20 NSW Code of Practice

20.1 NSW Code and NSW Guidelines

In addition to terms defined in this document, terms used in this clause 20 have the same meaning as is attributed to them in the New South Wales Government's Implementation Guidelines to the NSW Code of Practice for Procurement: Building and Construction ("**NSW Guidelines**") (as published by the NSW Treasury July 2013). The NSW Code and NSW Guidelines are available at www.industrialrelations.nsw.gov.au.

20.2 Primary Obligation

- (a) The Contractor must at all times comply with, and meet any obligations imposed by, the NSW Government's Code of Practice for Procurement ("NSW Code") and NSW Guidelines.
- (b) The Contractor must notify the CCU and the Principal of any possible non-compliance with the NSW Code and NSW Guidelines and of remedial action taken, within 24 hours of becoming aware of the possible non-compliance.
- (c) Where the Contractor engages a Subcontractor, the Contractor must ensure that the contract imposes on the Subcontractor equivalent obligations to those in this clause 20, including that the Subcontractor must at all times comply with, and meet any obligations imposed by, the NSW Code and the NSW Guidelines.
- (d) The Contractor must not appoint or engage another party in relation to the Works where that appointment or engagement would breach a sanction imposed on the other party in relation to the NSW Code or NSW Guidelines.

20.3 Access and information

- (a) The Contractor must maintain adequate records of compliance with the NSW Code and NSW Guidelines by it, its Subcontractors and related entities.
- (b) The Contractor must allow, and take reasonable steps to facilitate, authorised personnel (including personnel of the CCU) to:
 - (i) enter and have access to sites and premises controlled by the Contractor, including but not limited to the Site;
 - (ii) inspect any work, material, machinery, appliance, article or facility;
 - (iii) access information and documents;
 - (iv) inspect and copy any record relevant to the Works;
 - (v) have access to personnel; and
 - (vi) interview any person,as is necessary for the authorised personnel to monitor and investigate compliance with the NSW Code and NSW Guidelines, by the Contractor, its Subcontractors and related entities.
- (c) The Contractor, and its related entities, must agree to, and comply with, a request from authorised personnel (including personnel of the CCU) for the production of specified documents by a certain date, whether in person, by post or electronic means.

20.4 Sanctions

- (a) The Contractor warrants that at the time of entering into this Contract, neither it, nor any of its related entities, are subject to a sanction in connection with the NSW Code or NSW Guidelines that would have precluded it from responding to a procurement process for work to which the NSW Code and NSW Guidelines apply.

- (b) If the Contractor does not comply with, or fails to meet any obligation imposed by, the NSW Code or NSW Guidelines, a sanction may be imposed against it in connection with the NSW Code or NSW Guidelines.
- (c) Where a sanction is imposed:
 - (i) it is without prejudice to any rights that would otherwise accrue to the parties; and
 - (ii) the State of NSW (through its agencies, Ministers and the CCU) is entitled to:
 - (A) record and disclose details of non-compliance with the NSW Code or NSW Guidelines and the sanction; and
 - (B) take them into account in the evaluation of future procurement processes and responses that may be submitted by the Contractor, or its related entities, in respect of work to which the NSW Code and NSW Guidelines apply.

20.5 Compliance

- (a) The Contractor bears the cost of ensuring its compliance with the NSW Code and NSW Guidelines, including in respect of any positive steps it is obliged to take to meet its obligations under the NSW Guidelines. The Contractor is not entitled to make a claim for reimbursement or an extension of time from the Principal or the State of NSW for such costs.
- (b) Compliance with the NSW Code and NSW Guidelines does not relieve the Contractor from responsibility to perform the Works and any other obligation under the Contract, or from liability for any Defect in the Works or from any other legal liability, whether or not arising from its compliance with the NSW Code and NSW Guidelines.
- (c) Where a change in the Contract or the Works is proposed, and that change may, or may be likely to, affect compliance with the NSW Code and NSW Guidelines, the Contractor must immediately notify the Principal (or nominee) of the change, or likely change and specify:
 - (i) the circumstances of the proposed change;
 - (ii) the extent to which compliance with the NSW Code and NSW Guidelines will be, or is likely to be, affected by the change; and
 - (iii) what steps the Contractor proposes to take to mitigate any adverse impact of the change (including any amendments it proposes to a Workplace Relations Management Plan or Project Work Health and Safety Management Plan).

and the Principal will direct the Contractor as to the course it must adopt within 10 Business Days of receiving notice.

Signing page

EXECUTED as a deed

DATED: 6th July 2018

EXECUTED for and on behalf of
TRANSPORT FOR NSW (ABN 18 804
239 602)



Signature of Authorised Delegate


TIM POOLE

Print Name

(block letters)

PLR PROGRAM DIRECTOR

Position held



Signature of Witness

ALAN P. WILLIAMSON

Print Name

(block letters)

COMMERCIAL MANAGER

Position held

EXECUTED by Diona Pty Ltd (ACN 001
904 258) in accordance with
section 127(1) of the Corporations Act
2001 (Cth) by authority of its directors:



EXECUTED by Ward Civil &
Environmental Engineering Pty Ltd
(ACN 098 942 459) in accordance with
section 127(1) of the Corporations Act

2001 (Cth) by authority of its directors:





Transport
for NSW

Execution version

Schedules - Enabling Works Contract

ISD-17-6763

Parramatta Light Rail – Stage 1

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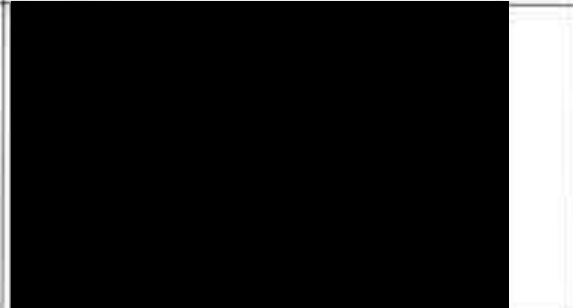
Enabling Works Contract

Schedule 1 Contract Particulars

Item	Concept	Details
1	Conditions Precedent to Completion: (Clause 1.1)	<p>The Contractor has completed all Works required under the Third Party Agreements and such works have been certified as having been completed in accordance with the terms of those Third Party Agreements, including the certificate required under:</p> <ul style="list-style-type: none"> (a) condition 9(c) of the Roads Act Approval; (b) section 5 of Schedule 4 to the Roads Act Approval, under which the Independent Certifier certifies that all findings/non-conformances of any road safety audit have been satisfactorily addressed and closed out; and (c) procure and provide the Principal's Representative with those warranties described in Item 23 of Schedule 1 or elsewhere in this Contract from relevant Subcontractors undertaking or supplying the work or items the subject of the warranty.
2	Contract Documentation (Clause 1.1)	<ul style="list-style-type: none"> (a) the General Conditions; (b) the Works Brief (including the Concept Design); and (c) the Schedules and Exhibits of this Contract (excluding any Information Documents and Materials which form part of the Schedules or Exhibits to this Contract, unless expressly identified as forming part of the Contract).
3	Contractor: (Clause 1.1)	<ul style="list-style-type: none"> (a) Diona Pty Ltd (ACN 001 904 258); and (b) Ward Civil & Environmental Engineering Pty Ltd (ACN 098 942 459). <p>Suite 2, Level 4, 65 Epping Road North Ryde NSW 2113</p>
4	Date for Completion: (Clause 1.1)	Portion 1 27 September 2019

Item	Concept	Details
		Portion 2 14 January 2020 Portion 3 24 April 2020
5	Defects Rectification Period: (Clause 1.1)	The Defects Rectification Period for each Portion is the period commencing on the Date of Completion of the Portion and expiring 24 months after the Date of Completion of that Portion.
6	Nominated Documents (Clause 1.1)	Enabling Works – HAZMAT Report
7	Other Excepted Risk: (Clause 1.1)	A negligent act or omission of the Principal, the Principal's Representative, other agents of the Principal or an Other Contractor (other than an Interface Contractor).
8	Interface Contractors: (Clause 1.1)	Infrastructure Contractor, SOM Contractor, and as otherwise detailed in the Works Brief
9	Original Contract Price: (Clause 1.1)	\$65,748,079.43
10	Portions: (Clause 1.1)	<p>Portion 1: Macquarie Street Construction Enabling</p> <p>All required elements essential for the 2-way re-configuration of George Street from O'Connell Street to Harris Street, including O'Connell Street and Victoria Road intersection.</p> <p>Portion 2: Church Street Construction Enabling</p> <p>All required elements essential for the potential closure of Church Street South of Board Street to Macquarie Street.</p> <p>Portion 3: Non-Critical Works</p> <p>All domain works along O'Connell Street and George Street and all other elements that fall outside of Portion 1 and Portion 2.</p>
11	Principal's Representative: (Clause 1.1)	Maziar Neyakivi, Senior Project Manager, Parramatta Light Rail
12	Reports: (Clause 1.1)	As included in the Concept Design, contained in Annexure A to the Works Brief.
13	Working days: (Clause 1.2(m))	Monday to Saturday excluding public holidays in Sydney and rostered days off.
14	Order of Precedence:	(a) The Contract, read with the details in

Item	Concept	Details
	(Clause 1.4)	<p>Schedule 1 but excluding the remaining Schedules and the Exhibits; then</p> <p>(b) the Schedules (other than Schedule 1) and Exhibit I (which for the avoidance of doubt, includes the Roads Act Approval and RMS Collaboration Agreement); then</p> <p>(c) the Works Brief (excluding any Concept Design); then</p> <p>(d) the TfNSW Standard Requirements; then</p> <p>(e) any Concept Design; then</p> <p>(f) Exhibits A to I (excluding the Works Brief, the TfNSW Standard Requirements and Exhibit I).</p>
15	Amount for approval of Subcontracts: (Clause 2.2(b))	Subcontracts with an initial price of [REDACTED] or greater.
16	Parts of Works requiring approval for particular Subcontractor: (Clause 2.2(b))	Works associated with traffic control signals (as set out in the Works Brief) must be undertaken by RMS prequalified traffic signal contractors.
17	Parts of Works requiring pre-qualification or registration with RMS (Clause 2.2(b))	<p>Pre-qualified categories of work:</p> <p>(a) roadworks;</p> <p>(b) asphalt paving;</p> <p>(c) protective treatment;</p> <p>(d) bridgeworks;</p> <p>(e) pretensioned concrete;</p> <p>(f) concrete paving; and</p> <p>(g) steel fabrication.</p> <p>Registered categories of work:</p> <p>(a) drainage;</p> <p>(b) earthworks</p> <p>(c) bridge formwork erection;</p> <p>(d) traffic control;</p> <p>(e) construction industry laboratories</p>

Item	Concept	Details
		(f) erosion, sedimentation and soil conservation consultancy services; (g) fabrication of minor steel items; (h) urban design services; (i) demolition of properties; and (j) stabilisation.
18	Subcontractors required to effect professional indemnity insurance: (Clause 2.2(e))	all Subcontracts which include any element of design
19	Minimum amount of Professional Indemnity Insurance required: (Clause 2.2(e))	
20	Subcontract prices for which security of payment provisions are required: (Clause 2.2(g)(i))	Subcontracts with an initial price of \$50,000 or greater.
21	Third Party Agreements (clause 1.1, 2.15)	City of Parramatta: Development Agreement RMS: Collaboration Agreement RMS: Roads Act Approval ("Draft")
22	Subcontractors required to execute deed in form of Schedule 14: (Clause 2.2(g)(iv)(A))	Subcontracts with an initial price of \$500,000 or greater.
	(Clause 2.2(g)(iv)(B))	The following categories: (a) all Subcontracts and consultant engagements which include any element of design; and (b) signalling designer.
23	Warranties required from Subcontractors: (Clause 2.2(h))	None.
24	Subcontractors to be novated	None.

Item	Concept	Details	
	to Contractor: (Clause 2.2(j))		
25	Parent Company Guarantors: (Clause 2.10)	[REDACTED]	
26	The party responsible for payment of the Long Service Leave Levy is (Clause 2.11)	Contractor	
27	Number and form of copies of the work method statements: (Clause 2.12(a)(ii)(G))	2 hard copies and 1 electronic copy in pdf format.	
28	The principal contractor under the WHS legislation is: (Clause 2.14)	Person the Contractor	Period of Appointment from the date of commencement of the Works until the Date of Completion.
29	Period after notice for inspection of Contemporaneous Work: (Clause 2.17(a)(i))	Seven days	
30	Defects Rectification Periods under the Third Party Agreements (clause 2.19(b))	Each defects rectification period referred to in each Third Party Agreement.	
31	Rates for determining increase in Contract Sum for failure to give access: (Clause 3.1(e)(ii))	[REDACTED]	
32	Number of copies of Design Documentation and survey information: (Clause 5.5)	4 (3 bound and 1 unbound) plus one copy in electronic format	
33	RMS Departures (Clause 5.11)	Refer to section 3.9 of the Works Brief	
34	Percentages to be applied to Variation and daywork costs: (Clauses 6.4 and 6.7)	Clause No	Percentage
		6.4(b)(ii)(A)(including a valuation required to be made by clause 3.6(d))	[REDACTED] %

Item	Concept	Details			
		6.4(b)(ii)(B)	█%		
		6.7	█%		
35	Provisional Sum Work: (Clauses 1.1 and 7.3)	Property Adjustment Works: █			
36	Percentage for Overhead Costs and profit (clause 7.3(b)(ii)(B)(2))	█%			
37	Parts of the Site within which the Works must be located: (Clauses 3.12 and 7.6(b)(i))	That land which is described as "Permanent Land" in Table 1 in Schedule 31.			
38	New Defects Rectification Period: (Clause 8.6)	A further period of 24 months, provided that such further period must not exceed 36 months from the Date of Completion of the Portion to which the relevant Defect rectification works relate.			
39	Contractor's Personnel (Clauses 2.1(f), 9.4(a) and 9.4(b)(i))	Role	Name	Percentage (%) utilisation on Project	
				Design Phase	Construction Phase
		█			

Item	Concept	Details
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40	Is the Contractor required to submit a Project Training Management Plan: (Clause 9.14)	No
41	Training Target (Clause 9.14(f)(i))	As set out in section 5.2 of the TfNSW Standard Requirements.
42	Causes of delay entitling Contractor to extension of time in respect of all Works: (Clause 10.7(a))	<ul style="list-style-type: none"> (a) a Change in Codes and Standards to which clause 2.3(b) applies; (b) a Change in Authority Approval to which clause 2.3(f) applies; (c) a legal challenge to an Authority Approval under clause 2.4; (d) where the Principal fails, in breach of this Contract to give the Contractor

Item	Concept	Details
		<p>access to the Site to enable the Contractor to commence and carry out the Contractor's Activities, but only if the failure continues for longer than 20 Business Days;</p> <p>(e) a Force Majeure Event;</p> <p>(f) a Change in Law to which clause 2.3(e) applies;</p> <p>(g) a strike that is industry-wide and not specific to the Contractor, the Site, or the Contractor's Activities;</p> <p>(h) compliance with any direction given by the Principal's Representative under clause 3.9 in respect of any Valuable Find in the circumstances described in clause 3.9;</p> <p>(i) Unknown Utilities Services Event; and</p> <p>(j) a delay resulting from the inaccuracy of information contained in a Nominated Document under clause 3.7.</p>
43	Not Used	
44	Rates to be used in determining delay damages: (Clause 10.13)	\$ [REDACTED] per day
45	Liquidated damages: (Clause 12.7(a))	<p>In respect of each Portion, for each day of delay after the Date for Completion in respect of the relevant Portion up to the earlier of the Date of Portion Completion or the date of termination of this Deed:</p> <p>(a) if the Contractor achieves Completion by the relevant Date for Completion, or within the first 60 days following the relevant Date for Completion, \$ [REDACTED] per day for the 60 days following the Date for Completion; or</p> <p>(b) if the Contractor fails to achieve Completion within the 45 days following the relevant Date for Completion:</p> <p>(i) \$ [REDACTED] per day from the Date for Completion up to and including day 30;</p> <p>(ii) \$ [REDACTED] per day from day 31 up to and including day 61;</p>

Item	Concept	Details
		<p>(iii) \$ [REDACTED] per day from day 62 up to and including day 92, and</p> <p>thereafter \$ [REDACTED] per day up to the amount set out in Item 44</p> <p>The liquidated damages are payable in respect of all Portions:</p> <p>(c) for the period that the rates payable are the same for both Portions, the total rate will be capped at the rate payable for one Portion; and</p> <p>(d) for the period that the rates payable are different for each Portion, the total rate will be capped at the higher of the two rates.</p>
46	Limit of liability for liquidated damages for delay: (Clause 12.7(f))	[REDACTED] % of the Contract Sum
47	Insurance policies required to be effected by the Principal (Clause 13.4)	Works Insurance Public and Product Liability Insurance
48	Insurance Policies required to be effected by the Contractor (Clause 13.5)	<p>Workers Compensation Insurance</p> <p>Amount of Cover: The maximum amount required by Law</p> <p>Construction Plant Insurance</p> <p>[REDACTED]</p> <p>Motor Vehicle Insurance</p> <p>[REDACTED]</p> <p>Professional Indemnity Insurance</p> <p>[REDACTED]</p>
49	Person in Insolvency Event: (Clause 14.4(a)(i)(C))	[REDACTED]

Item	Concept	Details
		[REDACTED]
50	Amount for termination for convenience: (Clause 14.10(a)(v))	[REDACTED] % of the cost determined under clauses 14.10(a)(ii), 14.10(a)(iii) and 14.10(a)(iv).
51	Clauses in respect of which disputes concerning directions of a Principal's Representative must be submitted within 14 days of date of direction: (Clauses 9.1(f), 15.1(b)(iv) and 15.2)	2.3(e)(ii), 2.15(b)(vi)(C), 2.15(b)(viii), 2.17(b)(i), 2.17(b)(ii), 3.1(e)(ii), 3.6(d), 3.9 (final paragraph), 6.4, 6.7, 7.3, 8.5, 8.6, 9.8, 10.10, 10.11, 10.13, 10.14(b)(ii), 11.3, 12.3(b), 12.3(d), 14.6(b), 14.10(a) and 14.12(a).
52	Executive Negotiators: (Clauses 1.1 and 15.5)	Principal: [REDACTED] Contractor: [REDACTED]
53	Addresses: (Clause 16.1(b)(i))	Principal: Level 5, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067 Principal's Representative: [REDACTED] Level 10, 130 George Street PARRAMATTA NSW 2150 Contractor: Suite 2, Level 4, 65 Epping Road North Ryde NSW 2113.
54	Applicability of Building Code: (Clause 16.28(a))	Clause 16.28 does not apply.
55	Time for giving notices: (Clauses 17.1(a) and 17.3(a))	14 days
56	Time for written Claims: (Clauses 17.1(b) and 17.3(c))	28 days

Schedules - Enabling Works Contract

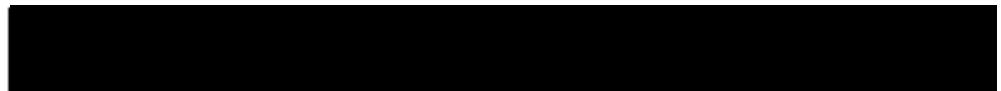
Schedule 2 Payment Breakdown Schedule

(Clause 11.2(d)(i))

This Payment Breakdown Schedule details all amounts the Contractor can claim in respect of the Contract Sum (being the Original Contract Price as adjusted in accordance with this Deed) for the performance of the Contractor's Activities, including the design, construction, commissioning and completion of the Enabling Works. All amounts in this Payment Breakdown Schedule are fixed and are not subject to rise and fall.

The **Original Contract Price** at the date of this Deed is sixty five million, seven hundred and forty eight thousand, seventy nine dollars and forty three cents (\$65,748,079.43).

The **Original Contract Price** is set out in Item (c) below and is comprised of the amounts in Items (a) to (c) inclusive below.



Schedules - Enabling Works Contract

Schedule 3 Form of Confidentiality Undertaking

(Clauses 2.2(g)(i.i) and 16.11(c)(i))

- To: **Transport for NSW (ABN 18 804 239 602)**, a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, 821 Zenith Centre, Pacific Highway, Chatswood, NSW 2067 ("Principal")
- (a) We [insert Subcontractor/Contractor details] [ABN] of [Address] the engaged [Consultant/Supplier/Contractor/Subcontractor] body, undertake to treat as confidential all information received/generated from the Principal in respect of work performed by the Principal.
 - (b) The [Consultant/Supplier/Contractor/Subcontractor] hereby undertakes:
 - (i) to disclose information to its employees only on a need-to-know basis;
 - (ii) not to disclose information to any other person without first obtaining the written consent of the Principal;
 - (iii) to ensure that its employees to whom information is disclosed will comply with (i) and (ii) above.
 - (c) This undertaking will not apply to information about the Principal which is in the public domain (except where the availability of the information in the public domain is due to any unauthorised disclosure by the [Consultant/Supplier/Contractor/Subcontractor], its employees or agents) or which was already known to the [Consultant/Supplier/Contractor/Subcontractor].
 - (d) Any breach of this undertaking by the [Consultant/Supplier/Contractor/Subcontractor's] employee or agent will constitute a breach of this undertaking by the [Consultant/Supplier/Contractor/Subcontractor] and at the direction of the Principal the [Consultant/Supplier/Contractor/Subcontractor] must institute proceedings or do whatever the Principal regards as reasonable to prevent or contain the breach.
 - (e) The [Consultant/Supplier/Contractor/Subcontractor] undertakes that on request from the Principal it will forthwith return to the Principal all originals and copies of the confidential information, however embodied, supplied by the Principal and destroy all documents containing or prepared using any confidential information however embodied.
 - (f) The [Consultant/Supplier/Contractor/Subcontractor] also undertakes to declare to the Principal any conflict of interests that exists or arises during the course of its engagement which may impinge on the objectivity or probity of the work performed. Such declarations are to be made as soon as the conflict of interests issues arises.

Schedules - Enabling Works Contract

This undertaking will remain in force until each part of the confidential information is released by the Principal into the public domain.

Executed as a deed poll.

Dated:

EXECUTED by **[COMPANY NAME#]**)
[INSERT ABN] in accordance with)
section 127(1) of the *Corporations Act*)
2001 (Cth) by authority of its directors:)

.....)
Signature of director)

.....)
Name of director (block letters))

.....)
Signature of director/company)
secretary*)
*delete whichever is not applicable)

.....)
Name of director/company secretary*)
(block letters))
*delete whichever is not applicable)

Schedule 4 Action in Complying with Planning Approval and Third Party Agreements

(Clause 2.3(d) and Clause 2.15)

Part A Planning Approval

The Contractor must fulfil all the conditions and requirements of the Planning Approval except to the extent that the following tables allocate responsibilities to the Principal. Nothing specified in this table as being a responsibility of the Principal will relieve the Contractor from complying with any obligation set out elsewhere in the Contract. The Contractor may apply to have any part of any of the Approvals listed below modified. The Contractor acknowledges and agrees that it is solely responsible for any such modification.

Part 1 – conditions of Planning Approval – Obligations Matrix – Enabling Works

- 1 Capitalised terms used in this Schedule 4 have the meanings given to them in the conditions of the Planning Approval (Conditions), unless otherwise specified.
- 2 The Schedule set out below contains columns which allocate responsibility as between the Principal and the Contractor. The Contractor must comply with all obligations of the Principal under the Conditions in undertaking the Contractor's Activities and Works, other than those listed in the Schedule as allocated to the Principal. For the avoidance of doubt, the SGM Contractor has primary responsibility for all conditions in respect of the operation of the CSSI, including operational noise. Operational noise conditions do not apply to non-operational components.
- 3 In addition to compliance with the relevant Conditions in accordance with the Schedule, the Contractor must comply with paragraphs 4 to 9 of this Schedule.

- 4 Where a Condition is capable of applying after Completion of the Contractor's Activities, the Contractor must:
 - (a) comply with the Condition to the extent necessary to achieve Completion;
 - (b) comply with the Condition to the extent necessary to comply with the Contractor's obligations which are required to be performed under the Contract after Completion (including in relation to defects and other works); and
 - (c) provide to the Principal prior to Completion all documents relating to the Contractor's Activities which, in the reasonable opinion of the Principal, would be required in order to permit the Principal, any contractor of the Principal or any third party to comply with the Condition after Completion.
- 5 The Contractor must, where the Principal is required to take any action in compliance with a Condition, provide all documents, information assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal).
- 6 Where a Condition requires the Proponent to notify or provide documentation to the Secretary (or Department of Planning and Environment (DPE)), then the Contractor must give such notice or documentation directly to the Principal, except in respect of the following clauses which must be issued by the Contractor to the Principal and the Secretary at the same time:
 - (a) Condition A44 and A47 Incident Notification. The Contractor must also give notification to the Environment Protection Authority (EPA) and the Principal at the same time, if required under the Protection of the Environment Operations Act 1997 (NSW). For the avoidance of doubt, any reports or further information that must be provided to the Secretary (or DPE) or the EPA following the notification of the incident in this clause 6(a), must be issued by the Contractor to the Principal at least one business day prior to the date for submission to the Secretary, DPE or EPA.
- 7 Except in the case of clause 6 above, unless otherwise directed by the Principal in writing, where a Condition requires the Proponent to notify, submit documentation or consult with a government agency or body (such as RFS, Sydney Co-ordination Office, Office of Environment and Heritage, the EPA, Department of Primary Industries, State Emergency Services, NSW Health or City of Parramatta) or stakeholder (such as a landowner or member of the Aboriginal community), then the Contractor must give such notice or documentation or undertake consultation directly with the government agency or body or stakeholder, and provide a copy of any such notice or documentation or consultation to the Principal. The Contractor must provide the Principal with reasonable notice of any proposed meeting with a government agency or body (of no less than 5 business days) to enable the Principal to have the opportunity to attend the meeting.
- 8 Except in the case of clause 6(a) above, in relation to any allocation of responsibility to the Principal (whether in full or in part) pursuant to this Schedule:

Schedules - Enabling Works Contract

- (a) to submit information reports, plans and other documentation (Approval Documents) to the Secretary, other body or to publish the Approval Documents, that obligation is subject to the Contractor having first provided the Approval Documents, to the Principal a reasonable period (of no less than 20 business days) in advance of the date upon which the Approval Documents are required to be submitted;
- (b) to make a request to the Secretary for an alternative timeframe for submission of the Approval Documents, that obligation is subject to the Contractor having first provided the Principal with notice of the need to submit a request for an alternative timeframe at least 40 business days prior to the date for submission of the Approval Documents in the applicable condition of approval; and
- (c) the Contractor must submit any information, report, plan or other documentation required to be prepared by the Contractor in a format which is consistent with, and permits the preparation of, the Approval Documents.

- 9 The Contractor is not permitted to propose to or agree with any regulator changes to the Project which could amount to a variation of any contract. Only the Principal can take such steps.
- 10 The Contractor should ensure that in complying with the Conditions, the Contractor observes its obligations under the Contract, for example, to comply with the TSRs.

No.	Enabling Works
General	
A6	The Principal will comply with condition A6
A9	The Principal will comply with condition A9, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
A10	The Principal will comply with condition A10, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Flexibility Provisions	

Schedules - Enabling Works Contract

No.	Enabling Works
A12	The Principal will comply with condition A12, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition. Unless otherwise directed by the Principal in writing, the Contractor must apply to the Principal for approval to undertake the flexibility provisions at least 10 business days prior to the proposed application of the flexibility provisions. The Principal may approve or refuse a request made by the Contractor under this condition.
A17	The Principal will comply with condition A17, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Environment Representative	
A20	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced ER. The Principal will be the single point of contact with the Secretary and provide the Contractor with the date the submission for approval is made, or any other timeframe relevant to this condition.
A21	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced ER. The Principal will be the single point of contact with the Secretary.
A22	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced ER. The Principal will be the single point of contact with the Secretary and provide the Contractor with the date the submission for approval is made, or any other timeframe relevant to this condition.
A23	The Principal will comply with condition A23 except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time frame requested by the Principal) in connection with a request under this condition.
A24	The Principal will comply with condition A24 except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
A25	The Principal will comply with condition A25 except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.

Schedules - Enabling Works Contract

No.	Enabling Works
Acoustics Adviser	
A26	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced Acoustics Adviser (AA). The Principal will be the single point of contact with the Secretary and provide the Contractor with the date the submission for approval is made, or any other timeframe relevant to this condition. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the timeframe requested by the Principal) in connection with a request under this condition.
A27	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced Acoustics Adviser (AA). The Principal will be the single point of contact with the Secretary and provide the Contractor with the date the submission for approval is made, or any other timeframe relevant to this condition.
A28	The Principal will engage, nominate and seek approval from the Secretary of a suitable qualified and experienced Acoustics Adviser (AA). The Principal will be the single point of contact with the Secretary and provide the Contractor with the date the submission for approval is made, or any other timeframe relevant to this condition.
A29	The Principal will comply with condition A29 except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Compliance Tracking Program	
A33	The Principal will comply with condition A33, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Community Information, Consultation and Involvement	
B1	The Principal will prepare the Community Communication Strategy. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition. The Contractor must implement all requirements within the Community Communication Strategy that relate to its Contractor's Activities.

Schedules - Enabling Works Contract

No.	Enabling Works
B2	The Principal will prepare the Community Communication Strategy. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition. The Contractor must implement all requirements within the Community Communication Strategy that relate to its Contractor's Activities.
B3	The Principal will prepare the Community Communication Strategy and submit it to the Secretary. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Complaints Management System	
36	The Principal will prepare a Complaints Management System, relying on information in respect of the Enabling Works and the Contractor's Activities provided by the Contractor to the Principal, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition. The Contractor must implement and maintain all requirements within the Complaints Management System that relate to its Contractor's Activities.
B7	The Principal will comply with condition B7, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
B8	The Principal will comply with condition B8, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
B9	The Principal will comply with condition B9, relying on information in respect of the Enabling Works and the Contractor's Activities provided by the Contractor to the Principal, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
B10	The Principal will comply with condition B10, relying on information in respect of the Enabling Works and the Contractor's Activities provided by the Contractor to the Principal, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.

Schedules - Enabling Works Contract



No.	Enabling Works
Provision of Electronic Information	
B1*	The Principal will comply with condition B1*, relying on information in respect of the Enabling Works and the Contractor's Activities provided by the Contractor to the Principal, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Operational Environmental Management	
D1	The Principal will comply with condition D1, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
D2	The Principal will comply with condition D2, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
D3	The Principal will comply with condition D3, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
D4	The Principal will comply with condition D4, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
D5	The Principal will comply with condition D5, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
D6	The Principal will comply with condition D6.
D7	The Principal will comply with condition D7.
D8	The Principal will comply with condition D8.

Schedules - Enabling Works Contract

No. Enabling Works	
Traffic Network Management	
E10	The Principal will prepare the Network Management Strategy. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition. The Contractor must implement all requirements within the Network Management Strategy that relate to its Contractor's Activities.
Operational Traffic, Transport and Access Performance Review	
E18	The Principal will comply with condition E18, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E19	The Principal will comply with condition E19, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Urban Design Requirements Report	
E87	The Principal will comply with condition E87, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E88	The Principal will comply with condition E88, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Design Review Panel	
E90	The Principal will comply with condition E90, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E91	The Principal will comply with condition E91, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.

No.	Enabling Works
E92	The Principal will comply with condition E92, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E93	The Principal will comply with condition E93.
E94	The Principal will comply with condition E94.
E95	The Principal will comply with condition E95, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E96	The Principal will comply with condition E96.
Biodiversity and Revegetation	
E101	<p>The Principal will comply with condition E101 except that:</p> <ul style="list-style-type: none"> (a) the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition, and (b) the Contractor must comply with any requirements identified in the Monitoring Program, including any mitigation measures, in connection with a request under this condition.
Streetscape Trees	
E102	The Principal will comply with condition E102, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
E103	The Principal will comply with condition E103, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.

Schedules - Enabling Works Contract

No.	Enabling Works
E104	The Principal will comply with condition E104, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Tree Offset Package	
E107	The Principal will prepare and implement a Tree Offset Package. The Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time requested by the Principal) in connection with a request under this condition.
Business Activation Plan	
E110	The Principal will comply with condition E110.
Flooding	
E113	The Principal will comply with condition E113, except that the Contractor must provide all documents, information, assistance and co-operation reasonably requested by the Principal (and within the time agreed with the Principal) in connection with a request under this condition.
E114	The Principal will comply with condition E114.
Electromagnetic Interference (EMI)	
E116	The Principal will comply with condition E116.
E117	The Principal will comply with condition E117.
Sustainability	
E136	In complying with this condition, the Contractor must achieve at least a minimum 'As built' rating score of 56 using the Infrastructure Sustainability Council of Australia infrastructure rating tool, or an equivalent level of performance using a demonstrated equivalent rating tool.

No.	Enabling Works
E137	The Principal will comply with condition E137, except that the Contractor must adhere to and document the implementation of the Sustainability Strategy with respect to the Contractor's Activities.

Part B Roads Act Approval – Pass Through Matrix

- 1 The Principal is a party to an agreement titled "Roads Act Approval Parramatta Light Rail" ("Roads Act Approval"), dated [insert] between Roads and Maritime Services ("RMS") and the Principal.
- 2 Capitalised terms used:
 - A. paragraphs 1 to 6 in this Schedule 4, Part B have the meaning given to them in the Contract; and
 - B. the table in this Schedule 4, Part B, have the meanings given to them in the Roads Act Approval, unless otherwise specified.
- 3 The Contractor agrees that whenever, pursuant to the terms of the Roads Act Approval, the Principal makes an acknowledgment or gives a release or warranty, indemnity, or covenant to RMS under any clause of the Roads Act Approval then, subject to the other terms of this Contract, the Contractor is deemed to make the same acknowledgment or give the same release or warranty, indemnity or covenant to the Principal in the same way as if the relevant terms of the acknowledgment, release or warranty, indemnity or covenant were set out in full in this Contract.
- 4 All obligations of the "Applicant" under the Roads Act Approval are the responsibility of the Contractor, other than those listed below.
- 5 Without limitation to clause 2.15(a)(ii) of the Contract, where the Contractor is required to assist the Principal as the "Applicant", pursuant to the requirements of this Schedule 4, Part B, the Contractor must do so.
- 6 In addition to paragraph 4 above, where the Roads Act Approval requires the Applicant to notify or provide documentation to the Consent Authority, this will be read as the Contractor must give such notice or documentation directly to the Principal, except in respect of the following Conditions, which must be issued by the Contractor to the Principal and RMS:

(Note: The references to the notices/documents which the Contractor must be issued directly to RMS will be finalized upon resolution of the Roads Act Approval Conditions.)



Condition	Roads Act Approval Conditions which remain the responsibility of TfNSW	Obligations that the Contractor must assist TfNSW to comply with
3	<p>TfNSW must fund, operate and maintain the Works:</p> <ul style="list-style-type: none"> (a) safely and in accordance with Law (including in compliance with the Consent Conditions); (b) in a manner which appropriately manages impacts on road users, the Affected Roads and the effective operation and maintenance of the road network; and (c) at its own risk and cost. 	
7	<p>TfNSW must ensure that during the design, construction, testing and commissioning period, there is at all times a suitable Independent Certifier:</p> <ul style="list-style-type: none"> (a) appointed on terms acceptable to RMS; and (b) who must act independently of TfNSW, the Contractor and their contractors. 	<p>The Contractor must assist TfNSW with anything TfNSW requires in order to ensure that a suitable Independent Certifier is appointed on acceptable terms and acts independently of TfNSW and the Contractor.</p>
8	<p>TfNSW must ensure that RMS obtains the benefit of the Independent Certifier's services performed, and promises and warranties given under the Independent Certifier Deed in respect of the Relevant Design Documentation, the Relevant Design Documentation (Traffic Signals), the Relevant Design Documentation (Bridges and Complex Structures) and the</p>	

Schedules - Enabling Works Contract



Condition	Roads Act Approval Conditions which remain the responsibility of TNSW	Obligations that the Contractor must assist TNSW to comply with
	Relevant Works on terms acceptable to TNSW	
9	TNSW must ensure that the Independent Certifier is engaged on terms consistent with the requirements of condition 9.	
10	TNSW must ensure that the Independent Certifier is engaged on terms consistent with the requirements of Condition 10	
11	TNSW must bear the costs of the Independent Certifier in carrying out its functions, including as contemplated in the Consent Conditions.	
12	TNSW to comply with requirements of Condition 12.	
21(h)	All rights and obligations under clause 21(h) will be retained by TNSW.	
21(i)	TNSW must procure that the Independent Certifier provides to RMS all communications with respect to the Relevant Design Documentation, Relevant Design Documentation (Traffic Signals) or Relevant Design Documentation (Bridges and Complex Structures).	
21(j)	If requested by RMS, TNSW will procure that the Independent Certifier meet with RMS within 5 Business Days of such request to discuss the resolution of any comment by RMS in respect of the Relevant Design Documentation, Relevant Design Documentation (Traffic Signals) or Relevant Design Documentation (Bridges and Complex Structures) (as applicable).	



Condition	Roads Act Approval Conditions which remain the responsibility of TfNSW	Obligations that the Contractor must assist TfNSW to comply with
21(k)	TfNSW must procure the Independent Certifier to resolve any outstanding issues the subject matter of the discussion under condition 21(i).	
29	If TfNSW receives any comments on the Project Plans, TfNSW must forward the comments to the Independent Certifier and must ensure that the Independent Certifier addresses such comments in its review of the relevant Project Plan.	
35(b) and (c)		<p>(b) notify TfNSW as soon as possible after (and in any event, within 5 hours of) becoming aware of any notifiable incident which occurs in connection with the design, construction, testing and commissioning of the Relevant Works;</p> <p>(c) provide TfNSW with a written report of all work health, safety and rehabilitation matters as TfNSW may require from time to time and no less than monthly.</p>
41	TfNSW must, in operating and maintaining the Works, satisfy the obligations of Condition 41.	
49	TfNSW remains responsible for all structures and facilities	



Condition	Roads Act Approval Conditions which remain the responsibility of TNSW	Obligations that the Contractor must assist TNSW to comply with
	<p>(including rail infrastructure) constructed or procured by it for the purposes of the light rail system, including all costs and risks associated with the ongoing resourcing, maintenance, operation, insurance and upkeep of those structures and facilities in perpetuity (and, where relevant, removal or replacement of those structures and facilities). TNSW must pay all fees and charges imposed by third parties, including service providers, in connection with the operation and maintenance of the Works</p>	
63	<p>TNSW must provide proof of insurance to RMS on request and whenever the Contractor is provided with proof of insurances by its Contractors.</p>	
67	<p>TNSW must develop, monitor and approve media releases and advertisements concerning the Works and liaise as appropriate to ensure consistency of messaging and activities with those of RMS.</p>	<p>The Contractor to assist TNSW to develop, monitor and approve media releases and advertisements concerning the Works and liaise as appropriate to ensure consistency of messaging and activities with those of RMS.</p>
74	<p>TNSW will be responsible for payment of fees or any other payments required to RMS in connection with the execution of its functions pursuant to Condition 74.</p>	
81	<p>The rights and obligations under Condition 81 remain with TNSW.</p>	
<p>Subcontractor Property Requirements</p>		
2.1	<p>Media releases, letterbox drops and other publications concerning changes to traffic arrangements as a result of the</p>	

Schedules - Enabling Works Contract



Condition	Roads Act Approval Conditions which remain the responsibility of TNSW	Obligations that the Contractor must assist TNSW to comply with
	Works (including any proposed temporary road closures or traffic control arrangements) must be approved by RMS prior to release.	
3.1	The names of all contractors and subcontractors proposed to undertake the Relevant Works must be provided to RMS prior to the commencement of the Contractor's work.	
4.1	TNSW must notify RMS in writing at least 10 Business Days in advance of the date on which the Contractor expects to commence construction of any part of the Relevant Works and must only commence Works in circumstances where to do so would not place it in breach of the Roads Act Consent.	
4.3	TNSW must consult with RMS prior to utilities being relocated outside of the standard Public Utility Space Allocations	To assist TNSW in consulting with RMS in the event that utilities are located outside of the standard Public Utility Space Allocations as detailed in the NSW Streets Opening Conference's Guide to Codes and Practices for Streets Opening.
Indemnification by the Contractor		
35	<p>The Contractor must indemnify TNSW and RMS against any damage, cost, expenses, loss or liability suffered or incurred by TNSW or RMS arising out of or in connection with:</p> <ul style="list-style-type: none"> <li>(a) any failure of the Contractor or a PCBU engaged by the Contractor, to exercise or fulfil its functions and obligations as a Principal Contractor; and <li>(b) any work health and safety claims in connection with the Works or the Contractor's workplace except to the extent that they are directly caused by a wrongful, negligent or unlawful act or default of TNSW or RMS or its employees, contractors or agents (excluding the 	



Condition	Roads Act Approval Conditions which remain the responsibility of TfNSW	Obligations that the Contractor must assist TfNSW to comply with:
<i>Contractor and its contractors).</i>		
59	The Contractor must indemnify TfNSW and RMS in relation to the design and construction of the Works. The Contractor acknowledges that TfNSW holds its indemnity on trust for RMS.	

Part C RMS Collaboration Agreement – Pass Through Matrix

- 1 The Principal is a party to an agreement titled "Parramatta Light Rail – Project Collaboration Agreement" ("Collaboration Agreement"), dated 05 February 2018 between Roads and Maritime Services ("RMS") and the Principal.
- 2 Capitalised terms used in:
 - A. paragraphs 1 to 6 in this Schedule 4, Part C have the meaning given to them in the Contract; and
 - B. the table in this Schedule 4, Part C have the meanings given to them in the Collaboration Agreement,
 unless otherwise specified.
- 3 The Contractor agrees that whenever, pursuant to the terms of the Collaboration Agreement, the Principal makes an acknowledgment or gives a release or warranty, indemnity, or covenant to RMS under any clause of the Collaboration Agreement then, subject to the other terms of this Contract, the Contractor is deemed to make the same acknowledgement or give the same release or warranty, indemnity or covenant to the Principal in the same way as if the relevant terms of the acknowledgement, release or warranty, indemnity or covenant were set out in full in this Contract.
- 4 All obligations of the Principal under Collaboration Agreement remain the responsibility of the Principal, other than those obligations which are assumed by the Contractor, as listed in the table below.
- 5 Without limiting clause 2.15(a)(iii) of the Contract, where the Contractor is required to assist the Principal pursuant to the requirements of this Schedule 4, Part C, the Contractor must do so.
- 6 In addition to paragraphs 3, 4, and 5 above, where the below table requires the Contractor to notify, provide documentation to or consult with RMS, this will be read as an obligation on the Contractor to give such notice or documentation directly to RMS with a copy to the Principal (at the same time as when the Contractor provides such a notice or document to RMS).

Clause	Obligations assumed by the Contractor	Obligations of TfNSW that Contractor must assist the TfNSW to comply with
2.3(a) and 4.3	The Contractor is responsible for obtaining, maintaining and complying with all Approvals which may be required for the Off-	



Clause	Obligations assumed by the Contractor	Obligations of TfNSW that Contractor must assist the TfNSW to comply with
<i>Alignment Works (other than the Planning Approval)</i>		
3.1(a)(i)	The Contractor must undertake the Contractor's Activities in a manner which achieves the least possible disruption (in both the short and long term) to the safe and efficient operation of the road network and customers on all modes of transport.	
3.1(b)	The Contractor must establish governance arrangements to ensure that it works with TfNSW and RMS effectively in connection with the delivery of the Off-Alignment Works.	
3.1(c)	The Contractor must provide an effective means to progressively resolve issues and support decision making processes to provide certainty to the scope and the responsibilities of each party.	
3.3(a)	The Contractor must undertake the Contractor's Activities to ensure safe and efficient road network operation, traffic flow, road asset management, safety, environment quality and community consultation.	
3.3(b)	<p>The Contractor acknowledges that the following broad activities are important to RMS, and will be addressed by the Contractor in undertaking the Contractor's Activities:</p> <ul style="list-style-type: none"> (a) road safety; (b) road network performance and efficiency; (c) geometric design; 	



Clause	Obligations assumed by the Contractor	Obligations of TfNSW that Contractor must assist the TfNSW to comply with
	<ul style="list-style-type: none"> (d) signposting and line marking; (e) construction impacts; (f) compliance with legislation, policy and standards; (g) traffic signal management; (h) traffic management and ROLS; (i) parking impacts; (j) pedestrian/cyclist integration; (k) ITS systems; (l) incident management; (m) speed zones; (n) pavement condition and design; and (o) road infrastructure and systems maintenance and access regimes. 	
3.3(c)	The Contractor must cooperate with RMS in RMS' exercise of its legislative obligations and functions.	
7.4(a)	The Contractor must undertake the Off-Alignment Works in	



Clause	Obligations assumed by the Contractor	Obligations of TNSW that Contractor must assist the TNSW to comply with
	<p>accordance with:</p> <ul style="list-style-type: none"> (a) the Consent Conditions; and (b) the Collaboration Agreement (where applicable). 	
8.1(b)	The Contractor must, and must procure that its subcontractors, comply with the Consent Conditions.	
8.3(a)	The Contractor must notify TNSW of any breach of the Consent Conditions which becomes known to the Contractor.	The Contractor must assist TNSW in consulting with RMS in relation to the performance of its obligations under the Consent Conditions.
9	The Contractor must work cooperatively with RMS and TNSW to implement the actions contemplated by the Collaboration Agreement.	
10	The Contractor must obtain ROLs in accordance with the requirements of TMC in order to occupy or close traffic lanes or impede the free flow of traffic on a road.	
11.1	<p>The Contractor must keep TNSW regularly informed as to the progress of:</p> <ul style="list-style-type: none"> (a) carrying out the Off-Alignment Works in accordance with the Consent Conditions; and (b) the Off-Alignment Works. 	To assist TNSW in keeping RMS regularly informed as to the progress of the Project and the Off-Alignment Works.
11.2	The Contractor must arrange access to the Site by RMS, subject to	

Schedules - Enabling Works Contract

Clause	Obligations assumed by the Contractor	Obligations of TNSW that Contractor must assist the TNSW to comply with
	any limitations agreed with TNSW in the Contract.	
11.2(b)		The Contractor must assist TNSW with providing the necessary documentation for the Off-Alignment Works to RMS, as agreed between TNSW and RMS.
11.3	The Contractor must procure, for the benefit of TNSW and RMS, any manufacturer or supplier warranties in relation to all traffic signals and related equipment installed, relocated or otherwise modified as part of the Off-Alignment Works.	
11.4	The Contractor must provide to TNSW, as-built drawings with respect to any part of the Off-Alignment Works, prior to completion of the relevant part of the Off-Alignment Works.	
12(b)	The Contractor must maintain those parts of the road(s) which the Contractor has access to and is working on.	
12(f)	The Contractor must procure a dilapidation report in respect of the relevant Off-Alignment Works on completion of those works by the Contractor under the Contract.	
13	<p>The Contractor:</p> <p>(a) grants to TNSW and RMS, at no cost to TNSW or RMS, a permanent, perpetual, irrevocable, transferable, royalty-free, non-exclusive licence to use, reproduce, modify, adapt, sub-license and otherwise use all of the design, materials, documents (including as-built documents) and methods of working produced by or on behalf of the</p>	



Clause	Obligations assumed by the Contractor	Obligations of TINSW that Contractor must assist the TINSW to comply with
	<p>Contractor in relation to the Off-Alignment Works; and</p> <p>(b) must nominate TINSW and RMS as entities to which the Contractor grants a permanent, perpetual, irrevocable, transferable, royalty-free, non-exclusive, licence to use, reproduce, modify, adapt and otherwise use all of the design materials, documents (including as-built documents) and methods of working produced by or on behalf of the Contractor in relation to the Off-Alignment Works.</p> <p>so as to enable TINSW and RMS to perform their functions under the Collaboration Agreement.</p>	
13(b)	<p>The Contractor will ensure that TINSW and RMS receive the benefit of any other intellectual property rights in relation to any documents and other materials provided by the Contractor to TINSW and RMS in relation to the Collaboration Agreement or the Consent Conditions, so as to enable TINSW and RMS to perform their functions under the Collaboration Agreement.</p>	
14	<p>The Contractor will:</p> <p>(a) on either TINSW or RMS' request, confirm that all insurances required under the Contract are current; and</p> <p>(b) on either TINSW or RMS' reasonable request, provide certified copies of insurance policies and certificates of currency held by the Contractor and referred to in (a).</p>	

Schedules - Enabling Works Contract



Clause	Obligations assumed by the Contractor	Obligations of TfNSW that Contractor must assist the TfNSW to comply with
16.1(b)(i)	The Contractor must ensure that any works undertaken in road reserve are undertaken in accordance with RMS' road standards	
16.1(b)(ii)	The Contractor must, where works involve the construction of assets, undertake this in accordance with the published standards of the relevant asset owner current at the time of detailed design.	
16.1(b)(iv)	The Contractor must, where works are on existing assets, undertake this in accordance with the published standards of the asset owner, current at the time of the applicable works or maintenance, to the extent that it is reasonable.	
16.1(c)	<p>Any works:</p> <ul style="list-style-type: none"> (a) involving the construction of new Utility Assets (including telecommunications assets) will be undertaken in accordance with the published standards (of the relevant Utility Asset Owner) current at the time of the works, unless and to the extent it is impracticable and unreasonable that such standards apply; and (b) on or maintenance of existing Utility Assets (including telecommunications assets) are to be undertaken in accordance with the published standards (of the relevant Utility Asset owner) current at the time of the works, unless and to the extent it is impracticable and unreasonable that such standards apply. 	
17(a)	The Contractor must ensure that each Relevant Design Documentation is endorsed with a certificate from the Independent	



Clause	Obligations assumed by the Contractor	Obligations of TNSW that Contractor must assist the TNSW to comply with
	<p>Certifier in the form contained in Annexure A to the Independent Certifier Deed Poll.</p>	
<p>20.1</p>	<p>To the full extent permitted by Law, the Contractor indemnifies TNSW, RMS and its Employees from and against all Claims and Costs brought against, suffered or incurred by TNSW, RMS and its Employees (including in circumstances where RMS has elected to exercise the functions of another roads authority) arising out of or in relation to:</p> <ul style="list-style-type: none"> (a) any damage to property or destruction of property; (b) any illness of (including mental illness), personal injury to or the death of any person; and (c) to the extent not indemnified under paragraphs (a) or (b), any third party Claim whatsoever brought against TNSW or RMS, <p>arising out of or in relation to the Off Alignment Works, provided that the indemnity shall be reduced proportionately to the extent any Claims or Costs are caused by or contributed to by RMS by either</p> <ul style="list-style-type: none"> (d) a negligent act or omission of TNSW, RMS or its Employees; or (e) a breach by TNSW or RMS of the Collaboration Agreement. 	

Schedules - Enabling Works Contract



Clause	Obligations assumed by the Contractor	Obligations of TINSW that Contractor must assist the TINSW to comply with
20.3	<p>The Contractor indemnifies and releases to the full extent permitted by Law, TINSW and RMS from all Claims and Costs resulting from or in connection with any breach by the Contractor of the Collaboration Agreement, provided that the indemnity shall be reduced proportionately to the extent that any Claims or Cost are caused by or contributed to by TINSW or RMS by either:</p> <ul style="list-style-type: none"><li>(a) a negligent act or omission of TINSW, RMS or its Employees; or<li>(b) a breach of TINSW or RMS of the Collaboration Agreement.	
22.2(b)	<p>The Contractor must, on the commencement of the Contract, execute a Project Company Deed Poll and provide a copy to RMS and TINSW.</p>	

Part D CoPC Development Agreement – Pass Through Matrix

- 1 The Principal is a party to an agreement titled "Development Agreement Parramatta Light Rail" ("CoPC Development Agreement"), dated 28 March 2018 between the City of Parramatta Council (CoPC) and the Principal.
- 2 Capitalised terms used in:
 - A paragraphs 1 to 6 in this Schedule 4, Part D have the meaning given to them in the Contract and
 - B the table in this Schedule 4, Part D have the meanings given to them in the CoPC Development Agreement,unless otherwise specified.
- 3 The Contractor agrees that whenever, pursuant to the terms of the CoPC Development Agreement, the Principal makes an acknowledgment or gives a release or warranty, indemnity or covenant to CoPC under any clause of the CoPC Development Agreement then, subject to the other terms of this Contract, the Contractor is deemed to make the same acknowledgment, or give the same release or warranty, indemnity or covenant to the Principal in the same way as if the relevant terms of the acknowledgment, release or warranty, indemnity or covenant were set out in full in this Contract.
- 4 All obligations of the Principal under the CoPC Development Agreement remain the responsibility of the Principal, other than those obligations which are assumed by the Contractor, as listed in the table below.
- 5 Without limitation to clause 2.15(a)(iii) of the Contract, where the Contractor is required to assist the Principal, pursuant to the requirements of this Schedule 4, Part D, the Contractor must do so.
- 6 In addition to paragraphs 3, 4 and 5 above, where the CoPC Development Agreement requires the Principal to notify, provide documentation to or consult with CoPC, this will be read as an obligation on the Contractor to give such notice or documentation directly to CoPC with a copy to the Principal (at the same time as when the Contractor provides such a notice or document to CoPC).

Schedules - Enabling Works Contract



Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TfNSW to comply with
3.1(e)(iii)	All rights and obligations under clause 3.1(e)(iii) apply to the Contractor.	
7.20(b)(i)	All rights and obligations under clause 7.20(b)(i) apply to the Contractor.	
7.20(b)(ii)	All rights and obligations under clause 7.20(b)(ii) apply to the Contractor (except to the extent that Compulsory Access Rights are to be obtained by TfNSW).	
7.20(b)(iii)	All rights and obligations under clause 7.20(b)(iii) apply to the Contractor.	
7.20(c)	All rights and obligations under clause 7.20(c) apply to the Contractor.	
7.20(d)	All rights and obligations under clause 7.20(d) apply to the Contractor.	
7.20(e)	All rights and obligations under clause 7.20(e) apply to the Contractor.	
7.20(f)	All rights and obligations under clause 7.20(f) apply to the Contractor.	
7.20(g)(i) and clause 4.1	All rights and obligations under clause 7.20(g)(i) and clause 4.1 apply to the Contractor.	

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Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TINSW to comply with
7.20(g)(ii) and clause 7.1	All rights and obligations under clause 7.20(g)(ii) and clause 7.1 apply to the Contractor.	
7.20(g)(ii) and clause 7.3	All rights and obligations under clause 7.20(g)(ii) and clause 7.3 (excluding clause 7.3(c)) apply to the Contractor.	
7.20(g)(ii) and clause 7.4	All rights and obligations under clause 7.20(g)(ii) and clause 7.4 apply to the Contractor.	
7.20(g)(ii) and clause 7.7(f)(iii) and (iv)	All rights and obligations under clause 7.20(g)(ii) and clause 7.7(f)(iii) and (iv) apply to the Contractor.	
7.20(g)(ii) and clause 7.8	All rights and obligations under clause 7.20(g)(ii) and clause 7.8 apply to the Contractor.	
7.20(g)(iv) and clause 7.10	All rights and obligations under clause 7.20(g)(iv) and clause 7.10 apply to the Contractor.	
7.20(g)(iv) and clause 7.11	All rights and obligations under clause 7.20(g)(iv) and clause 7.11 apply to the Contractor.	
7.20(g)(iv) and clause 7.12	All rights and obligations under clause 7.20(g)(iv) and clause 7.12 apply to the Contractor.	
7.20(g)(iv) and clause 7.13	All rights and obligations under clause 7.20(g)(iv) and clause 7.13 apply to the Contractor.	

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Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TNSW to comply with
7.20(g)(iv) and clause 7.14	All rights and obligations under clause 7.20(g)(iv) and clause 7.14 apply to the Contractor.	
7.20(g)(iv) and clause 7.15	All rights and obligations under clause 7.20(g)(iv) and clause 7.15 apply to the Contractor.	
7.20(g)(v) and clause 8.2		Without limiting clause 2.15(a)(iii) of the Contract, the Contractor must provide TNSW with all reasonable assistance in relation to clause 7.20(g)(v) and clause 8.2.
7.20(g)(v) and clause 8.3(a)(i)		Without limiting clause 2.15(a)(iii) of the Contract, the Contractor must provide TNSW with all reasonable assistance in relation to clause 7.20(g)(v) and clause 8.3(a)(i).
7.20(g)(v) and clause 8.3(a)(ii)		Without limiting clause 2.15(a)(iii) of the Contract, the Contractor must provide TNSW with all reasonable assistance in relation to clause 7.20(g)(v) and clause 8.3(a)(ii).
7.20(g)(v) and clause 8.3(a)(iv)		Without limiting clause 2.15(a)(iii) of the Contract, the Contractor must provide TNSW with all reasonable assistance in relation to clause 7.20(g)(v) and clause 8.3(a)(iv).
7.20(g)(vii) and clause 12	All rights and obligations under clause 7.20(g)(vii) and clause 12 apply to the Contractor.	
7.20(g)(vii) and clause 13.1	The Contractor must indemnify and release both TNSW and CoPC in accordance with the indemnities and releases which	



Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TfNSW to comply with
	TfNSW provides in clause 13.1	
7.20(g)(viii) and clause 20.2(b)-(d)	All rights and obligations under clause 7.20(g)(viii) and clause 20.2(b)-(d) apply to the Contractor.	
7.20(g)(viii) and clause 20.6	All rights and obligations under clause 7.20(g)(viii) and clause 20.6 apply to the Contractor.	
7.20(g)(viii) and clause 21.1	All rights and obligations under clause 7.20(g)(viii) and clause 21.1 apply to the Contractor.	
7.20(g)(viii) and clause 21.2	All rights and obligations under clause 7.20(g)(viii) and clause 21.2 apply to the Contractor.	
7.20(g)(viii) and clause 21.5(a)-(c)	All rights and obligations under clause 7.20(g)(viii) and clause 21.5 (a) to (c) apply to the Contractor.	
7.20(g)(ix) and clause 24		Without limiting clause 2.15(a)(ii) of the Contract, the Contractor must provide TfNSW with all reasonable assistance in relation to clause 7.20(g)(ix) and clause 24.
7.20(g)(ix) and Schedule 2	All rights and obligations under clause 7.20(g)(ix) and Schedule 2 apply to the Contractor.	
7.20(h)	All rights and obligations under clause 7.20(h) apply to the Contractor (except in relation to obtaining the Acceptable Project Planning Approval).	



Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TfNSW to comply with
7.20(i)	All rights and obligations under clause 7.20(i) apply to the Contractor.	
7.20(j)	All rights and obligations under clause 7.20(j) apply to the Contractor.	
7.20(l)	All rights and obligations under clause 7.20(l) apply to the Contractor.	
7.20(m)	All rights and obligations under clause 7.20(m) apply to the Contractor.	
7.20(n)	All rights and obligations under clause 7.20(n) apply to the Contractor.	
7.20(o)	All rights and obligations under clause 7.20(o) apply to the Contractor.	
7.20(p) and (q)		Without limiting clause 2.15(a)(iii) of the Contract, the Contractor must provide TfNSW with all reasonable assistance in relation to clause 7.20(p) and (q).
7.20(r)	All rights and obligations under clause 7.20(r) apply to the Contractor.	
7.20(s)	All rights and obligations under clause 7.20(s) apply to the Contractor.	

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Clause	Obligations assumed by the Contractor	Obligations that the Contractor must assist TfNSW to comply with
7.20(t)	All rights and obligations under clause 7.20(t) apply to the Contractor.	
7.20(u)	All rights and obligations under clause 7.20(u) apply to the Contractor.	

Schedules - Enabling Works Contract

Schedule 5 Subcontractors – Security of Payment

(Clause 2.2(g)(i))

The following terms must be included in each Subcontract, and the Subcontract is let by those Subcontractors, as referred to in clause 2.2(g)(i) of the General Conditions of this Contract.

1 Options as to Form of Security

- (a) A clause which allows the Subcontractor to lodge an approved unconditional undertaking from a bank or financial institution instead of a cash security or retention moneys as its security for performance of the Subcontract.
- (b) A clause which provides that if the Subcontractor does lodge an unconditional undertaking for the required amount, the Contractor must not deduct further retention moneys and any retention moneys or other cash security then held will be promptly released to the Subcontractor.

2 Trust for Cash Security and Retention Moneys

A clause which has the effect that:

- (a) cash securities and retentions under the Subcontract and the cash proceeds of any security converted to cash (other than in exercise of a contractual right of enforcement) is trust money and must be deposited into and held in a trust account with a bank within 24 hours of receipt or conversion.
- (b) the trust money is beneficially owned by the party which provided the security at all times unless the other party becomes entitled to receive them under the Subcontract;
- (c) the security holder must hold proper records and account to the security provider for the trust moneys; and
- (d) any interest earned by the trust account will not be held in trust, and will be owned by the security holder.

3 Payment Provisions

A clause which:

- (a) has the effect of requiring the Contractor to pay the Subcontractor (and Subcontractors their subcontractors) regular progress payments for 100% of the value of work (less only retention moneys, if any, paid into the trust account) for which payment is claimed by the Subcontractor and for which the Contractor has claimed payment from the Principal, no later than:

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- (i) in the case of the Contractor's Subcontractors, 7 days; and
 - (ii) in the case of the Subcontractor's subcontractors, 14 days,
- after the last day for payment by the Principal to the Contractor for such work;
- (b) states nothing in the clause referred to in paragraph (a) is to be read so as to prevent the Contractor from paying the Subcontractor an amount in excess of that claimed from the Principal, or before the time stipulated in that clause, and
 - (c) states if anything in the clause referred to in paragraph (a) is inconsistent with any other provision in the Subcontract, the provisions of that clause will prevail to the extent of the inconsistency.

A clause that prescribes an interest rate for overdue payments that is not less than the interest rate specified in clause 11.13 of the General Conditions of this Contract.

4 Alternative Dispute Resolution

- (a) A clause that requires alternative dispute resolution procedures of the type required in this Contract.
- (b) A clause making it optional for the Subcontractor to comply with the alternative dispute resolution process if the only remedy it seeks is an order for payment of money which is not disputed to be due and payable under the Subcontract.

5 Documents to be Provided to Subcontractors

A clause that requires the Contractor to provide the Subcontractor with a copy of extracts from this Contract before the Subcontractor starts work under the Subcontract. The extracts to be provided are:

- (a) clause 2.2(g)(i);
- (b) this Schedule 5;
- (c) clause 11; and
- (d) clause 15.

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Schedule 6 Consultant Deed of Covenant

(Clause 2.2(g)(i.))

This deed poll is made the _____ day of _____

To: **Transport for NSW** (ABN 18 804 239 602) a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 (the "Principal")

By: [_____] ("Consultant")

Recitals

- A The Principal has engaged [_____] ("Contractor") to carry out certain works for the Principal by a contract dated [_____] ("Contract").
- B The Contractor has engaged the Consultant by agreement dated [_____] ("Subcontract") to carry out the professional services to be performed under the Subcontract ("Professional Services") for the purposes of the performance of the Contractor's obligations under the Contract as they relate those design services.
- C Under the Contract, the Contractor is required to procure the Consultant to execute this deed poll in favour of the Principal.

Operative

1 Duty of Care

- (a) The Consultant:
- (i) warrants to the Principal that:
- (A) in performing the Professional Services, it will exercise the standard of skill, care and diligence that would be expected of a consultant experienced in and expert in the provision of the type of professional services required by the Principal;
- (B) the Professional Services will be fit for the intended purposes disclosed in or reasonably able to be inferred from the Works Brief, which is an annexure to the Contract; and
- (C) the Professional Services do not and will not infringe any patent, registered design, trademark or name, copyright or other protected right;
- (i) acknowledges that:
- (A) in performing the Professional Services it will owe a duty of care to the Principal; and

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- (B) it is aware that the Principal will be relying upon the skill and judgment of the Consultant in performing the Professional Services and the warranties given by the Consultant in this deed poll; and
- (iii) must act in good faith and in the best interests of the Principal and promptly advise the Principal about any matter in which the Consultant has been instructed by the Contractor to provide the Professional Services in a manner which is, or may result in an outcome which is, not in accordance with the requirements of the Contract, including without limitation:
 - (A) where the Contractor's instructions in relation to design are not consistent with the Contract or may result in the Works not being fit for their intended purpose; or
 - (B) where the Contractor's instructions require the Consultant to issue a certificate where the conditions for the issue of that certificate under the Contract have not been satisfied.
- (b) The Consultant must:
 - (i) fully cooperate with each other consultant and contractor engaged by the Principal ("Other Contractor");
 - (ii) carefully coordinate and integrate the Professional Services with the services and work carried out by each Other Contractor;
 - (iii) carry out the Professional Services so as to minimise any interfering with, disrupting or delaying, the services and work carried out by each Other Contractor;
 - (iv) without limitation, provide whatever advice, support and cooperation is reasonable to facilitate the due carrying out of the services and work being provided by each Other Contractor;
 - (v) ensure title to and intellectual property (including any patent, registered design, trademark or name, copyright or other protected right) in or in relation to the Professional Services will vest upon its creation for the purposes of the Contract in the Principal;
 - (vi) obtain an assignment to the Principal from any third party who owns any intellectual property right in the Professional Services;
 - (vii) if any intellectual property rights in or in relation to documents, designs and computer programs created for the purposes of the Contract is not capable of being vested in the Principal because the Consultant itself does not own, and is unable at a reasonable cost to obtain ownership of, those rights, provide to the Principal an irrevocable licence to use that Intellectual Property, by sub-licence from the Consultant or direct licence from a third party; and
 - (viii) ensure that the intellectual property created for the purposes of the Contract is not used, adapted or reproduced other than for the purposes of the Contract without the prior written approval of the Principal (which will not be unreasonably withheld, but may be given subject to terms and conditions).

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- (c) The Consultant must indemnify the Principal from and against:
- (i) any liability to or claim by any other person; and
 - (ii) all claims against, and costs, expenses, losses and damages, suffered or incurred by the Principal arising out of, or in any way in connection with:
 - (iii) the Consultant's breach of a term of, or warranty under, this deed poll; or
 - (iv) any actual or alleged infringement of any patent, registered design, trademark or name, copyright or other protected right

2 Notices

- (a) Any notices contemplated by, or arising out of or in any way in connection with, this deed poll must be in writing and delivered to the relevant address (or to a party's new address which that party notifies to the others):
- (i) to the Principal: c/o Level 5, Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067
 - (ii) to the Consultant: **[insert details]**
- (b) A notice sent by post will be taken to have been received at the time when, in due course of the post, it would have been delivered at the address to which it is sent.
- (c) If the Consultant is a foreign company (as defined in the Corporations Act), the Consultant must within 14 days of the date of this deed poll:
- (i) appoint a local process agent acceptable to the Principal as its agent to accept service of process under or in any way in connection with this deed poll; and
 - (ii) obtain the process agent's consent to the appointment.
- (d) The appointment must be in a form acceptable to the Principal and may not be revoked without the Principal's consent.

3 Miscellaneous

- (a) This deed poll will be construed in accordance with the law of the State of New South Wales and the Consultant irrevocably submits to the jurisdiction of the Courts of that State.
- (b) This deed poll may not be revoked or otherwise modified without the prior written consent of the Principal.

Schedules - Enabling Works Contract

Schedule

[INSERT DESCRIPTION OF PROFESSIONAL SERVICES] as more particularly described in the Subcontract.

Executed as a deed poll.

[appropriate execution block to be inserted]

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Schedule 7 Approvals to be obtained by the Principal

(Clause 2.3(d)(i))

- The Planning Approval.
- The Roads Act Approval.

Part 2

clause 2.7(c)(ii)

This deed poll (*Undertaking*) made the _____ day of _____ 20__

In favour of: Transport for NSW (ABN 18 804 239 602), a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2057 (*Principal*)

Given by: [_____] (*Institution*)

RECITALS

- A. By a deed dated [__] (*Deed*) between [__] (*Contractor*) and the Principal the Contractor agreed to carry out the Contractor's Activities (as defined in the Deed).
- B. Under the provisions of the Deed, the Contractor is required to provide this Undertaking to the Principal.

INTERPRETATION

Terms used in this deed poll which are not otherwise defined will have the meaning given to them in the Deed.

OPERATIVE

1. The Institution unconditionally undertakes and covenants to pay to the Principal on demand without reference to the Contractor and notwithstanding any notice given by the Contractor to the Institution not to do so, any sum or sums which may from time to time be demanded in writing by the Principal to a maximum aggregate sum of \$ (_____).
2. The Institution's liability under this Undertaking will be a continuing liability and will continue until payment is made under this Undertaking of the maximum aggregate sum or until the Principal notifies the Institution that this Undertaking is no longer required.
3. The liability of the Institution under this Undertaking must not be discharged or impaired by reason of any variation or variations (with or without the knowledge or consent of the Institution) in any of the stipulations or provisions of the Deed or the Contractor's Activities or acts or things to be executed, performed and done under the Deed or by reason of any breach or breaches of the Deed by the Contractor or the Principal.
4. The Institution may at any time without being required so to do pay to the Principal the maximum aggregate sum less any amount or amounts it may previously have paid under this Undertaking and thereupon the liability of the Institution hereunder will immediately cease.
5. This Undertaking will be governed by and construed in accordance with the laws for the time being of the State of New South Wales.

6. The Institution hereby submits to the non-exclusive jurisdiction of the courts of New South Wales and any courts that may hear appeals from any of those courts, for any proceedings in connection with this Undertaking, and waives any right it might have to claim that those courts are an inconvenient forum.

Executed as a deed poll.

Signed Sealed and Delivered)

by [])

being signed sealed and)

delivered by its duly constituted)

.....

(Signature)

Attorney [])

under Power of Attorney)

No. in the presence of:)

.....
(Signature of Witness)

.....
(Name of Witness in Full)

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Schedule 9 Information Documents and Materials

(Clause 3.7)

Table 1: List of Information Documents and Materials

Document number	Document Title/ Description
1.	TfNSW Social Procurement Workforce Policy For Capital Projects
2.	TfNSW Sustainable Design Guidelines V4.0
3.	Directory of Services and Support Partners
4.	Harris Street Fig - Arboricultural Impact Assessment
5.	Parramatta Light Rail - Arboricultural Impact Assessment
6.	AUS Enabling Works Utilities Concept Design Report - rev 1.2 - report only
7.	GREP (Government Resource Efficiency Policy)
8.	Infrastructure Sustainability Scorecard V1.2
9.	TfNSW Climate Risk Assessment Guidelines 9tp-sd-08
10.	TfNSW CERT Tool
11.	Carbon Estimate and Reporting Tool Guidelines
12.	Enabling Works Survey DWG Files
13.	Enabling Works Concept Design-Part 1
14.	Enabling Works Concept Design-Part 2
15.	Enabling Works Concept Design-Part 3
16.	Enabling Works Concept Design-Part 4
17.	Enabling Works Concept Design-Part 5
18.	ISD-17-6763 - Parramatta Light Rail-Utilities Model Training Session - Presentation
19.	PLR_Clash Hierarchy Process
20.	Enabling Works Scope Summary Map
21.	Construction Traffic Management Plan 09012017

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Document number	Document Title/ Description
22	Transport and Access - Transport and Accessibility Working Paper 13 July 2016
23	PLR Street Concept Plans George St and Charles St
24	COP Events Calendar for 2018
25	Surveyor General's Direction No 11
26	Surveyor General's Direction No 12
27	Enabling Works Detailed Design DWG files
28	Enabling Works Survey DWG
29	Additional Geotechnical Investigation Scope of Works
30	Parramatta Light Rail - Enabling Works - Existing Survey Files (DWG Files)
31	Enabling Works -Draft Environmental Detailed Design Report v5
32	Design Technical Note
33	Parramatta Light Rail Stage 1 Enabling Works-Design Review Record-TfNSW suggested response to RMS Comments
34	Sustainability Information Document (Enabling Works)

**PLACEHOLDER
FOR USB**

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Schedule 10 Prices and Rates for valuation of Variations and Overhead Costs

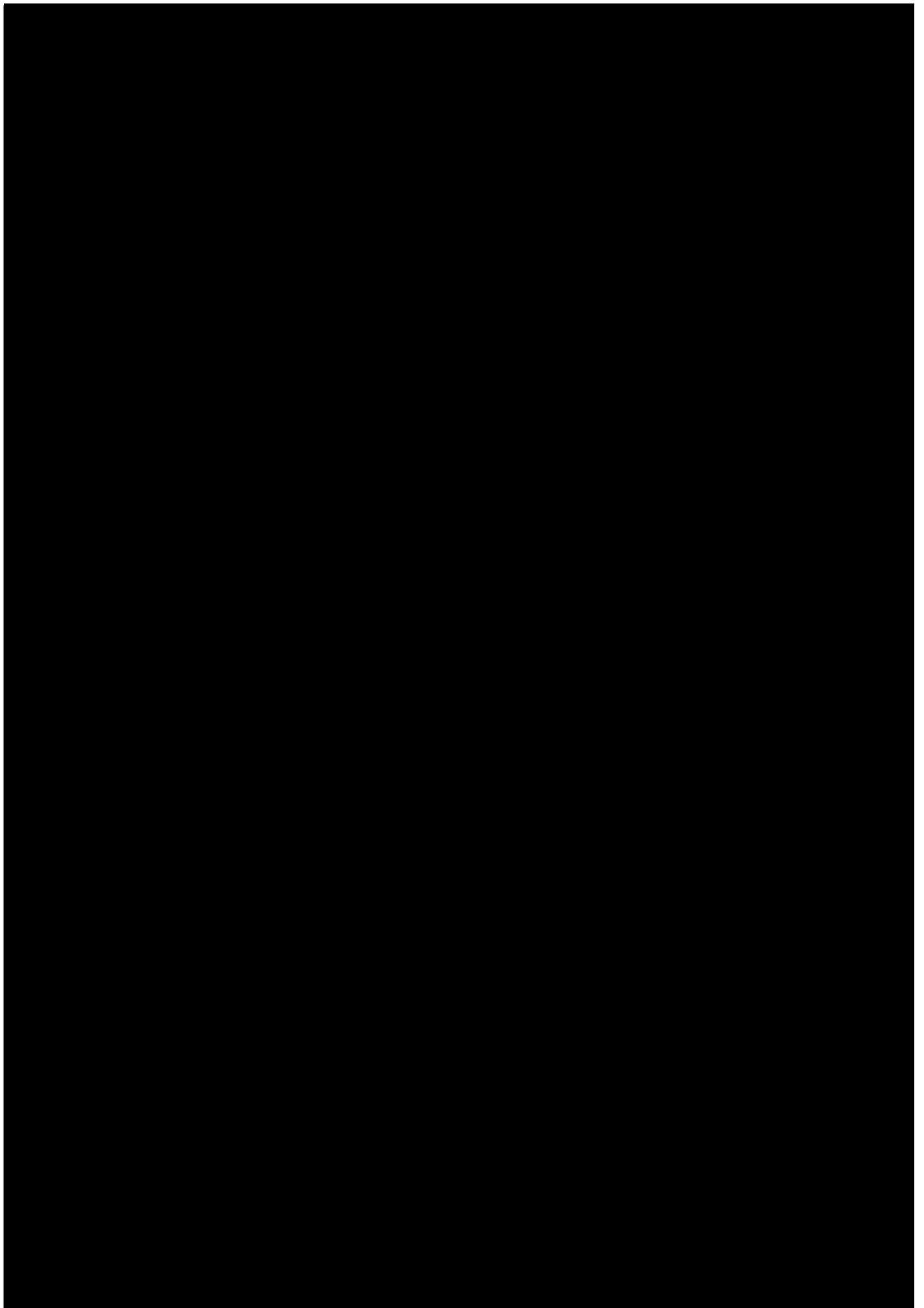
(Clauses 6.4(b)(i)A and 6.7(a))

Part A

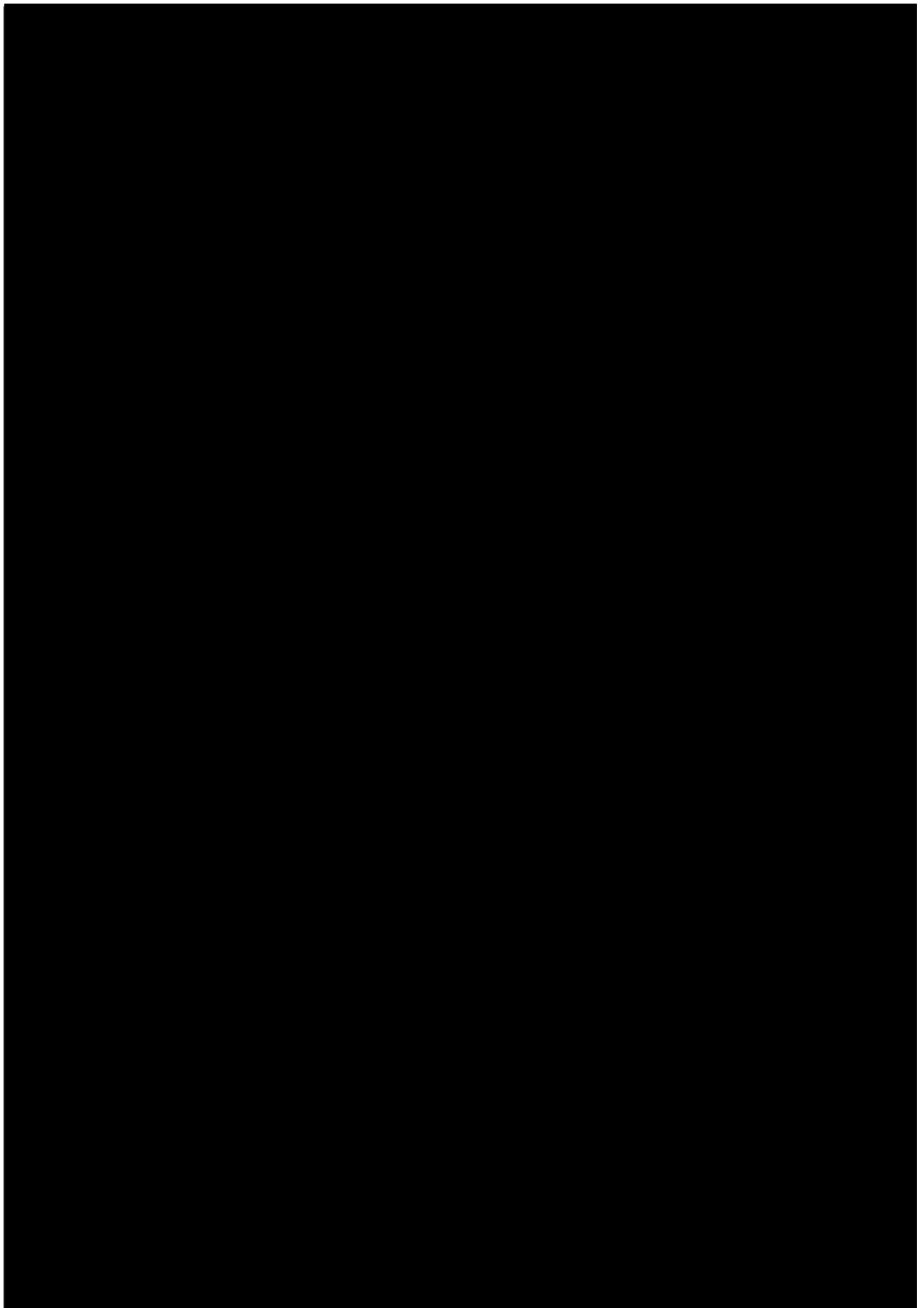
The prices and rates referred to in clauses 6.4(b)(i)A and 6.7(a) of the Contract are those set out in the table below:

Schedule of Rates for Labour

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Part B Overhead Costs

(Clauses 1.1, 6.4(b) and 7.3(b))

1 On-site overheads

The on-site overheads are those overhead costs and expenses which are specific to the Site including:

- (a) on-site personnel with project management, site supervision, administration and support functions;
- (b) site accommodation including amenities and parking facilities;
- (c) phones lease and installation, rental and charges including mobiles;
- (d) storage area and facilities;
- (e) office supplies and consumables;
- (f) site services;
- (g) furniture and office fittings;
- (h) site-based computers;
- (i) printing, photocopying and stationery;
- (j) reproduction of drawings;
- (k) project specific insurances only (and not corporate held insurances);
- (l) project specific software, data processing and network systems;
- (m) security;
- (n) cleaning;
- (o) postage;
- (p) site communications;
- (q) first aid and personal protective equipment for the personnel referred to in paragraph (a);
- (r) small tools; and
- (s) waste disposal associated with site accommodation, including amenities and parking facilities (excluding waste disposal associated with construction activities).

2 Off-site overheads

The off-site overheads are on account of costs and expenses related to off-site business functions of the Contractor (in respect of the Works) including the following matters:

- (a) safety and quality;

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- (b) research and development;
- (c) financial, legal, human resources and commercial;
- (d) executive management;
- (e) corporate infrastructure and support;
- (f) parent company fees;
- (g) corporate head offices running costs and payroll;
- (h) bonds and bank guarantees.

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Schedule 11 Form of Warranty

(Clause 2.2(i))

This Deed Poll is made the _____ day of _____ 20__

To: **Transport for NSW** (ABN 18 804 238 602) of a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 ("Principal")

[#Add other beneficiaries as nominated by TfNSW] ("Beneficiary").

By: That person described in Item 1 of the Schedule ("Warrantor") which expression will include its successors and assigns)

Recitals

- A The Warrantor has supplied the items described in Item 2 of the Schedule ("Equipment") to the person described in Item 3 of the Schedule ("Contractor") or the person described in Item 4 of the Schedule, a subcontractor of the Contractor ("Subcontractor"), for the works ("Works") being carried out by the Contractor under the contract described in Item 5 of the Schedule ("Contract") with the Principal.
- B It is a requirement of the Contract that the Contractor procure the Warrantor to give the following warranties in favour of the Principal and the Beneficiary with respect to the Equipment.

Operative

1 Quality

The Warrantor:

- (a) warrants to the Principal and the Beneficiary that the Equipment will be to the quality and standard stipulated by the Contract and will be of merchantable quality and fit for the purpose for which it is required; and
- (b) gives the warranty more particularly set out in Item 6 of the Schedule with respect to the Equipment

The above warranties are in addition to and do not derogate from any warranty implied by law in respect of the Equipment.

2 Replacement

The Warrantor warrants to the Principal and the Beneficiary that it will replace so much of the Equipment as within the period described in Item 7 of the Schedule:

- (a) is found to be of a lower quality or standard than that referred to in clause 1; or

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- (b) shows deterioration of such extent that in the opinion of the Principal or the Beneficiary the Equipment ought to be made good or replaced in order to achieve fitness for the purpose for which it is required, whether on account of utility, performance, appearance or otherwise.

3 Warrantor to bear cost

The Warrantor covenants to the Principal and the Beneficiary that it will bear the cost of any work necessary to any part of the Works to enable the requirements of clause 2 to be carried out or to make good the Works afterwards.

4 Principal not liable

The Warrantor acknowledges to the Principal and the Beneficiary that nothing contained in this deed poll is intended to nor will render either the Principal or the Beneficiary in any way liable to the Warrantor in relation to any matters arising out of the Contract or otherwise.

5 This deed poll may not be revoked

This deed poll may not be revoked or otherwise modified without the prior written consent of the Principal and the Beneficiary.

6 Governing Law

This deed poll is governed by the laws of the State of New South Wales.

7 Jurisdiction

The Warrantor irrevocably submits to the non-exclusive jurisdiction of the Courts of New South Wales.

8 Enforcement of this deed poll

For the avoidance of doubt this deed poll is enforceable by any of the Principal or the Beneficiary.

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Schedule

Item 1: Name and Address of Warrantor

[#insert]

Item 2: Equipment
(Recital A)

[#insert]

Item 3: Contractor
(Recital A)

[#insert]

Item 4: Subcontractor
(Recital A)

[#insert]

Item 5: Contract
(Recital A)

[#insert]

Item 6: Detailed Warranty of Warrantor
(Clause 1(b))

[#insert]

Item 7: Period of Years
(Clause 2)

[insert period] years from the expiry of the last Defects Rectification Period as defined in the Contract (including any extension under clause 8.6 of the Contract).

Executed as a deed poll.

Executed by *[insert name of Warrantor]*
(ABN *[insert ABN]*) in accordance with
section 127(1) of the Corporations Act
2001 (Cth) by authority of its directors:

Signature of director

Signature of director / company
secretary

Name of director (block letters)

Name of director / company
secretary (block letters)

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Schedule 12 Form of Statutory Declaration

(Clause 11.6(b)(i))

Statutory Declaration		State Act (NSW) NSW Schedule
1. of	
do solemnly and sincerely declare that:		
1.	I am the representative of, (the Contractor) in the Office Bearer capacity of,	
2.	The Contractor has a contract with the / /..... (the Contract)	
3.	I personally know the facts which I have set out in this declaration.	
4.	All employees who have at any time been engaged by the Contractor for work done under the Contract: a) have been paid all remuneration and benefits to the date of this declaration payable to them by the Contractor in respect of their employment on work under the Contract, and b) have otherwise had accrued to their account all benefits to which they are entitled from the Contractor as at the date of this declaration in respect of their employment on work under the Contract pursuant to any award, enterprise agreement, act or regulation, with the exception of the employees and respective amounts unpaid or not accrued for each employee listed below: Employee: Amount unpaid or not accrued.	
5.	Attached to and forming part of this declaration, as Annexure A, is a supporting statement for the purposes of section 13(7) of the Building and Construction Industry Security of Payment Act 1999 (NSW).	
5A.	Where the Contractor holds any retention money from a Subcontractor, the Contractor has complied with all requirements under the Building and Construction Industry Security of Payment Amendment (Retention Money Trust Account) Regulation 2015 (NSW), with the exception of the	

Schedules - Enabling Works Contract

<p>Items listed below:</p> <p>.....</p> <p>.....</p> <p>.....</p>													
<p>6. In all cases where a subcontractor or supplier to the Contractor has provided services and/or materials in respect of the Contract and has submitted a claim to the Contractor for those services or materials which as at the date of this statutory declaration would have been due and payable but which the Contractor disputes, the reasons for such dispute have been notified in writing to the subcontractor or supplier by the Contractor prior to the date of this statutory declaration. Where such dispute relates to part only of the subcontractor or supplier's claim, that part of the claim not in dispute has been paid by the Contractor to the subcontractor or supplier as at the date of this statutory declaration except for the amounts listed in 6 above.</p> <p>7. The provisions of the Contract relating to the payment of employees, subcontractors and suppliers of the Contractor have been complied with by the Contractor.</p> <p>8. The Contractor has been informed by each subcontractor to the Contractor (except for subcontracts not exceeding \$25,000 at their commencement) by statutory declaration in equivalent terms to this declaration (made no earlier than the date 14 days before the date of this declaration):</p> <p>(a) that their subcontracts with their subcontractors and suppliers comply with the requirements of the Contract relating to payment of employees and subcontractors, and</p> <p>(b) that all their employees and subcontractors, as at the date of the making of such a declaration:</p> <p>i) have been paid all remuneration and benefits due and payable to them by; or</p> <p>ii) had accrued to their account all benefits to which they are entitled from:</p> <p>the subcontractor of the Contractor or from any other subcontractor (except for subcontracts not exceeding \$25,000 at their commencement) in respect of any work under the Contract, and</p> <p>(c) of details of any amounts due and payable or benefits due to be received or accrued described in 8(b) above which have not been paid, received or accrued,</p> <p>except for the following subcontractors to the Contractor who have failed to provide such a declaration:</p> <p>Subcontractor:</p> <p>Due amount unpaid:</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>	<p>insert names and addresses of the Contractor's subcontractors who have not submitted a declaration, and unpaid amounts due or otherwise due to each of them by the Contractor in respect of this claim.</p> <p>insert names of the subcontractors, the name and addresses of the unpaid employees, subcontractors and suppliers and amounts listed as unpaid or not accrued to them.</p>												
<p>9. Where a subcontractor to the Contractor has provided a declaration as in 8 above, and it includes unpaid amounts or benefits either not received or not accrued, details of the subcontractor, details of the affected employees, suppliers and subcontractors of the subcontractor, and the respective amounts or benefits either unpaid or not accrued are as follows:</p> <table border="1"> <thead> <tr> <th>Employee, subcontractor or supplier:</th> <th>Amount unpaid or not accrued</th> </tr> </thead> <tbody> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>.....</td> <td>.....</td> </tr> <tr> <td>.....</td> <td>.....</td> </tr> </tbody> </table>	Employee, subcontractor or supplier:	Amount unpaid or not accrued	
Employee, subcontractor or supplier:	Amount unpaid or not accrued												
.....												
.....												
.....												
.....												
.....												

Schedules - Enabling Works Contract

-

10. In relation to the statutory declaration provided by each subcontractor to the Contractor, I am not aware of anything to the contrary of what is contained therein, and on the basis of the contents of those statutory declarations, I believe the information to be true.
11. Attached to and forming part of this declaration, as Annexure B, is a Subcontractor's Statement given by the Contractor in its capacity as 'subcontractor' (as that term is defined in the Workers Compensation Act 1987, Pay-Roll Tax Act 1971 and Industrial Relations Act 1996) which is a written statement:
- (a) under section 175B of the Workers Compensation Act 1987 in the form and providing the detail required by that legislation;
 - (b) under section 18(6) of schedule 2 of part 5 of the Pay-Roll Tax Act 2007 in the form and providing the detail required by that legislation; and
 - (c) under section 127 of the Industrial Relations Act 1996 in the form and providing the detail required by that legislation.
12. I personally know the truth of the matters which are contained in this declaration and the attached Subcontractor's Statement.
13. All statutory declarations and Subcontractor's Statements received by the Contractor from subcontractors were:
- (a) given to the Contractor in its capacity as 'principal contractor' as defined in the Workers Compensation Act 1987, the Pay-Roll Tax Act 2007 and the Industrial Relations Act 1996 (Acts); and
 - (b) given by the subcontractors in their capacity as 'subcontractors' as defined in the Acts.
14. I am not aware of anything which would contradict the statements made in the statutory declarations or written statements provided to the Contractor by its subcontractors, as referred to in this declaration.

I make this solemn declaration conscientiously believing the same to be true and by virtue of the Oaths Act 1900 (NSW). I am aware that I may be subject to punishment by law if I wilfully make a false statement in this declaration.

Declared at on

 (place) (day) (month) (year)

.....
 (Signature of Declarant)

Before me:

.....
 (Signature of person before whom the declaration is made)

.....
 (Name of the person before whom the declaration is made)

.....
 (Title of the person before whom the declaration is made)

And as a witness, I certify the following matters concerning the person who made this declaration (declarant):

[Strike out the text that does not apply]

- 1. I saw the face of the declarant.
- OR
- I did not see the face of the declarant because the

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declarant was wearing a face covering, but I am satisfied that the declarant had a special justification for not removing the covering.

2. I have known the declarant for at least 12 months,
OR
I confirmed the declarant's identity using the following identification document:

*Identification document relied on
(may be original or certified copy)*

Signature of person before whom the declaration is made

Before me.

.....
(Signature of person before whom the declaration is made)

.....
(Name of the person before whom the declaration is made)

.....
(Title of the person before whom the declaration is made)*

- * The declaration must be made before one of the following persons.
- where the declaration is sworn within the State of New South Wales
 - (i) a justice of the peace of the State of New South Wales;
 - (ii) a solicitor of the Supreme Court of New South Wales with a current practising certificate; or
 - (iii) a notary public.
 - where the declaration is sworn in a place outside the State of New South Wales:
 - (i) a notary public; or
 - (ii) any person having authority to administer an oath in that place.

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Annexure A

Supporting statement by head contractor regarding payment to subcontractors

This statement must accompany any payment claim served on a principal to a construction contract by a head contractor.

For the purposes of this statement, the terms principal, head contractor, subcontractor, and construction contract have the meanings given in section 4 of the *Building and Construction Industry Security of Payment Act 1999*.

Head contractor: [business name of head contractor]
ABN: [ABN]

* 1. has entered into a contract with: [business name of subcontractor]

ABN: [ABN]

Contract number/identifier: [contract number/identifier]

OR

* 2. has entered into a contract with the subcontractors listed in the attachment to this statement.

* [Delete whichever of the above does not apply]

This statement applies for work between [start date] and [end date] inclusive (the construction work concerned), subject of the payment claim dated [date].

I, [full name], being the head contractor, a director of the head contractor or a person authorised by the head contractor on whose behalf this declaration is made, hereby declare that I am in a position to know the truth of the matters that are contained in this supporting statement and declare that, to the best of my knowledge and belief, all amounts due and payable to subcontractors have been paid (not including any amount identified in the attachment as an amount in dispute).

Signature: Date

Full name: Position/Title:

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Attachment

Schedule of subcontractors paid all amounts due and payable				
Subcontractor	ABN	Contract number / identifier	Date of works (period)	Date of payment claim (head contractor claim)

Schedule of subcontractors for which an amount is in dispute and has not been paid				
Subcontractor	ABN	Contract number / identifier	Date of works (period)	Date of payment claim (head contractor claim)

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Annexure B

SUBCONTRACTOR'S STATEMENT

REGARDING WORKERS COMPENSATION, PAYROLL TAX AND REMUNERATION (Note 1 - see back of form)

For the purposes of this Statement a subcontractor is a person (or other legal entity) that has entered into a contract with a principal contractor to carry out work.

This Statement must be signed by a subcontractor (or by a person who is authorised, or held out as being authorised, to sign the statement by the subcontractor) referred to in any of s175B *Workers Compensation Act 1987*, Schedule 2 Part 5 *Payroll Tax Act 2007*, and s127 *Industrial Relations Act 1996* where the subcontractor has employed or engaged workers or subcontractors during the period of the contract to which the form applies under the relevant Act(s). The signed Statement is to be submitted to the relevant principal contractor.

SUBCONTRACTOR'S STATEMENT (Refer to the back of this form for Notes, period of Statement retention, and Offences under various Acts.

Subcontractor: ABN:
(Business name)

of
(Address of subcontractor)

has entered into a contract with
ABN:
(Business name of principal contractor) (Note 2)

Contract number/identifier (Note 3)

This Statement applies for work between:/...../..... and/...../.....
inclusive, (Note 4)

subject of the payment claim dated:/...../..... (Note 5)

I, a Director or a person authorised by the Subcontractor on whose behalf this declaration is made, hereby declare that I am in a position to know the truth of the matters which are contained in this Subcontractor's Statement and declare the following to the best of my knowledge and belief:

- (a) The abovementioned Subcontractor has either employed or engaged workers or subcontractors during the above period of this contract. Tick if true and comply with (b) to (g) below, as applicable. If it is not the case that workers or subcontractors are involved or you are an exempt employer for workers compensation purposes tick and only complete (f) and (g) below. You must tick one box. (Note 6)
- (b) All workers compensation insurance premiums payable by the Subcontractor in respect of the work done under the contract have been paid. The Certificate of Currency for that insurance is attached and is dated/...../..... (Note 7)
- (c) All remuneration payable to relevant employees for work under the contract for the above period has been paid. (Note 8)
- (d) Where the Subcontractor is required to be registered as an employer under the *Payroll Tax Act 2007*, the Subcontractor has paid all payroll tax due in respect of employees who performed work under the contract, as required at the date of this Subcontractor's Statement. (Note 9)
- (e) Where the Subcontractor is also a principal contractor in connection with the work, the Subcontractor has in its capacity of principal contractor been given a written Subcontractor's Statement by its subcontractor(s) in connection with that work for the period stated above. (Note 10)
- (f) Signature Full name.....

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(g) Position/Title Date

NOTE: Where required above, this Statement must be accompanied by the relevant Certificate of Currency to comply with section 175B of the Workers Compensation Act 1987.

Schedules - Enabling Works Contract

Notes

1. This form is prepared for the purpose of section 175B of the *Workers Compensation Act 1987*, Schedule 2 Part 5 *Payroll Tax Act 2007* and section 127 of the *Industrial Relations Act 1996*. If this form is completed in accordance with these provisions, a principal contractor is relieved of liability for workers compensation premiums, payroll tax and remuneration payable by the subcontractor.
A principal contractor can be generally defined to include any person who has entered into a contract for the carrying out of work by another person (or other legal entity called the subcontractor) and where employees of the subcontractor are engaged in carrying out the work which is in connection with the principal contractor's business.
2. For the purpose of this Subcontractor's Statement, a principal contractor is a person (or other legal entity), who has entered into a contract with another person (or other legal entity) referred to as the subcontractor, and employees/workers of that subcontractor will perform the work under contract. The work must be connected to the business undertaking of the principal contractor.
3. Provide the unique contract number, title, or other information that identifies the contract.
4. In order to meet the requirements of s127 *Industrial Relations Act 1996*, a statement in relation to remuneration must state the period to which the statement relates. For sequential Statements ensure that the dates provide continuous coverage.
Section 127(6) of the *Industrial Relations Act 1996* defines remuneration 'as remuneration or other amounts payable to relevant employees by legislation, or under an industrial instrument, in connection with work done by the employees.'
Section 127(11) of the *Industrial Relations Act 1996* states 'to avoid doubt, this section extends to a principal contractor who is the owner or occupier of a building for the carrying out of work in connection with the building so long as the building is owned or occupied by the principal contractor in connection with a business undertaking of the principal contractor'
5. Provide the date of the most recent payment claim.
6. For Workers Compensation purposes an exempt employer is an employer who pays less than \$7500 annually, who does not employ an apprentice or trainee and is not a member of a group.
7. In completing the Subcontractor's Statement, a subcontractor declares that workers compensation insurance premiums payable up to and including the date(s) on the Statement have been paid, and all premiums owing during the term of the contract will be paid.
8. In completing the Subcontractor's Statement, a subcontractor declares that all remuneration payable to relevant employees for work under the contract has been paid.
9. In completing the Subcontractor's Statement, a subcontractor declares that all payroll tax payable relating to the work undertaken has been paid.
10. It is important to note that a business could be both a subcontractor and a principal contractor, if a business 'in turn' engages subcontractors to carry out the work. If your business engages a subcontractor you are to also obtain Subcontractor's Statements from your subcontractors.

Statement Retention

The principal contractor receiving a Subcontractor's Statement must keep a copy of the Statement for the periods stated in the respective legislation. This is currently up to seven years.

Offences in respect of a false Statement

In terms of s127(8) of the *Industrial Relations Act 1996*, a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence if:

- (a) the person is the subcontractor;
- (b) the person is authorised by the subcontractor to give the statement on behalf of the subcontractor, or
- (c) the person holds out or represents that the person is authorised by the subcontractor to give the statement on behalf of the subcontractor.

In terms of s175B of the *Workers Compensation Act* and clause 18 of Schedule 2 of the *Payroll Tax Act 2007* a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence.

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Further Information

For more information, visit the WorkCover website www.workcover.nsw.gov.au, Office of State Revenue website www.osr.nsw.gov.au or Office of Industrial Relations, Department of Commerce website www.commerce.nsw.gov.au. Copies of the *Workers Compensation Act 1987*, the *Payroll Tax Act 2007* and the *Industrial Relations Act 1996* can be found at www.legislation.nsw.gov.au.

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Schedule 13 Property Owner's Certificate

(Clause 3.5(c)(ii))

This deed poll is made the _____ day of _____ 20____

To: **Transport for NSW (ABN 18 804 239 602)** a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 ('Principal')

By: [_____].

Property Address:

1 I/We confirm that the following works has been carried out and completed on my/our property to my/our satisfaction:

[#Insert description of works on property and property]

2 I/We confirm that our land has been rehabilitated and all damage and degradation on it repaired.

3 I/We release the Principal from all claims and actions which I/We may have arising out of or in connection with the works referred to in paragraph 1.

4 This deed poll may not be revoked or otherwise modified without the prior written consent of the Principal.

Executed as a deed poll.

[Add appropriate execution block]

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Schedule 14 Form of Subcontractor Deed

(Clause 2.2(g)(iv))

THIS DEED POLL is made on 20..... by
..... ACN..... of
..... (the 'Subcontractor').

Recitals

- A Transport for NSW (ABN 18 804 239 602), a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1998* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 (the "Principal") has entered into a contract with [] ("Contractor") for the construction of [] ("Works").
- B The Subcontractor has an agreement (the "Subcontract") with the Contractor for the execution and completion of the [] (the "Subcontract Works") for the Works.
- C It is a condition of the Subcontract that the Subcontractor executes this Deed Poll.

THIS DEED WITNESSES THAT THE SUBCONTRACTOR HEREBY COVENANTS, WARRANTS AND AGREES with and for the benefit of the persons named in the Schedule as follows:

- 1 It will comply with its obligations under the Subcontract and upon completion of the Works, the Subcontract Works will satisfy the requirements of the Subcontract.
- 2 The persons named in the Schedule may assign or charge the benefits and rights accrued under this Deed Poll.
- 3 The Subcontractor:
 - (a) must if required by a written notice by the Principal to sign a deed in the form of the attached Deed of Novation (**Attachment 1**) with such substitute contractor as the Principal may nominate; and
 - (b) for this purpose irrevocably appoints the Principal to be its attorney with full power and authority to complete the particulars in and sign the attached Deed of Novation.
- 4 This Deed Poll is governed by the laws of the State of New South Wales.
- 5 This Deed Poll may not be revoked or otherwise modified without the prior written consent of the Principal.
- 6 The Subcontractor's liability in respect of a breach of a particular obligation under this Deed Poll will be reduced to the extent to which the Subcontractor has already paid money to or performed work for the Contractor in respect of that breach.

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PERSONS NAMED IN THE SCHEDULE TO THE DEED POLL

Transport for NSW (ABN 18 604 239 602)

[insert relevant details eg Sydney Trains/NSW Trains]

EXECUTED AS A DEED POLL

Executed by *[insert company name]*
(ABN *[insert ABN]*) in accordance with
section 127(1) of the Corporations Act
2001 (Cth) by authority of its directors:

Signature of director

Name of director (block letters)

Signature of director/ company
secretary

Name of director / company
secretary

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Attachment 1 (to Schedule 14)

THIS DEED OF NOVATION is made on [] 20[] between the following parties:

1. [] ('Substitute Contractor')
2. [] ('Original Contractor')
3. [] ('Subcontractor').

Recitals

A By deed dated [] (the "Contract") between:

- (i) **Transport for NSW (ABN 18 804 239 602)**, a NSW Government agency, a corporation constituted by section 3C of the *Transport Administration Act 1988 (NSW)*, of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 (the "Principal"); and
- (ii) [] Original Contractor,

the Principal engaged the Original Contractor to undertake the Works (as defined in the Contract).

B The Original Contractor has entered into an agreement ("Subcontract") with the Subcontractor for the execution and completion of the [] ("Subcontract Works") as part of the Works.

C The Principal has terminated the Contract and has engaged Substitute Contractor to complete the Works.

D The Principal and Substitute Contractor wish to effect a novation of the Subcontract.

THIS DEED WITNESSES that in consideration, among other things, of the mutual promises contained in this deed, the parties agree:

- 1 Substitute Contractor must perform all of the obligations of the Original Contractor under the Subcontract which are not performed at the date of this deed. Substitute Contractor is bound by the Subcontract as if it had originally been named in the Subcontract in place of Original Contractor.
- 2 The Subcontractor must perform its obligations under, and be bound by, the Subcontract as if Substitute Contractor was originally named in the Subcontract in place of Original Contractor.
- 3 This deed is governed by the laws of New South Wales and the parties agree to submit to the non-exclusive jurisdiction of the courts of that state.

EXECUTED by the parties as a deed:

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EXECUTED by **{#SUBSTITUTE CONTRACTOR}** **[ABN {#}]#** in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors:

.....
Signature of director

.....
Name of director (block letters)

.....
Signature of director/company secretary*
*delete whichever is not applicable

.....
Name of director/company secretary*
(block letters)
*delete whichever is not applicable

EXECUTED by **{ORIGINAL CONTRACTOR}** **[ABN {#}]#** in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors:

.....
Signature of director

.....
Name of director (block letters)

.....
Signature of director/company secretary*
*delete whichever is not applicable

.....
Name of director/company secretary*
(block letters)
*delete whichever is not applicable

EXECUTED by **{#SUBCONTRACTOR}** **[ABN {#}]#** in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors:

.....
Signature of director

.....
Name of director (block letters)

.....
Signature of director/company secretary*
*delete whichever is not applicable

.....
Name of director/company secretary*
(block letters)
*delete whichever is not applicable

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Schedule 15 Options

(Clause 6.3)

Not applicable.

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Schedule 17 Deed of Guarantee and Indemnity

(Clause 2.10)

Deed of Guarantee and Indemnity made at _____ on _____ 20__

Transport for NSW (ABN 18 804 239 602), a NSW Government agency and a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2087 ("Principal")

Callbra Group Limited ABN 44 103 255 623 of [insert] ("Guarantor")

Recitals

- A The Principal has agreed to enter into the Contract with the Contractor on the condition that the Guarantor provide this Guarantee.
- B The Contractor is an unincorporated joint venture comprised of:
- (a) Diona Pty Ltd ("Diona"); and
 - (b) Ward Civil & Environmental Engineering Pty Ltd ("Ward"),
- which has been constituted by the joint venture agreement dated 29 June 2018.
- C The Guarantor has agreed on the following terms and conditions to guarantee to the Principal all of the Obligations of Diona and to indemnify the Principal against any loss arising from any failure by Diona to perform the Obligations.
- D The Guarantor considers that by providing this guarantee there will be a commercial benefit flowing to it.

THIS DEED PROVIDES

1 Definitions

1.1 Definitions and Interpretation

In this Deed:

Contract means the Enabling Works Contract dated on or about the date of this Deed between the Principal and the Contractor

Contractor means the Diona Ward Joint Venture established by the joint venture agreement dated 29 June 2018.

Event of Default means any event which constitutes a breach of, or a duty and properly declared to be an event of default (howsoever described) by, the Contract.

Guaranteed Money means all money the payment or repayment of which from time to time forms part of the Obligations.

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Insolvency Provision means any Law relating to insolvency, sequestration, liquidation or bankruptcy (including any Law relating to the avoidance of conveyances in fraud of creditors or of preferences, and any Law under which a liquidator or trustee in bankruptcy may set aside or avoid transactions), and any provision of any agreement, arrangement or scheme, formal or informal, relating to the administration of any of the assets of any person.

Obligations means all the liabilities and obligations of Diona to the Principal, under or arising out of or in any way in connection with the Contract or the work to be carried out or performed under the Contract, and includes any liabilities or obligations which:

- (a) are liquidated or unliquidated;
- (b) are present, prospective or contingent;
- (c) are in existence before or come into existence on or after the date of this Deed;
- (d) relate to the payment of money or the performance or omission of any act;
- (e) sound in damages only; or
- (f) accrue as a result of any Event of Default,

and irrespective of:

- (g) whether Diona is liable or obligated solely, or jointly, or jointly and severally with another person;
- (h) the circumstances in which the Principal comes to be owed each liability or obligation and in which each liability or obligation comes to be secured by this Deed, including any assignment of any liability or obligation or of this Deed; or
- (i) the capacity in which Diona and the Principal comes to owe or be owed such liability or obligation,

and **Obligation** means any liability or obligation forming part of the Obligations

Power means any right, power, authority, discretion, remedy or privilege conferred on the Principal by the Contract, by statute, by law or by equity.

Security means a mortgage, charge, pledge, lien, hypothecation, guarantee (including this Deed), indemnity, letter of credit, letter of comfort, performance bond, contractual right of set-off or combination or other assurance against loss which secures the Guaranteed Money or the performance of any other Obligation, and whether existing at the date of this Deed or at any time in the future.

Specified Rate means the rate which is 2% above the rate expressed as a percentage per annum:

- (a) which is the average of the bid rates shown at approximately 10.15 am on reference rate page "BBSY" on the Reuters Monitor System on the day the relevant amount was due and payable for bank accepted bills having a tenor of 30 days; or
- (b) if for any reason the rate referred to in paragraph (a) is no longer available or if there is no rate displayed for that period at that time, then

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the average of the buying rates quoted by 3 banks selected by the Principal at or about 10.15 am on the relevant date referred to in paragraph (a) for bills accepted by such banks having a tenor of 30 days.

1.2 Defined terms

Terms used in this Deed which are not otherwise defined will have the meaning given to them in the Contract.

1.3 Interpretation

In this Deed unless the context otherwise requires:

- (a) references to a person include an individual, a body politic, the estate of an individual, a firm, a corporation, an authority, an association or joint venture (whether incorporated or unincorporated), or a partnership;
- (b) the words "including", "includes" and "include" will be read as if followed by the words "without limitation";
- (c) a reference to any party to this Deed includes that party's executors, administrators, successors, and permitted substitutes and assigns, including any person taking part by way of novation;
- (d) a reference to any Authority, institute, association or body is:
 - (i) if that Authority, institute, association or body is reconstituted, renamed or replaced or if the powers or functions of that Authority, institute, association or body are transferred to another organisation, deemed to refer to the reconstituted, renamed or replaced organisation or the organisation to which the powers or functions are transferred, as the case may be; and
 - (ii) if that Authority, institute, association or body ceases to exist, deemed to refer to the organisation which serves substantially the same purposes or objects as that Authority, institute, association or body;
- (e) a reference to this Deed or to any other deed, agreement, document or instrument is deemed to include a reference to this Deed or such other deed, agreement, document or instrument as amended, novated, supplemented, varied or replaced from time to time;
- (f) a reference to any legislation or to any section or provision of it includes:
 - (i) any statutory modification or re-enactment of, or any statutory provision substituted for, that legislation, section or provision; and
 - (ii) ordinances, by-laws, regulations of and other statutory instruments issued under that legislation, section or provision;
- (g) words in the singular include the plural (and vice versa) and words denoting any gender include all genders;
- (h) headings are for convenience only and do not affect the interpretation of this Deed;
- (i) a reference to:

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- (i) a party or clause is a reference to a party or clause of or to this Deed; and
- (ii) a paragraph or a sub-paragraph is a reference to a paragraph or sub-paragraph in the clause in which the reference appears;
- (j) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (k) for all purposes (other than where designated as a Business Day), "day" means calendar day;
- (l) a reference to "\$" is to Australian currency;
- (m) no rule of construction applies to the disadvantage of a party on the basis that the party put forward or crafted this Deed or any part; and
- (n) any reference to "information" will be read as including information, representations, statements, data, samples, calculations, assumptions, deductions, determinations, drawings, design, specifications, models, plans and other documents in all forms including the electronic form in which it was generated.

2 Guarantee

2.1 Guarantee

The Guarantor irrevocably and unconditionally guarantees to the Principal the due and punctual performance by Diona of all the Obligations.

2.2 Payment by Guarantor

If Diona does not pay the Guaranteed Money when due, the Guarantor must on demand pay to the Principal the Guaranteed Money which is then due and unpaid or which later becomes due, owing or payable.

2.3 Perform Obligations

If Diona defaults in the performance or observance of any of the Obligations, the Guarantor must, in addition to its obligations under clause 2.2 of this Guarantee, on demand from time to time by the Principal, immediately perform any of the Obligations then required to be performed by Diona in the same manner as Diona is required to perform the Obligations.

2.4 Maximum Liability

The aggregate liability of the Guarantor to the Principal under or arising from this Deed is no greater than that which Diona has to the Principal under the Contract.

3 Indemnity

As a covenant separate and distinct from that contained in clause 2.1, the Guarantor irrevocably and unconditionally agrees to indemnify the Principal and at all times to keep the Principal indemnified against any loss or damage suffered by the Principal arising out of or in connection with:

- (a) any failure by Diona to perform the Obligations duly and punctually; or

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- (b) any obligation or liability that would otherwise form part of the Obligations being void, voidable or unenforceable against or irrecoverable from Diona for any reason, and whether or not the Principal knew or ought to have known of that reason.

4 Liability as guarantor and indemnifier

A reference in this Deed to the obligations or liabilities of the Guarantor is a reference to the Guarantor's obligations or liabilities as either guarantor or indemnifier (or both) under this Deed. The use of the expression 'Guarantor' in this Deed in relation to a party must not be construed as diminishing that party's obligations as an indemnifier under this Deed.

5 Nature and preservation of liability

5.1 Absolute liability

- (a) The liability of the Guarantor under this Deed is absolute and is not subject to the performance of any condition precedent or subsequent by Diona or the Guarantor.
- (b) This Deed binds each person who has executed it, notwithstanding that:
 - (i) any person, whether named as a party or not, does not execute this Deed;
 - (ii) the execution of this Deed by any person is invalid, forged or irregular in any way; or
 - (iii) this Deed is or becomes unenforceable, void or voidable against any other person.

5.2 Unconditional liability

The liability of the Guarantor under this Deed will not be affected by any act, omission, matter or thing which, but for this clause 5.2, might operate in law or in equity to release the Guarantor from that liability or to reduce the Guarantor's liability under this Deed, including any of the following:

- (a) the occurrence before, on or at any time after the date of this Deed, of any Insolvency Event in relation to Diona or the Guarantor;
- (b) the receipt by the Principal of any payment, dividend or distribution under any Insolvency Provision in relation to Diona or the Guarantor;
- (c) the occurrence of any Event of Default;
- (d) the Contract or any payment or other act, the making or doing of which would otherwise form part of the Obligations being or becoming or being conceded to be frustrated, illegal, invalid, void, voidable, unenforceable or irrecoverable in whole or in part for any reason whether past, present or future;
- (e) the Principal accepting or declining to accept any Security from any person at any time;
- (f) the Principal granting time, waiver or other indulgence or concession to, or making any composition or compromise with, Diona or the Guarantor;

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- (g) the Principal not exercising or delaying (whether deliberately, negligently, unreasonably or otherwise) in the exercise of any remedy or right it has for the enforcement of the Contract or any Obligation;
- (h) any laches, acquiescence or other act, neglect, default, omission or mistake by the Principal;
- (i) the determination, rescission, repudiation or termination, or the acceptance of any of the foregoing, by the Principal or Diona or the Guarantor of the Contract or any Obligation;
- (j) any variation to the Contract or any Obligation, whether or not that variation is substantial or material, or imposes any additional liability on or disadvantages Diona or the Guarantor;
- (k) the full, partial or conditional release or discharge by the Principal or by operation of law, of Diona or the Guarantor from the Contract or any Obligation;
- (l) any change in membership (whether by death or retirement of an existing member, admission of a new member, or otherwise) or in the name of any partnership, firm or association in which Diona or the Guarantor is a member;
- (m) the transfer, assignment or novation by the Principal or Diona or the Guarantor of all or any of its rights or obligations under the Contract or under any other Obligation;
- (n) any failure by the Principal to disclose to the Guarantor any material or unusual fact, circumstance, event or thing known to, or which ought to have been known by, the Principal relating to or affecting Diona or the Guarantor at any time before or during the currency of this Deed, whether prejudicial or not to the rights and liabilities of the Guarantor and whether or not the Principal was under a duty to disclose that fact, circumstance, event or thing to the Guarantor or to Diona;
- (o) the Principal agreeing with Diona or the Guarantor not to sue, issue process, sign or execute judgment, commence proceedings for bankruptcy or liquidation, participate in any administration, scheme or deed of arrangement or reconstruction, prove in any bankruptcy or liquidation, or do anything else in respect of the liability of Diona or the Guarantor;
- (p) (where the Guarantor is an individual) the death or mental incapacity of the Guarantor; or
- (q) the provisions of section 440J of the *Corporations Act 2001* (Cth) operating to prevent or delay:
 - (i) the enforcement of this Deed against any Guarantor; or
 - (ii) any claim for contribution against any Guarantor.

5.3 No merger

- (a) This Deed is in addition to and does not merge with, postpone, lessen or otherwise prejudicially affect the Contract or any other Power of the Principal.
- (b) The Principal will hold any judgment or order obtained by it against any person in respect of the Guaranteed Money or the Obligations

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collaterally with this Deed, and this Deed will not merge in that judgment or order.

5.4 No obligation to gain consent

No consent is required from any Guarantor nor is it necessary for the Guarantor to or be made aware of any event referred to in clause 5.2, any transaction between the Principal and Diona, or any particulars concerning any Obligation.

5.5 Appropriation

- (a) The Principal is under no obligation to marshal or appropriate in favour of any Guarantor, or to exercise, apply, transfer or recover in favour of any Guarantor, any Security or any funds or assets that the Principal holds, has a claim on, or has received or is entitled to receive, but may do so in the manner and order as the Principal determines in its absolute discretion.
- (b) The Principal may hold in a suspense account (without liability to pay interest) any money which it receives from the Guarantor, or which it receives on account of the Guarantor's liability under this Deed, and which the Principal may, at its discretion, appropriate in reduction of the Guarantor's liability under this Deed.

5.6 Void or voidable transactions

If:

- (a) the Principal has at any time released or discharged:
 - (i) the Guarantor from its obligations under this Deed; or
 - (ii) any assets of the Guarantor from a Security,in either case in reliance on a payment, receipt or other transaction to or in favour of the Principal; or
- (b) any payment or other transaction to or in favour of the Principal has the effect of releasing or discharging:
 - (i) the Guarantor from its obligations under this Deed; or
 - (ii) any assets of the Guarantor from a Security;

and

- (c) that payment, receipt or other transaction is subsequently claimed by any person to be void, voidable or capable of being set aside for any reason, including under an Insolvency Provision or under the general law; and
- (d) that claim is upheld or is conceded or compromised by the Principal.

then:

- (e) the Principal will immediately become entitled against the Guarantor to all rights (including under any Security) as it had immediately before that release or discharge;

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- (f) the Guarantor must immediately do all things and execute all documents as the Principal may reasonably require to restore to the Principal all those rights; and
- (g) the Guarantor must indemnify the Principal against costs, losses and expenses suffered or incurred by the Principal in or in connection with any negotiations or proceedings relating to the claim or as a result of the upholding, concession or compromise of the claim.

5.7 No set-off, counterclaim

The liability of the Guarantor under this Deed will not be reduced or avoided by any defence, set-off or counterclaim available to Diona against the Principal.

5.8 Claim on the Guarantor

The Principal is not required to make any claim or demand on Diona, or to enforce the Contract, or any other right, power or remedy against Diona, before making any demand or claim on the Guarantor.

5.9 No representation by Principal etc.

The Guarantor acknowledges that it has not entered into this Deed as a result of any representation, promise, statement or inducement to the Guarantor by or on behalf of the Principal, Diona or any other person.

6 Representations and Warranties

6.1 General representations and warranties

The Guarantor or, if there is more than one Guarantor, each Guarantor represents and warrants to the Principal:

- (a) this Deed constitutes a valid and legally binding obligation of the Guarantor in accordance with its terms;
- (b) the execution, delivery and performance of this Deed by the Guarantor does not breach any law, or any document or agreement to which the Guarantor is a party or which is binding on it or any of its assets;
- (c) no litigation, arbitration, mediation, conciliation, criminal or administrative proceedings are current, pending or, to the knowledge of the Guarantor, threatened, which, if adversely determined, may have a material adverse effect on the business assets or financial condition of the Guarantor;
- (d) all information relating to the Guarantor provided to the Principal in connection with this Deed is true in all material respects and is not, by omission or otherwise, misleading in any material respect; and
- (e) the Guarantor has not entered into this Deed as the trustee of any trust.

6.2 Corporate representations and warranties

The Guarantor, or if there is more than one Guarantor, each Guarantor, that is or purports to be a body corporate, further represents and warrants to the Principal that:

- (a) it is duly incorporated and has the corporate power to own its property and to carry on its business as is now being conducted;

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- (b) the execution, delivery and performance of this Deed does not breach the Constitution of the Guarantor and, if the Guarantor or any of its subsidiaries is listed on the Australian Securities Exchange Limited or on any other stock exchange, those listing requirements or business rules;
- (c) it has the power, and has taken all corporate and other action required, to enter into this Deed and to authorise the execution and delivery of this Deed and the performance of its obligations under this Deed; and
- (d) the Guarantor has filed all corporate notices and effected all registrations with the Australian Securities and Investments Commission and all of those filings and registrations are current, complete and accurate.

6.3 Representations and warranties repeated

Each representation and warranty in this Deed will be repeated on each day whilst any of the Guaranteed Money remains outstanding (whether or not then due for payment) with reference to the facts and circumstances then subsisting, as if made on each such day.

7 Payments

7.1 On demand

All money payable by the Guarantor under this Deed must be paid by the Guarantor on demand by the Principal in immediately available funds to the account and in the manner notified by the Principal to the Guarantor.

7.2 Payment in gross

All money received or recovered by the Principal on account of the Guaranteed Money will be treated as payments in gross without any right on the part of the Guarantor to claim the benefit of any money received or recovered by the Principal or any Security, until the Principal has been paid 100 cents in the dollar in respect of the Guaranteed Money.

7.3 Interest

As a liability separate and distinct from the Guarantor's liability under clauses 2 and 3, the Guarantor must on demand by the Principal pay interest on all amounts due and payable by it and unpaid under or in respect of this Deed. Interest will accrue on those amounts from day to day from the due date up to the date of actual payment, before and (as a separate and independent obligation) after judgment, at the Specified Rate for successive 90 day interest periods commencing on the date of default and, if not paid when due, will itself bear interest in accordance with this clause 7.3.

7.4 Merger

If the liability of the Guarantor to pay to the Principal any money under this Deed becomes merged in any judgment or order, then, as an independent obligation, the Guarantor will pay interest on the amount of that money at the rate which is the higher of that payable under clause 7.3 and that fixed by or payable under the judgment or order.

7.5 No set-off or deduction

All payments by the Guarantor to the Principal under this Deed must be:

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- (a) free of any set-off or counterclaim; and
- (b) without deduction or withholding for or on account of any present or future Taxes, unless the Guarantor is compelled by law to make any deduction or withholding.

If the Guarantor is compelled by law to make any deduction or withholding for or on account of any present or future Taxes (not being Taxes on the overall net income of the Principal), then the Guarantor must:

- (c) pay to the Principal any additional amounts necessary to enable the Principal to receive (after all deductions and withholdings for those Taxes) a net amount equal to the full amount which would otherwise be payable to the Principal if no deduction or withholding was required to be made;
- (d) promptly (and within the time prescribed by law) pay to the relevant taxing authority the amount of those Taxes which it is compelled by law to deduct or withhold, and indemnify the Principal for any Taxes and interest or penalties to which the Principal may become liable consequent on the failure of the Guarantor to pay those Taxes; and
- (e) deliver to the Principal, promptly on request from the Principal, a copy of any receipt issued by the relevant taxing authority on payment of those Taxes.

7.6 Currency indemnity

- (a) The Australian Dollar is the currency of payment by the Guarantor under or in connection with this Deed, except that payment by the Guarantor of or in relation to any Obligation which is denominated in a foreign currency must be made in that foreign currency.
- (b) If for any reason any amount payable by the Guarantor under or in connection with this Deed is received by the Principal in a currency (Payment Currency) other than the currency (Agreed Currency) in which that amount is required to be paid under this Deed (whether as a result of any judgment or order, the liquidation of the Guarantor or otherwise), and the amount obtained (net of charges) by the Principal on its conversion of the amount of the Payment Currency received into the Agreed Currency is less than the amount payable under this Deed in the Agreed Currency, then the Guarantor will, as an independent and additional obligation, indemnify the Principal for that deficiency and for any loss sustained as a result of that deficiency.

8 Expenses and stamp duties

8.1 Expenses

The Guarantor must on demand reimburse the Principal for and keep the Principal indemnified against all expenses, including legal fees, costs and disbursements on a solicitor/client basis (or on a full indemnity basis, whichever is the higher) assessed without the necessity of taxation, incurred by the Principal in connection with:

- (a) the preparation, negotiation and execution of this Deed and any subsequent consent, agreement, approval, waiver, amendment to or discharge of this Deed; and

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- (b) any exercise, enforcement or preservation, or attempted exercise, enforcement or preservation, of any rights under this Deed.

8.2 Stamp duties

- (a) The Guarantor must pay all stamp duties, transaction, registration and similar Taxes, including fines and penalties, financial institutions duty and debts tax which may be payable to or required to be paid by any appropriate authority, or determined to be payable in connection with the execution, delivery, performance or enforcement of this Deed or any payment, receipt or other transaction contemplated by this Deed; and
- (b) the Guarantor must indemnify the Principal against any loss or liability incurred or suffered by it as a result of the delay or failure by the Guarantor to pay Taxes.

8.3 Goods and Services Tax

If the Principal is or becomes liable to pay any GST (including any penalty) in respect of any supply it makes under, or in connection with, this Deed (GST Liability) then:

- (a) to the extent that an amount is payable by the Guarantor to the Principal under this Deed for that supply - the amount will be increased by the full amount of the GST Liability; and
- (b) otherwise - the Guarantor will indemnify and keep the Principal indemnified for the full amount of the GST Liability.

9 Assignment

The Principal may assign, novate or otherwise transfer all or any part of its rights under this Deed and may disclose to a proposed assignee or transferee any information in the possession of the Principal relating to the Guarantor.

10 Governing law, jurisdiction and arbitration

10.1 Governing law

This Deed and where applicable, the arbitration reference contained in clause 10.3, is governed by and will be construed according to the laws of New South Wales.

10.2 Jurisdiction

- (a) This clause 10.2 only applies where clauses 10.3 to 10.7 do not apply.
- (b) The Guarantor irrevocably submits to the non-exclusive jurisdiction of the courts and appellate courts of New South Wales, and the courts competent to determine appeals from those courts, with respect to any proceedings which may be brought relating in any way to this Deed.
- (c) The Guarantor irrevocably waives any objection it may now or in the future have to the venue of any proceedings, and any claim it may now or in the future have that any proceeding has been brought in an inconvenient forum, where that venue falls within paragraph (b) of this clause.

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10.3 Reference to arbitration

- (a) Causes 10.3 to 10.7 will only apply where the Guarantor is a foreign company (as defined in section 9 of the *Corporations Act 2001* (Cth)).
- (b) Any controversy, claim or dispute directly or indirectly based upon, arising out of, relating to or in connection with this Deed (including but not limited to any question relating to the existence, validity or termination of this Deed) shall be referred to and finally resolved by arbitration in accordance with the arbitration rules of the Australian Centre for International Commercial Arbitration (known as the ACICA Arbitration Rules).
- (c) The seat of the arbitration will be Sydney.
- (d) The number of arbitrators will be one.
- (e) The language of the arbitration will be English.

10.4 Powers of the arbitrator

The arbitral tribunal has the power to grant all legal, equitable and statutory remedies, except punitive damages.

10.5 Consolidation

The parties agree that section 24 of the *International Arbitration Act 1974* (Cth) will apply in respect of consolidations.

10.6 Joinder

The arbitral tribunal has the power, on the application of any party to this arbitration agreement, to allow a third party who the arbitrator considers has a sufficient interest in the outcome of the arbitration to be joined in the arbitration as a party. Each party to this Deed hereby consents to such joinder. In the event of such joinder of parties in the arbitration, the arbitrator has the power to make a single final award, or separate awards, in respect of all parties so joined in the arbitration.

10.7 Award final and binding

Any award will be final and binding upon the parties.

11 Miscellaneous

11.1 Notices

- (a) Any notices contemplated by this Deed must be in writing and delivered to the relevant address as set out below (or to any new address that a party notifies to the others).
 - (i) to the Principal: Level 5, Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067
 - (ii) to the Guarantor: [to be completed]

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- (b) A notice sent by post will be taken to have been received at the time when, in due course of the post, it would have been delivered at the address to which it is sent.

11.2 Continuing obligation

This Deed is a continuing obligation notwithstanding any termination by the Guarantor, settlement of account, intervening payment, express or implied revocation or any other matter or thing, and the Principal will continue to be entitled to the benefit of this Deed as regards the due and punctual performance of all the Obligations until a final discharge has been given to the Guarantor.

11.3 Further assurance

The Guarantor must immediately on the request of the Principal, and at the cost of the Guarantor, do and perform all further acts and things and execute and deliver all further documents as the Principal reasonably requires, or as are required by law, to perfect or to give effect to the rights and powers of the Principal created, or intended to be created, by this Deed.

11.4 Form of demand

A demand on the Guarantor for payment under this Deed may be in the form and contain any information as the Principal determines. It need not specify the amount of the Guaranteed Money, nor the method or basis of calculation of all or any part of the Guaranteed Money, including amounts of, or in the nature of, interest.

11.5 Entire agreement

This Deed constitutes the entire agreement and understanding between the parties and will take effect according to its tenor despite, and supersede:

- (a) any prior agreement (whether in writing or not), negotiations and discussions between the parties in relation to the subject matter of this Deed; or
- (b) any correspondence or other documents relating to the subject matter of this Deed that may have passed between the parties prior to the date of this Deed and that are not expressly included in this Deed.

11.6 Joint and several liability

The obligations of the Guarantor, if more than one person, under this Deed, are joint and several. Each person constituting the Guarantor acknowledges and agrees that it will be causally responsible for the acts and omissions (including breaches of this Deed) of the other as if those acts or omissions were its own and the Principal may proceed against any or all of them. This Deed binds each person who signs as a "Guarantor" even if another person who was intended to become a "Guarantor" does not become a "Guarantor" or is not bound by this Deed.

11.7 Severance

If at any time any provision of this Deed is or becomes illegal, invalid or unenforceable in any respect under the law of any jurisdiction, that will not affect or impair:

- (a) the legality, validity or enforceability in that jurisdiction of any other provision of this Deed; or

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- (b) the legality, validity or enforceability under the law of any other jurisdiction of that or any other provision of this Deed.

11.8 Remedies cumulative

Each Power is cumulative and in addition to each other Power available to the Principal.

11.9 Waiver

- (a) Failure to exercise or enforce or a delay in exercising or enforcing or the partial exercise or enforcement of any right, power or remedy provided by law or under this Deed by the Principal will not in any way preclude, or operate as a waiver of, any exercise or enforcement, or further exercise or enforcement of that or any other right, power or remedy provided by law or under this Deed.
- (b) Any waiver or consent given by the Principal under this Deed will only be effective and binding on the Principal if it is given or confirmed in writing by the Principal.
- (c) No waiver by the Principal of:
- (i) a breach of any term of this Deed; or
 - (ii) any other failure by the Guarantor to comply with a requirement of this Deed,

will operate as a waiver of another breach of that term or failure to comply with that requirement or of a breach of any other term of this Deed or failure to comply with any other requirement of this Deed.

11.10 Consents

Any consent of the Principal referred to in, or required under, this Deed may be given or withheld, or may be given subject to any conditions, as the Principal (in its absolute discretion) thinks fit, unless this Deed expressly provides otherwise.

11.11 Moratorium legislation

To the fullest extent permitted by law, the provisions of all laws operating directly or indirectly to lessen or affect in favour of the Guarantor any obligation under this Deed, or to delay or otherwise prevent or prejudicially affect the exercise of any Power, are expressly waived.

11.12 Set-off

- (a) The Principal may (without prior notice at any time) set off any obligation then due and payable by the Guarantor under this Deed against any obligation (whether or not due and payable) by the Principal to the Guarantor, regardless of the place or currency of payment of either obligation or the office or branch through which either obligation is booked. If the obligations are in different currencies, the Principal may convert either obligation into the currency of the other obligation at a market rate of exchange determined by it for the purpose of the set-off. If either obligation is unliquidated or unascertained, the Principal may effect the set off in an amount estimated by it in good faith to be the amount of that obligation.

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- (b) The Principal is not obliged to exercise any right of set off pursuant to clause 11.12(a), which is in addition to its other rights of combination of account, set-off or lien (by contract or operation of law).
- (c) On its exercise of any set off pursuant to clause 11.12(a) against the Guarantor, the Principal will promptly notify the Guarantor of details of that set-off.

11.13 Variations

This Deed may only be varied by a document signed by or on behalf of both the Principal and the Guarantor.

11.14 Provisions limiting or excluding liability

Any provision of this Deed which seeks to limit or exclude a liability of the Principal or the Guarantor is to be construed as doing so only to the extent permitted by law.

11.15 Counterparts

- (a) This Deed need not be executed by the Principal.
- (b) If the Guarantor is more than one person, a Guarantor may execute this Deed in one or more separate counterparts, each of which constitutes the deed of that Guarantor.

Executed as a deed.

Executed by **[Insert Company Name]** **[Insert ABN]** in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors:

Signature of director

Name of director (block letters)

Signature of director / company secretary

Name of director / company secretary (block letters)

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(Clause 2.10)

Deed of Guarantee and Indemnity made at _____ on _____ 20____

Transport for NSW (ABN 18 804 239 602), a NSW Government agency and a corporation constituted by section 3C of the *Transport Administration Act 1988* (NSW), of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, CHATSWOOD NSW 2067 ("Principal")

Peter G Ward Industries Pty Ltd ABN 82 002 306 149 of (*insert*) ("Guarantor")

Recitals

- A. The Principal has agreed to enter into the Contract with the Contractor on the condition that the Guarantor provide this Guarantee.
- B. The Contractor is an unincorporated joint venture comprised of:
- (a) Diona Pty Ltd ("Diona"); and
 - (b) Ward Civil & Environmental Engineering Pty Ltd ("Ward"),
- which has been constituted by the joint venture agreement dated 29 June 2018.
- C. The Guarantor has agreed on the following terms and conditions to guarantee to the Principal all of the Obligations of Ward and to indemnify the Principal against any loss arising from any failure by Ward to perform the Obligations.
- D. The Guarantor considers that by providing this guarantee there will be a commercial benefit flowing to it.

THIS DEED PROVIDES

1 Definitions

1.1 Definitions and Interpretation

In this Deed:

Contract means the Enabling Works Contract dated on or about the date of this Deed between the Principal and the Contractor.

Contractor means the Diona Ward Joint Venture established by the joint venture agreement dated 29 June 2018.

Event of Default means any event which constitutes a breach of, or is duly and properly declared to be an event of default (howsoever described) by, the Contract.

Guaranteed Money means all money the payment or repayment of which from time to time forms part of the Obligations.

Insolvency Provision means any Law relating to insolvency, sequestration, liquidation, or bankruptcy (including any Law relating to the avoidance of conveyances in fraud of creditors or of preferences, and any Law under which a liquidator or trustee in bankruptcy may set aside or avoid transactions), and any provision of any agreement, arrangement or scheme, formal or informal, relating to the administration of any of the assets of any person.

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Obligations means all the liabilities and obligations of Ward to the Principal under or arising out of or in any way in connection with the Contract or the work to be carried out or performed under the Contract, and includes any liabilities or obligations which:

- (a) are liquidated or unliquidated;
- (b) are present, prospective or contingent,
- (c) are in existence before or come into existence on or after the date of this Deed;
- (d) relate to the payment of money or the performance or omission of any act;
- (e) sound in damages only; or
- (f) accrue as a result of any Event of Default.

and irrespective of:

- (g) whether Ward is liable or obligated solely, or jointly, or jointly and severally with another person;
- (h) the circumstances in which the Principal comes to be owed each liability or obligation and in which each liability or obligation comes to be secured by this Deed, including any assignment of any liability or obligation or of this Deed; or
- (i) the capacity in which Ward and the Principal comes to owe or be owed such liability or obligation.

and **Obligation** means any liability or obligation forming part of the Obligations.

Power means any right, power, authority, discretion, remedy or privilege conferred on the Principal by the Contract, by statute, by law or by equity.

Security means a mortgage, charge, pledge, lien, hypothecation, guarantee (including this Deed), indemnity, letter of credit, letter of comfort, performance bond, contractual right of set-off or combination or other assurance against loss which secures the Guaranteed Money or the performance of any other Obligation, and whether existing at the date of this Deed or at any time in the future.

Specified Rate means the rate which is 2% above the rate expressed as a percentage per annum:

- (a) which is the average of the bid rates shown at approximately 10.15 am on reference rate page 'BBSY' on the Reuters Monitor System on the day the relevant amount was due and payable for bank accepted bills having a tenor of 30 days; or
- (b) if for any reason the rate referred to in paragraph (a) is no longer available or if there is no rate displayed for that period at that time, then the average of the buying rates quoted by 3 banks selected by the Principal at or about 10.15 am on the relevant date referred to in paragraph (a) for bills accepted by such banks having a tenor of 30 days.

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1.2 Defined terms

Terms used in this Deed which are not otherwise defined will have the meaning given to them in the Contract.

1.3 Interpretation

In this Deed unless the context otherwise requires:

- (a) references to a person include an individual, a body politic, the estate of an individual, a firm, a corporation, an authority, an association or joint venture (whether incorporated or unincorporated), or a partnership;
- (b) the words "including", "includes" and "include" will be read as if followed by the words "without limitation";
- (c) a reference to any party to this Deed includes that party's executors, administrators, successors, and permitted substitutes and assigns, including any person taking part by way of novation;
- (d) a reference to any Authority, institute, association or body is:
 - (i) if that Authority, institute, association or body is reconstituted, renamed or replaced or if the powers or functions of that Authority, institute, association or body are transferred to another organisation, deemed to refer to the reconstituted, renamed or replaced organisation or the organisation to which the powers or functions are transferred, as the case may be; and
 - (ii) if that Authority, institute, association or body ceases to exist, deemed to refer to the organisation which serves substantially the same purposes or objects as that Authority, institute, association or body;
- (e) a reference to this Deed or to any other deed, agreement, document or instrument is deemed to include a reference to this Deed or such other deed, agreement, document or instrument as amended, novated, supplemented, varied or replaced from time to time;
- (f) a reference to any legislation or to any section or provision of it includes:
 - (i) any statutory modification or re-enactment of, or any statutory provision substituted for, that legislation, section or provision; and
 - (ii) ordinances, by-laws, regulations of and other statutory instruments issued under that legislation, section or provision;
- (g) words in the singular include the plural (and vice versa) and words denoting any gender include all genders;
- (h) headings are for convenience only and do not affect the interpretation of this Deed;
- (i) a reference to:
 - (i) a party or clause is a reference to a party or clause of or to this Deed; and
 - (ii) a paragraph or a sub-paragraph is a reference to a paragraph or sub-paragraph in the clause in which the reference appears;

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- (j) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (k) for all purposes (other than where designated as a Business Day), "day" means calendar day;
- (l) a reference to "\$" is to Australian currency;
- (m) no rule of construction applies to the disadvantage of a party on the basis that the party put forward or drafted this Deed or any part; and
- (n) any reference to "information" will be read as including information, representations, statements, data, samples, calculations, assumptions, deductions, determinations, drawings, design, specifications, models, plans and other documents in all forms including the electronic form in which it was generated.

2 Guarantee

2.1 Guarantee

The Guarantor irrevocably and unconditionally guarantees to the Principal the due and punctual performance by Ward of all the Obligations.

2.2 Payment by Guarantor

If Ward does not pay the Guaranteed Money when due, the Guarantor must on demand pay to the Principal the Guaranteed Money which is then due and unpaid or which later becomes due, owing or payable.

2.3 Perform Obligations

If Ward defaults in the performance or observance of any of the Obligations, the Guarantor must, in addition to its obligations under clause 2.2 of this Guarantee, on demand from time to time by the Principal, immediately perform any of the Obligations then required to be performed by Ward in the same manner as Ward is required to perform the Obligations.

2.4 Maximum Liability

The aggregate liability of the Guarantor to the Principal under or arising from this Deed is no greater than that which Ward has to the Principal under the Contract.

3 Indemnity

As a covenant separate and distinct from that contained in clause 2.1, the Guarantor irrevocably and unconditionally agrees to indemnify the Principal and at all times to keep the Principal indemnified against any loss or damage suffered by the Principal arising out of or in connection with:

- (a) any failure by Ward to perform the Obligations duly and punctually; or
- (b) any obligation or liability that would otherwise form part of the Obligations being void, voidable or unenforceable against or

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irrecoverable from Ward for any reason, and whether or not the Principal knew or ought to have known of that reason.

4 Liability as guarantor and indemnifier

A reference in this Deed to the obligations or liabilities of the Guarantor is a reference to the Guarantor's obligations or liabilities as either guarantor or indemnifier (or both) under this Deed. The use of the expression 'Guarantor' in this Deed in relation to a party must not be construed as diminishing that party's obligations as an indemnifier under this Deed.

5 Nature and preservation of liability

5.1 Absolute liability

- (a) The liability of the Guarantor under this Deed is absolute and is not subject to the performance of any condition precedent or subsequent by Ward or the Guarantor.
- (b) This Deed binds each person who has executed it, notwithstanding that:
 - (i) any person, whether named as a party or not, does not execute this Deed;
 - (ii) the execution of this Deed by any person is invalid, forged or irregular in any way; or
 - (iii) this Deed is or becomes unenforceable, void or voidable against any other person.

5.2 Unconditional liability

The liability of the Guarantor under this Deed will not be affected by any act, omission, matter or thing which, but for this clause 5.2, might operate in law or in equity to release the Guarantor from that liability or to reduce the Guarantor's liability under this Deed, including any of the following:

- (a) the occurrence before, on or at any time after the date of this Deed, of any Insolvency Event in relation to Ward or the Guarantor;
- (b) the receipt by the Principal of any payment, dividend or distribution under any Insolvency Provision in relation to Ward or the Guarantor;
- (c) the occurrence of any Event of Default;
- (d) the Contract or any payment or other act, the making or doing of which would otherwise form part of the Obligations being or becoming or being conceded to be frustrated, illegal, invalid, void, voidable, unenforceable or irrecoverable in whole or in part for any reason whether past, present or future;
- (e) the Principal accepting or declining to accept any Security from any person at any time;
- (f) the Principal granting time, waiver or other indulgence or concession to, or making any composition or compromise with, Ward or the Guarantor;

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- (g) the Principal not exercising or delaying (whether deliberately, negligently, unreasonably or otherwise) in the exercise of any remedy or right it has for the enforcement of the Contract or any Obligation;
- (h) any laches, acquiescence or other act, neglect, default, omission or mistake by the Principal;
- (i) the determination, rescission, repudiation or termination, or the acceptance of any of the foregoing, by the Principal or Ward or the Guarantor of the Contract or any Obligation;
- (j) any variation to the Contract or any Obligation, whether or not that variation is substantial or material, or imposes any additional liability on or disadvantages Ward or the Guarantor;
- (k) the full, partial or conditional release or discharge by the Principal or by operation of law, of Ward or the Guarantor from the Contract or any Obligation;
- (l) any change in membership (whether by death or retirement of an existing member, admission of a new member, or otherwise) or in the name of any partnership, firm or association in which Ward or the Guarantor is a member;
- (m) the transfer, assignment or novation by the Principal or Ward or the Guarantor of all or any of its rights or obligations under the Contract or under any other Obligation;
- (n) any failure by the Principal to disclose to the Guarantor any material or unusual fact, circumstance, event or thing known to, or which ought to have been known by, the Principal relating to or affecting Ward or the Guarantor at any time before or during the currency of this Deed, whether prejudicial or not to the rights and liabilities of the Guarantor and whether or not the Principal was under a duty to disclose that fact, circumstance, event or thing to the Guarantor or to Ward;
- (o) the Principal agreeing with Ward or the Guarantor not to sue, issue process, sign or execute judgment, commence proceedings for bankruptcy or liquidation, participate in any administration, scheme or deed of arrangement or reconstruction, prove in any bankruptcy or liquidation, or do anything else in respect of the liability of Ward or the Guarantor;
- (p) (where the Guarantor is an individual) the death or mental incapacity of the Guarantor; or
- (q) the provisions of section 440J of the *Corporations Act 2001* (Cth) operating to prevent or delay:
 - (i) the enforcement of this Deed against any Guarantor; or
 - (ii) any claim for contribution against any Guarantor.

5.3 No merger

- (a) This Deed is in addition to and does not merge with, postpone, lessen or otherwise prejudicially affect the Contract or any other Power of the Principal.
- (b) The Principal will hold any judgment or order obtained by it against any person in respect of the Guaranteed Money or the Obligations

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collaterally with this Deed, and this Deed will not merge in that judgment or order

5.4 No obligation to gain consent

No consent is required from any Guarantor nor is it necessary for the Guarantor to or be made aware of any event referred to in clause 5.2, any transaction between the Principal and Ward, or any particulars concerning any Obligation.

5.5 Appropriation

- (a) The Principal is under no obligation to marshal or appropriate in favour of any Guarantor, or to exercise, apply, transfer or recover in favour of any Guarantor, any Security or any funds or assets that the Principal holds, has a claim on, or has received or is entitled to receive, but may do so in the manner and order as the Principal determines in its absolute discretion.
- (b) The Principal may hold in a suspense account (without liability to pay interest) any money which it receives from the Guarantor, or which it receives on account of the Guarantor's liability under this Deed, and which the Principal may, at its discretion, appropriate in reduction of the Guarantor's liability under this Deed.

5.6 Void or voidable transactions

if:

- (a) the Principal has at any time released or discharged:
 - (i) the Guarantor from its obligations under this Deed; or
 - (ii) any assets of the Guarantor from a Security;

in either case in reliance on a payment, receipt or other transaction to or in favour of the Principal; or

- (b) any payment or other transaction to or in favour of the Principal has the effect of releasing or discharging:
 - (i) the Guarantor from its obligations under this Deed; or
 - (ii) any assets of the Guarantor from a Security;

and

- (c) that payment, receipt or other transaction is subsequently claimed by any person to be void, voidable or capable of being set aside for any reason, including under an Insolvency Provision, or under the general law; and
- (d) that claim is upheld or is conceded or compromised by the Principal;

then:

- (e) the Principal will immediately become entitled against the Guarantor to all rights (including under any Security) as it had immediately before that release or discharge;

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- (f) the Guarantor must immediately do all things and execute all documents as the Principal may reasonably require to restore to the Principal all those rights; and
- (g) the Guarantor must indemnify the Principal against costs, losses and expenses suffered or incurred by the Principal in or in connection with any negotiations or proceedings relating to the claim or as a result of the upholding, concession or compromise of the claim.

5.7 No set-off, counterclaim

The liability of the Guarantor under this Deed will not be reduced or avoided by any defence, set-off or counterclaim available to Ward against the Principal.

5.8 Claim on the Guarantor

The Principal is not required to make any claim or demand on Ward, or to enforce the Contract, or any other right, power or remedy against Ward, before making any demand or claim on the Guarantor.

5.9 No representation by Principal etc.

The Guarantor acknowledges that it has not entered into this Deed as a result of any representation, promise, statement or inducement to the Guarantor by or on behalf of the Principal, Ward or any other person.

6 Representations and Warranties

6.1 General representations and warranties

The Guarantor or, if there is more than one Guarantor, each Guarantor represents and warrants to the Principal:

- (a) this Deed constitutes a valid and legally binding obligation of the Guarantor in accordance with its terms;
- (b) the execution, delivery and performance of this Deed by the Guarantor does not breach any law, or any document or agreement to which the Guarantor is a party or which is binding on it or any of its assets;
- (c) no litigation, arbitration, mediation, conciliation, criminal or administrative proceedings are current, pending or, to the knowledge of the Guarantor, threatened, which, if adversely determined, may have a material adverse effect on the business assets or financial condition of the Guarantor;
- (d) all information relating to the Guarantor provided to the Principal in connection with this Deed is true in all material respects and is not, by omission or otherwise, misleading in any material respect; and
- (e) the Guarantor has not entered into this Deed as the trustee of any trust.

6.2 Corporate representations and warranties

The Guarantor, or if there is more than one Guarantor, each Guarantor, that is or purports to be a body corporate, further represents and warrants to the Principal that:

- (a) it is duly incorporated and has the corporate power to own its property and to carry on its business as is now being conducted;

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- (b) the execution, delivery and performance of this Deed does not breach the Constitution of the Guarantor and, if the Guarantor or any of its subsidiaries is listed on the Australian Securities Exchange Limited or on any other stock exchange, those listing requirements or business rules;
- (c) it has the power, and has taken all corporate and other action required, to enter into this Deed and to authorise the execution and delivery of this Deed and the performance of its obligations under this Deed; and
- (d) the Guarantor has filed all corporate notices and effected all registrations with the Australian Securities and Investments Commission and all of those filings and registrations are current, complete and accurate.

6.3 Representations and warranties repeated

Each representation and warranty in this Deed will be repeated on each day whilst any of the Guaranteed Money remains outstanding (whether or not then due for payment) with reference to the facts and circumstances then subsisting, as if made on each such day.

7 Payments

7.1 On demand

All money payable by the Guarantor under this Deed must be paid by the Guarantor on demand by the Principal in immediately available funds to the account and in the manner notified by the Principal to the Guarantor.

7.2 Payment in gross

All money received or recovered by the Principal on account of the Guaranteed Money will be treated as payments in gross without any right on the part of the Guarantor to claim the benefit of any money received or recovered by the Principal or any Security, until the Principal has been paid 100 cents in the dollar in respect of the Guaranteed Money.

7.3 Interest

As a liability separate and distinct from the Guarantor's liability under clauses 2 and 3, the Guarantor must on demand by the Principal pay interest on all amounts due and payable by it and unpaid under or in respect of this Deed. Interest will accrue on those amounts from day to day from the due date up to the date of actual payment, before and (as a separate and independent obligation) after judgment, at the Specified Rate for successive 90 day interest periods commencing on the date of default and, if not paid when due, will itself bear interest in accordance with this clause 7.3.

7.4 Merger

If the liability of the Guarantor to pay to the Principal any money under this Deed becomes merged in any judgment or order, then, as an independent obligation, the Guarantor will pay interest on the amount of that money at the rate which is the higher of that payable under clause 7.3 and that fixed by or payable under the judgment or order.

7.5 No set-off or deduction

All payments by the Guarantor to the Principal under this Deed must be:

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- (a) free of any set-off or counterclaim; and
- (b) without deduction or withholding for or on account of any present or future Taxes, unless the Guarantor is compelled by law to make any deduction or withholding.

If the Guarantor is compelled by law to make any deduction or withholding for or on account of any present or future Taxes (not being Taxes on the overall net income of the Principal), then the Guarantor must:

- (c) pay to the Principal any additional amounts necessary to enable the Principal to receive (after all deductions and withholdings for those Taxes) a net amount equal to the full amount which would otherwise be payable to the Principal if no deduction or withholding was required to be made;
- (d) promptly (and within the time prescribed by law) pay to the relevant taxing authority the amount of those Taxes which it is compelled by law to deduct or withhold, and indemnify the Principal for any Taxes and interest or penalties to which the Principal may become liable consequent on the failure of the Guarantor to pay those Taxes; and
- (e) deliver to the Principal, promptly on request from the Principal, a copy of any receipt issued by the relevant taxing authority on payment of those Taxes.

7.6 Currency indemnity

- (a) The Australian Dollar is the currency of payment by the Guarantor under or in connection with this Deed, except that payment by the Guarantor of or in relation to any Obligation which is denominated in a foreign currency must be made in that foreign currency.
- (b) If for any reason any amount payable by the Guarantor under or in connection with this Deed is received by the Principal in a currency (Payment Currency) other than the currency (Agreed Currency) in which that amount is required to be paid under this Deed (whether as a result of any judgment or order, the liquidation of the Guarantor or otherwise), and the amount obtained (net of charges) by the Principal on its conversion of the amount of the Payment Currency received into the Agreed Currency is less than the amount payable under this Deed in the Agreed Currency, then the Guarantor will, as an independent and additional obligation, indemnify the Principal for that deficiency and for any loss sustained as a result of that deficiency.

8 Expenses and stamp duties

8.1 Expenses

The Guarantor must on demand reimburse the Principal for and keep the Principal indemnified against all expenses, including legal fees, costs and disbursements on a solicitor/own client basis (or on a full indemnity basis, whichever is the higher) assessed without the necessity of taxation, incurred by the Principal in connection with:

- (a) the preparation, negotiation and execution of this Deed and any subsequent consent, agreement, approval, waiver, amendment to or discharge of this Deed; and

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- (b) any exercise, enforcement or preservation, or attempted exercise, enforcement or preservation, of any rights under this Deed.

8.2 Stamp duties

- (a) The Guarantor must pay all stamp duties, transaction, registration and similar Taxes, including fines and penalties, financial institutions duty and debits tax which may be payable to or required to be paid by any appropriate authority, or determined to be payable in connection with the execution, delivery, performance or enforcement of this Deed or any payment, receipt or other transaction contemplated by this Deed; and
- (b) The Guarantor must indemnify the Principal against any loss or liability incurred or suffered by it as a result of the delay or failure by the Guarantor to pay Taxes.

8.3 Goods and Services Tax

If the Principal is or becomes liable to pay any GST (including any penalty) in respect of any supply it makes under, or in connection with, this Deed (GST Liability) then:

- (a) to the extent that an amount is payable by the Guarantor to the Principal under this Deed for that supply - the amount will be increased by the full amount of the GST Liability; and
- (b) otherwise - the Guarantor will indemnify and keep the Principal indemnified for the full amount of the GST Liability.

9 Assignment

The Principal may assign, novate or otherwise transfer all or any part of its rights under this Deed and may disclose to a proposed assignee or transferee any information in the possession of the Principal relating to the Guarantor.

10 Governing law, jurisdiction and arbitration

10.1 Governing law

This Deed and where applicable, the arbitration reference contained in clause 10.3, is governed by and will be construed according to the laws of New South Wales.

10.2 Jurisdiction

- (a) This clause 10.2 only applies where clauses 10.3 to 10.7 do not apply.
- (b) The Guarantor irrevocably submits to the non-exclusive jurisdiction of the courts and appellate courts of New South Wales, and the courts competent to determine appeals from those courts, with respect to any proceedings which may be brought relating in any way to this Deed.
- (c) The Guarantor irrevocably waives any objection it may now or in the future have to the venue of any proceedings, and any claim it may now or in the future have that any proceeding has been brought in an inconvenient forum, where that venue falls within paragraph (b) of this clause.

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10.3 Reference to arbitration

- (a) Clauses 10.3 to 10.7 will only apply where the Guarantor is a foreign company (as defined in section 9 of the *Corporations Act 2001* (Cth)).
- (b) Any controversy, claim or dispute directly or indirectly based upon, arising out of, relating to or in connection with this Deed (including but not limited to any question relating to the existence, validity or termination of this Deed) shall be referred to and finally resolved by arbitration in accordance with the arbitration rules of the Australian Centre for International Commercial Arbitration (known as the ACICA Arbitration Rules).
- (c) The seat of the arbitration will be Sydney.
- (d) The number of arbitrators will be one.
- (e) The language of the arbitration will be English.

10.4 Powers of the arbitrator

The arbitral tribunal has the power to grant all legal, equitable and statutory remedies, except punitive damages.

10.5 Consolidation

The parties agree that section 24 of the *International Arbitration Act 1974* (Cth) will apply in respect of consolidations.

10.6 Joinder

The arbitral tribunal has the power, on the application of any party to this arbitration agreement, to allow a third party who the arbitrator considers has a sufficient interest in the outcome of the arbitration to be joined in the arbitration as a party. Each party to this Deed hereby consents to such joinder. In the event of such joinder of parties in the arbitration, the arbitrator has the power to make a single final award, or separate awards, in respect of all parties so joined in the arbitration.

10.7 Award final and binding

Any award will be final and binding upon the parties.

11 Miscellaneous

11.1 Notices

- (a) Any notices contemplated by this Deed must be in writing and delivered to the relevant address as set out below (or to any new address that a party notifies to the others).
 - (i) to the Principal: Level 5, Tower A
Zenith Centre
821 Pacific Highway
CHATSWOOD NSW 2067
 - (ii) to the Guarantor: [to be completed]

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- (b) A notice sent by post will be taken to have been received at the time when, in due course of the post, it would have been delivered at the address to which it is sent.

11.2 Continuing obligation

This Deed is a continuing obligation notwithstanding any termination by the Guarantor, settlement of account, intervening payment, express or implied revocation or any other matter or thing, and the Principal will continue to be entitled to the benefit of this Deed as regards the due and punctual performance of all the Obligations until a final discharge has been given to the Guarantor.

11.3 Further assurance

The Guarantor must immediately on the request of the Principal, and at the cost of the Guarantor, do and perform all further acts and things and execute and deliver all further documents as the Principal reasonably requires, or as are required by law, to perfect or to give effect to the rights and powers of the Principal created, or intended to be created, by this Deed.

11.4 Form of demand

A demand on the Guarantor for payment under this Deed may be in the form and contain any information as the Principal determines. It need not specify the amount of the Guaranteed Money, nor the method or basis of calculation of all or any part of the Guaranteed Money, including amounts of, or in the nature of, interest.

11.5 Entire agreement

This Deed constitutes the entire agreement and understanding between the parties and will take effect according to its tenor despite, and supersede:

- (a) any prior agreement (whether in writing or not), negotiations and discussions between the parties in relation to the subject matter of this Deed; or
- (b) any correspondence or other documents relating to the subject matter of this Deed that may have passed between the parties prior to the date of this Deed and that are not expressly included in this Deed.

11.6 Joint and several liability

The obligations of the Guarantor, if more than one person, under this Deed, are joint and several. Each person constituting the Guarantor acknowledges and agrees that it will be causally responsible for the acts and omissions (including breaches of this Deed) of the other as if those acts or omissions were its own and the Principal may proceed against any or all of them. This Deed binds each person who signs as a "Guarantor" even if another person who was intended to become a "Guarantor" does not become a "Guarantor" or is not bound by this Deed.

11.7 Severance

If at any time any provision of this Deed is or becomes illegal, invalid or unenforceable in any respect under the law of any jurisdiction, that will not affect or impair:

- (a) the legality, validity or enforceability in that jurisdiction of any other provision of this Deed; or

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- (b) the legality, validity or enforceability under the law of any other jurisdiction of that or any other provision of this Deed.

11.8 Remedies cumulative

Each Power is cumulative and in addition to each other Power available to the Principal.

11.9 Waiver

- (a) Failure to exercise or enforce or a delay in exercising or enforcing or the partial exercise or enforcement of any right, power or remedy provided by law or under this Deed by the Principal will not in any way preclude, or operate as a waiver of, any exercise or enforcement, or further exercise or enforcement of that or any other right, power or remedy provided by law or under this Deed.
- (b) Any waiver or consent given by the Principal under this Deed will only be effective and binding on the Principal if it is given or confirmed in writing by the Principal.
- (c) No waiver by the Principal of:
 - (i) a breach of any term of this Deed; or
 - (ii) any other failure by the Guarantor to comply with a requirement of this Deed.

will operate as a waiver of another breach of that term or failure to comply with that requirement or of a breach of any other term of this Deed or failure to comply with any other requirement of this Deed.

11.10 Consents

Any consent of the Principal referred to in, or required under, this Deed may be given or withheld, or may be given subject to any conditions, as the Principal (in its absolute discretion) thinks fit, unless this Deed expressly provides otherwise.

11.11 Moratorium legislation

To the fullest extent permitted by law, the provisions of all laws operating directly or indirectly to lessen or affect in favour of the Guarantor any obligation under this Deed, or to delay or otherwise prevent or prejudicially affect the exercise of any Power, are expressly waived.

11.12 Set-off

- (a) The Principal may (without prior notice at any time) set off any obligation then due and payable by the Guarantor under this Deed against any obligation (whether or not due and payable) by the Principal to the Guarantor, regardless of the place or currency of payment of either obligation or the office or branch through which either obligation is booked. If the obligations are in different currencies, the Principal may convert either obligation into the currency of the other obligation at a market rate of exchange determined by it for the purpose of the set-off. If either obligation is unliquidated or unascertained, the Principal may effect the set off in an amount estimated by it in good faith to be the amount of that obligation.

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- (b) The Principal is not obliged to exercise any right of set off pursuant to clause 11.12(a), which is in addition to its other rights of combination of account, set-off or lien (by contract or operation of law).
- (c) On its exercise of any set off pursuant to clause 11.12(a) against the Guarantor, the Principal will promptly notify the Guarantor of details of that set-off.

11.13 Variations

This Deed may only be varied by a document signed by or on behalf of both the Principal and the Guarantor.

11.14 Provisions limiting or excluding liability

Any provision of this Deed which seeks to limit or exclude a liability of the Principal or the Guarantor is to be construed as doing so only to the extent permitted by law.

11.15 Counterparts

- (a) This Deed need not be executed by the Principal.
- (b) If the Guarantor is more than one person, a Guarantor may execute this Deed in one or more separate counterparts, each of which constitutes the deed of that Guarantor.

Executed as a deed.

Executed by [insert Company Name] [Insert ABN] in accordance with section 127(1) of the Corporations Act 2001 (Cth) by authority of its directors:

Signature of director

Name of director (block letters)

Signature of director / company secretary

Name of director / company secretary (block letters)

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Schedule 18 Deed of Novation (Principal, Contractor and Subcontractor)

(Clause 2.2(j))

THIS DEED OF NOVATION is made on [] between the following parties:

- 1 Transport for NSW (ABN 18 804 239 602) of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067 ("Principal")
- 2 [] ABN [] of [] ("Contractor"); and
- 3 [] ABN [] of [] ("Subcontractor").

Recitals

- A By agreement dated [] (the "Subcontract"), the Principal engaged the Subcontractor to, and the Subcontractor agreed to, undertake certain works for the Principal (the "Subcontract Works").
- B By agreement dated [] (the "Contract"), the Principal engaged the Contractor to, and the Contractor agreed to, undertake certain works for the Principal, which includes the Subcontract Works.
- C Under the Contract and the Subcontract, the Contractor and the Subcontractor must enter into this deed when the Principal requires them to do so.
- D Subject to this deed, the Subcontractor agrees to accept the Contractor in place of the Principal for the performance of a : the obligations of the Principal and to release completely and discharge the Principal from all of its obligations under the Subcontract and from all claims and demands in respect of it.

THIS DEED WITNESSES that in consideration, among other things, of the mutual promises contained in this deed, the parties agree:

- 1 The Subcontractor must perform its obligations under, and be bound by, the Subcontract as if the Contractor was originally named in the Subcontract as the Principal.
- 2 The Subcontractor:
 - (a) releases and forever discharges the Principal from its obligations under the Subcontract and from all claims and demands in respect of the Subcontract; and
 - (b) accepts the liability of the Contractor in place of the liability of the Principal in respect of the Subcontract.
- 3 The Contractor must perform all the obligations of the Principal under, and be bound by, the Subcontract as if the Contractor were originally named in the Subcontract as the Principal.

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- 4 Upon the execution and exchange of this deed:
- (a) the Principal must release any securities given to it by the Subcontractor in accordance with the Subcontract;
 - (b) the Subcontractor must give the Contractor security in the same form and for the same amounts as any security required by the Subcontract; and
 - (c) the Subcontractor must ensure that the Contractor is appropriately noted on all relevant insurance policies as required by the Subcontract.
- 5 This deed is governed by the laws of New South Wales and the parties agree to submit to the non exclusive jurisdiction of the courts of that state.

EXECUTED by the parties as a deed:

Executed by [Insert Company Name] [Insert ABN] in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors.

Signature of director

Name of director (block letters)

Executed by [Insert Company Name] [Insert ABN] in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors.

Signature of director

Name of director (block letters)

Executed by [Insert Company Name] [Insert ABN] in accordance with section 127(1) of the *Corporations Act 2001* (Cth) by authority of its directors.

Signature of director

Name of director (block letters)

Signature of director / company secretary

Name of director / company secretary (block letters)

Signature of company secretary/director

Name of director / company secretary (block letters)

Signature of director / company secretary

Name of director / company secretary (block letters)

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Schedule 19 Contractor's Certificate of Design Compliance

(Clauses 5.3 and 11.6(b)(ii))

CONTRACTOR'S CERTIFICATE OF DESIGN COMPLIANCE	
CONTRACTOR: _____	
DESIGN PACKAGE	DESCRIPTION
_____	_____
_____	_____
_____	_____
_____	_____
<i>(Attach schedule of work packages if insufficient space)</i>	
I certify that the design for the packages or part thereof described above has been completed to the extent indicated above in accordance with the requirements of the Contract between the Principal and _____, and complies with the requirements of the Contract, subject to the register of outstanding minor design non-conformances and unresolved issues attached.	
I further certify that the attached compliance records as required by the Contract reflect the true status of the design packages.	
SIGNATURE: _____ (Contractor's Representative)	SIGNATURE: _____ (Contractor's Subcontractor/Designer)
DATE: _____	DATE: _____

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Schedule 20 Contractor's Certificate of Construction Compliance

(Clauses 7.1(c) and 11.6(b)(ii))

CONTRACTOR'S CERTIFICATE OF CONSTRUCTION COMPLIANCE	
CONTRACTOR: _____	
<u>WORK PACKAGE</u>	<u>DESCRIPTION</u>
_____	_____
_____	_____
<i>(Attach schedule of work packages if insufficient space)</i>	
I certify that the procurement/construction of the work packages or part thereof described above have been completed to the extent indicated above in accordance with the requirements of the Contract between the Principal and _____, and comply with the requirements of the Contract, subject to the register of outstanding minor construction non-conformance and unresolved issues attached.	
I further certify that the attached compliance records as required by the Contract reflect the true status of the work packages.	
NAME: _____	SIGNATURE: _____ DATE: / /
<i>(Contractor's Representative)</i>	

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THIS SECTION MUST BE COMPLETED BY THE RELEVANT CONTRACTOR'S
SUBCONTRACTOR/DESIGNER

I certify that the procurement/construction of the work packages (one certificate per work package) or part thereof described above have been completed to the extent indicated above in accordance with the requirements of the Contract between the Principal and _____, and comply with the requirements of the Contract, subject to the register of outstanding minor construction non-conformances and unresolved issues attached.

I further certify that the attached compliance records as required by the Contract reflect the true status of the work packages.

SIGNATURE: _____
(Contractor's Subcontractor/Designer)

DATE: _____

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Schedule 21 Contractor's Certificate of Completion

(Clause 1.1 and Clause 12.3(c))

CONTRACTOR'S CERTIFICATE OF COMPLETION	
CONTRACTOR: _____	
Description of Portion or Works: _____ _____ _____	
<p>I certify that the Completion of the above Portion/the Works has/have been achieved in accordance with the requirements of the Contract between the Principal and _____, complies with the requirements of the Contract, subject to the register of unresolved issues attached.</p> <p>I further certify that:</p> <ul style="list-style-type: none">(a) All Variation Orders (including concessions) are listed in the attached compliance register.(b) All identified Defects (including any non-conformities but excluding Defects accepted as minor by the Principal) have been satisfactorily rectified and their documentation closed out.(c) All required documentation has been submitted.(d) All notices regarding system deficiencies have been satisfactorily closed out. <p>I further certify that the attached compliance records as required by the Contract reflect the true status of the Portion/the Works.</p> <p>SIGNATURE: _____ SIGNATURE: _____ <i>(Contractor's Representative)</i> <i>(Contractor's Subcontractor/Designer)</i></p> <p>DATE: _____ DATE: _____</p>	

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Schedule 22 Contractor's Certificate of Final Completion

(Clause 12.8(d))

CONTRACTOR'S CERTIFICATE OF FINAL COMPLETION	
CONTRACTOR:	
I hereby certify that Final Completion has been achieved by [the Contractor] in accordance with the requirements of the Deed (including all Variation orders detailed in (a) below) between the Principal and the Contractor.	
I further certify that:	
(a)	All Variation Orders (including concessions) are listed in the attached compliance register.
(b)	All identified Defects (including any non-conformities) have been satisfactorily rectified and their documentation closed out.
(c)	All required documentation has been submitted.
(d)	All notices regarding system deficiencies have been satisfactorily closed out.
I further certify that the attached compliance records as required by the Deed reflect the true status of the Portion/the Works.	
SIGNATURE: _____ <i>(Contractor's Representative)</i>	DATE: / /

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Schedule 23 Form of Other Contractor Deed Poll

(Clause 7.4)

This Deed Poll made the _____ day of _____ 20____

In favour of: [insert details] (ABN [insert details]) of [insert details]
("Contractor") and

Transport for NSW (ABN 18 604 239 602) of Level 5, Tower A, Zenith
Centre, 821 Pacific Highway, Chatswood, NSW, 2067

("Principal")

Given by: [insert details] (ABN [insert details]) of [insert details]
("Other Contractor")

Recitals

- A By a contract dated [insert date] ("Contract") between the Principal and the Contractor, the Contractor agreed to design and construct certain works ("Works"), on the land more particularly described in the Contract (the "Site").
- B The Other Contractor has been appointed under a Contract ("Other Contract") to undertake certain works on the Site ("Other Contractor Works").
- C For the purposes of the *Work Health and Safety Act 2011* (NSW) and the *Work Health and Safety Regulation 2011* (NSW) (together, the "WHS Legislation"), the Works and the Other Contractor Works are a "construction project" within the meaning of the WHS Legislation.
- D Under the Contract, the Principal engaged the Contractor as principal contractor and authorised the Contractor to have management and control of the workplace for the purpose of discharging the duties imposed on a principal contractor for the construction project.
- E Under the provisions of the Contract, the Principal is required to procure the provision of this Deed Poll from each Other Contractor that undertakes Other Contractor Works (as that term is defined in the Contract).

This Deed Poll Provides

- 1 In consideration of the Contractor accepting this Deed Poll, the Other Contractor agrees that
 - (a) the Other Contractor, its subcontractors and their respective personnel while they are on the Site, will comply with Site safety regulations, any Site rules or regulations and with all directions of the Contractor with respect to work health and safety;

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- (b) the Other Contractor, its subcontractors and their respective personnel will comply in a timely manner with directions of the Contractor so that the Contractor discharges its obligations as principal contractor;
 - (c) the Other Contractor, its subcontractors and their respective personnel will consult, cooperate and coordinate activities with the Contractor, the Principal and all other persons who have a work health and safety duty in relation to the same matter;
 - (d) the Other Contractor, its subcontractors and their respective personnel will comply with the work health and safety plan(s) prepared by the Contractor while on Site;
 - (e) the Contractor may exclude the Other Contractor, any of its subcontractors and their respective personnel from the Site for work health and safety reasons;
 - (f) the Contractor may direct the Other Contractor, any of its subcontractors and their respective personnel to perform or not perform certain acts for work health and safety reasons;
 - (g) where high risk construction work is to be carried out in the performance of the Other Contractor Works, the Other Contractor must:
 - (i) prepare a safe work method statement that complies with all requirements of the WHS Legislation;
 - (ii) provide a copy of the safe work method statement to the Principal and the Contractor prior to the commencement of high risk construction work;
 - (iii) review and revise the safe work method statement in accordance with the WHS Legislation;
 - (iv) ensure that the high risk construction work is carried out in compliance with the safe work method statement; and
 - (v) where so directed by the Contractor, suspend the performance of any high risk construction work;
 - (h) the Other Contractor shall in carrying out the work under the Other Contract, comply with, and ensure that all subcontractors and personnel comply with the WHS Legislation; and
 - (i) in its contracts with subcontractors, the Other Contractor will ensure that the subcontractor is obliged to give the same obligations and rights as required of the Other Contractor under this Deed Poll.
- 2 The Other Contractor indemnifies the Contractor against any delay, damage, expense, loss, penalty or liability suffered or incurred by the Contractor as a result of:
- (j) any failure by the Other Contractor to comply with any direction given by the Contractor in accordance with this Deed Poll; or
 - (k) any breach by the Other Contractor, any of its subcontractors or their respective personnel of:
 - (i) their respective contractual or legislative work health and safety obligations; or

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(ii) the provisions of this Deed Poll.

- 3 This Deed Poll will be governed by and construed in accordance with the law for the time being of New South Wales.

Executed as a Deed Poll.

Executed by *[Insert Company Name of Other Contractor] [insert ABN]* in accordance with section 127(1) of the Corporations Act 2001 (Cth) by authority of its directors:

Signature of director

Name of director (block letters)

Signature of director / company secretary

Name of director / company secretary

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Schedule 24 Not Used

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Schedule 25 Not Used

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Schedule 26 Expert Determination Agreement

(Clauses 15.8(b) and 15.9)

Expert Determination Agreement made at _____ **on** _____
Parties [_____] ("Principal")
[Insert name and address of Contractor] ("Contractor")
[Insert name and address of Expert agreed between the Parties or
appointed pursuant to clause [to be inserted] of the Contract]
("Expert")

Background

- A The Principal and the Contractor (together "the Parties" and each "a Party") are parties to a contract ("Contract") for [to be inserted].
- B By written notice dated [to be inserted], the [insert the Principal or Contractor as applicable] has required that the matter described in Schedule 1, being a matter that the Contract requires or permits to be referred to an Expert for determination, be determined by an Expert appointed under clause 15.7 of the Contract ("Matter").
- C Pursuant to clause 15.7 of the Contract, the Expert has been appointed to determine the Matter in accordance with the process set out in this Agreement.

Operative part

1 Appointment of Expert

- (a) The Parties appoint the Expert to determine the Matter in the manner and within the times set out in this Agreement and the Expert accepts the appointment on the basis set out in this Agreement.
- (b) The Parties agree that:
- (i) the Expert will act as an expert and not as an arbitrator;
 - (ii) neither the determination of the Matter, nor the process required by this Agreement is an arbitration and any conference conducted during the determination is not a hearing conducted under any legislation or rules relating to any form of arbitration;
 - (iii) the rules of evidence and natural justice do not apply to the determination; and
 - (iv) the Expert must conduct the determination of the Matter in accordance with the Rules for Expert Determination Process set out in Schedule 2;

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- (c) If, at any time during the determination, the Expert becomes aware of circumstances that might reasonably be considered to adversely affect the Expert's capacity to act independently or impartially, the Expert must inform the Parties immediately and, unless the Parties agree otherwise, terminate this Agreement.

2 Confidentiality

All proceedings and submissions relating to the determination (including the fact that any step in the determination is occurring), and all documents prepared for the purposes of the determination (including the Expert's determination), must be kept confidential between the Parties and the Expert. No such proceedings, submissions or documents, nor any other information relating to or arising out of the determination, may be divulged to any other person, except with the prior written consent of both Parties or as may be required by law or to the extent necessary to give effect to or enforce the Expert's determination.

3 Costs and Fees

- (a) As between the Parties and the Expert, the Parties are jointly and severally liable for the payment of the Expert's fees and disbursements, calculated in accordance with the Schedule of Fees and Disbursements set out in Schedule 3. The Parties agree to comply with any direction from the Expert as to the provision of security deposits in respect of his or her fees and disbursements.
- (b) The Parties agree as between themselves that:
- (i) they will each pay one half of the Expert's fees and disbursements, calculated in accordance with the Schedule of Fees and Disbursements set out in Schedule 3; and
 - (ii) they will each bear their own costs of and incidental to the preparation of this Agreement and their participation in the determination.

4 Exclusion of Liability and Indemnity

Except in the case of fraud, the Expert will not be liable to either Party for any act or omission by the Expert in the performance or purported performance of this Agreement. The Parties jointly and severally indemnify the Expert against all claims arising out of or in any way referable to any act or omission by the Expert (except fraud) in the performance or purported performance by the Expert of the terms of this Agreement.

5 Co-operation of the Parties

Each Party agrees to take part in the determination in good faith and to comply with the reasonable requests and directions of the Expert in relation to the conduct of the determination.

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6 Governing Law

This Agreement is governed by and is to be construed in accordance with the laws in force in the State of New South Wales.

7 Jurisdiction

- (a) The Parties and the Expert irrevocably submit to the non-exclusive jurisdiction of the courts of the State of New South Wales and the New South Wales courts to which the appeals from those courts may be made.
- (b) The Parties and the Expert irrevocably waive any objection they may now or in the future have to the venue of any proceedings, and any claim they may now or in the future have that any proceeding has been brought in an inconvenient forum, where that venue falls within clause 7(a).

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Schedule 1 - The Matter

[To be inserted when it comes time for expert determination]

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Schedule 2 - Rules for Expert Determination Process

1 Commencement

1.1 Except as provided in clause 4.3 of these Rules, the expert determination process begins when the Expert accepts an appointment to determine the Matter in accordance with these Rules and the Code of Conduct appended to these Rules.

2 Written Submissions

2.1 Within 7 days after the date this process begins, Party A (ie the Party who gave notice under clause 15.1 of the Contract) must, in addition to any particulars provided by Party A under clause 15.1 of the Contract, give the other Party and the Expert a written statement of the Matter referred for Expert determination, any agreed statement of facts and a written submission on the Matter in support of Party A's contentions.

2.2 Within 7 days after the statement in clause 2.1 is served, the other Party must give Party A and the Expert a written response to Party A's submissions.

2.3 If the Expert considers it appropriate, Party A may reply in writing to the other Party's response in clause 2.2 within the time allowed by the Expert.

2.4 If the Expert decides further information or documentation is required for the determination of the Matter, the Expert may direct one or more Parties to provide such further submissions, information or documents as the Expert may require.

3 Conference

3.1 The Expert may, if he or she thinks appropriate, call a conference of the Parties. Unless the Parties agree otherwise, the conference will be held in Sydney.

3.2 At least 14 days before the conference, the Expert must inform the Parties of the date, venue and agenda for the conference.

3.3 The Parties must appear at the conference and may make submissions on the subject matter of the conference. If a Party fails to appear at a conference of which that Party had been notified under clause 3.2, the Expert and the other Party may nevertheless proceed with the conference and the absence of that Party will not terminate or discontinue the Expert determination process.

3.4 The Parties:

(a) may be accompanied at a conference by legal or other advisers, and

(b) will be bound by any procedural directions as may be given by the Expert in relation to the conference both before and during the course of the conference.

3.5 The conference must be held in private.

3.6 If required by any Party, transcripts of the conference proceedings must be taken and made available to the Expert and the Parties.

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4 General

- 4.1 In making a determination or calling or holding a conference, the Expert must proceed in accordance with the Contract.
- 4.2 All proceedings and submissions relating to the Expert determination process must be kept confidential except:
- (a) with the prior consent of the Parties;
 - (b) as may be required by law; or
 - (c) as may be required in order to enforce the determination of the Expert.
- 4.3 The Expert must:
- (a) inform the Parties of:
 - (i) any relationship or interest with the Parties or their respective officers, employees, contractors, consultants or agents;
 - (ii) any interest the Expert has in the matters in dispute; and
 - (iii) any circumstance which might reasonably be considered to adversely affect the expert's capacity to act independently or impartially,
 - (iv) immediately upon becoming aware of any such circumstances; and
 - (b) upon making any disclosure under this clause 4.3, unless and until the Parties agree otherwise terminate the proceedings.

5 The Determination

- 5.1 As soon as possible after receipt of the submissions or after any conference and, in any event not later than 90 days after the Expert's acceptance of appointment, the Expert must:
- (a) determine the Matter between the Parties; and
 - (b) notify the Parties of that determination
- 5.2 The determination of the Expert must:
- (a) be in writing stating the Expert's determination and giving reasons;
 - (b) be made on the basis of the submissions (if any) of the parties, the conference (if any) and the Expert's own expertise; and
 - (c) meet the requirements of the Contract.
- 5.3 Subject to clause 5.4, to the extent permitted by law, the Expert's determination will be final and binding on the Parties unless a notice of appeal is given in accordance with clause 15.10 of the Contract.
- 5.4 If the Expert's determination contains a clerical mistake, an error arising from an accidental slip or omission, a material miscalculation of figures, a mistake in

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the description of any person, matter or thing, or a defect of form, then the Expert must correct the determination.

6 Costs

6.1 Security for costs must be deposited by both Parties at the commencement of the Expert determination process in accordance with any direction of the Expert

7 Modification

7.1 These rules may be modified only by agreement of the Parties and, if the Expert has been appointed, the Expert.

Schedules - Enabling Works Contract

APPENDIX 1 TO RULES FOR EXPERT DETERMINATION PROCESS

Code of Conduct for an Expert

- 1 The function of the Expert is to make a determination of the Matter in accordance with the Contract and the Expert Determination Agreement, including the Rules and this Code of Conduct.
- 2 The Expert must receive the written submissions and responses of the Parties in accordance with the procedures specified in the Rules and may require further information or documentation from the Parties which is reasonably necessary to determine the Matter.
- 3 The Expert must decide whether a conference is necessary to receive further information. The Expert must inform the Parties of the subject matter of any conference and may hear representations only on those matters during any such conference.
- 4 The Expert must disclose to both Parties all information and documents received.
- 5 If a Party fails to make a written submission, the Expert may continue with the process.
- 6 Subject to clause 3.3 of the Rules in relation to conferences, meetings and discussions with the Expert must only take place in the presence of both Parties.

Schedules - Enabling Works Contract

Schedule 3 - The Expert's Fees and Disbursements

[To be inserted when it comes time for expert determination]

Schedules - Enabling Works Contract

Signed as an agreement:

Signed for and on behalf of the
Principal by
[insert name] in the presence of

[Signature]

[Name of witness]

[Signature of witness]

Signed for and on behalf of the
Contractor by *[insert name]* in the
presence of:

[Signature]

[Name of witness]

[Signature of witness]

Schedules - Enabling Works Contract

Signed by the Expert *[insert name]* in
the presence of:

[Signature]

[Name of witness]

[Signature of witness]

Schedules - Enabling Works Contract

Schedule 27 Principal Supplied Items

Not applicable

Schedules - Enabling Works Contract

Schedule 28 Report on Aboriginal participation and apprentices

(Clause 9.14(f)(ii))

This report is a status report as to the Contractor's achievement both in regard to expenditure with Aboriginal owned businesses (1.5% of CAPEX) and employment of Aboriginal people to work on the project (both of which the Contractor must include in the Aboriginal Participation Plan) as well as employment of apprentices.

The mandatory NSW Government targets are the % of spend and % of trade workforce respectively. Employee numbers are as per the data collection and reporting in the Transport Standard Requirements.

Requirement	Minimum targets for the Contract as a whole	Quantity achieved by Contractor for reporting period
Direct employment of Aboriginal people (employees, apprentices) (generated from the Aboriginal Participation in Construction Policy Participation Plan)	Number employed and % of total labour force \$ spend and % of total contract value	
Other employment of Aboriginal people (contractors, group training) (generated from the Aboriginal Participation in Construction Policy Participation Plan)	Number employed and % of total labour force \$ spend and % of total contract value	
Goods/services bought from Aboriginal businesses (generated from the Aboriginal Participation in Construction Policy Participation Plan)	\$ spend and % of total contract value	
Education expenses (generated from the Aboriginal Participation in Construction Policy Participation Plan)	\$ spend and % of total contract value	
Payments to Aboriginal business/community organisations (generated from the Aboriginal Participation in	\$ spend and % of total contract value	

Schedules - Enabling Works Contract

Construction Policy Participation Plan)		
Other type of expenditure approved by the agency (generated from the Aboriginal Participation in Construction Policy Participation Plan)	\$ spend and % of total contract value	
Indirect Expenditure (include description of activities and participating business/community group details) (generated from the Aboriginal Participation in Construction Policy Participation Plan)	\$ spend and % of total contract value	
Apprentices to be engaged to carry out work under the Contract (Group Training Organisations sourced or directly employed)	20% of trade positions	

Contract Execution Page

DATED day of20.....

Executed and delivered as a Deed in Sydney

Signed, sealed and delivered for and on behalf of **Transport for NSW (ADN 18 804 239 602)** in the presence of:

Signature of Witness

Signature of Authorised Delegate

Print Name
(block letters)

Print Name
(block letters)

Position held

Position held

Schedules - Enabling Works Contract

Executed by *[Insert Contractor name]*
ABN *[Insert ABN]* in accordance with
section 127(1) of the *Corporations*
Act 2001 (Cth) by authority of its
directors:

Signature of director

Signature of company
secretary/director

Name of director (block letters)

Name of company secretary/director
(block letters)

Schedules - Enabling Works Contract

Schedule 29 Independent Certifier Deed



Transport
for NSW

IC ITT VERSION: 23/3/2018
Post-tender mark-up 15/6/2018

Parramatta Light Rail Umbrella Independent Certifier Deed

Dated

PARRAMATTA LIGHT RAIL
PLR STAGE 1

Transport for NSW (ABN 18 804 239 602) ("TfNSW")

[Name of Independent Certifier] (ABN ##) ("Independent Certifier")

Parramatta Light Rail Umbrella Independent Certifier Deed Contents

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Parramatta Light Rail Umbrella Independent Certifier Deed

Details

Parties

TfNSW	Name	Transport for NSW
	ABN	18 804 239 602
	Address	Level 10, 130 George Street Parramatta, 2150
	Telephone	[##]
	Attention	[##]

Independent Certifier	Name	[##]
	ABN	[##]
	Address	[##]
	Telephone	[##]
	Attention	[##]

Representatives

Aggregate Liability Cap	\$50,000,000.00 (Fifty Million Dollars)
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Governing law	New South Wales
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Business Day place (s)	Sydney, New South Wales
-------------------------------	-------------------------

Recitals	A	On 8 December 2015, the NSW Government announced its intention to deliver the Project.
	B	TfNSW has been selected by the NSW Government as the proponent for the development and delivery of the Project.
	C	The Project is being delivered in the following packages: <ul style="list-style-type: none">(i) the Remediation Contract;(ii) the Enabling Works Contract;(ii) the SOM Contract; and

(ii) the Infrastructure Contract.

- D** Those contracts, together with the CoPC Contract, UrbanGrowth Contract, HAC Development Agreement and the RMS Documents involve the performance of Services by the Independent Certifier.
- E** The Independent Certifier is aware of the criticality of its role in providing the Services on a Project wide basis and the need for it to maintain a sufficient level of committed, expert and available resources in order to fulfil its obligations under this Deed and the Contract Deeds in a timely and effective manner.
- F** The Independent Certifier has represented to TfNSW that it has the resources and expertise required to perform the Services and its other obligations under this Deed in accordance with this Deed and the Contract Deeds and TfNSW has entered into this Deed and will enter into the Contract Deeds in reliance on that representation.
- G** Under this Deed, the Independent Certifier promises to enter into the Contract Deeds on pre-agreed terms as set out in this Deed.
- H** Under the Contract Deeds, the relevant Principal Parties will appoint the Independent Certifier to perform the Services in relation to each of the Contracts.
- I** The Independent Certifier accepts the appointment and agrees to carry out the Services and its other obligations under this Deed on the terms of this Deed and the Contract Deeds.
-

Parramatta Light Rail Umbrella Independent Certifier Deed

General terms

1 Definitions and interpretation

1.1 Definitions

These meanings apply unless the contrary intention appears:

Acoustic Advisor Fee means the fee to be paid in respect of the Acoustic Advisor Services as specified in Schedule 3.

Acoustic Advisor Services means the services so described in Schedule 1, as amended by this Deed or any Contract Deed.

Assumed Services means the Services proposed in respect of each Contract, as specified in Schedule 1.

Authority includes any governmental or semi-governmental or local government authority, administrative or judicial body or tribunal, department, commission, public authority, agency, Minister, statutory corporation or instrumentality (and includes ASA), and any private electricity, telecommunications, gas or other utility company having statutory rights in relation to the PLR Stage 1.

Authority Approval means any licence, permit, consent, approval, determination, exemption, certificate, memorandum of understanding, notification or permission from any Authority or under any Law, or any requirement made under any Law, which must be obtained or satisfied (as the case may be) to carry out the Services, the HAC Services and the RMS Services.

Background IP means Intellectual Property Rights owned by or licensed to the Independent Certifier which:

- (a) exists prior to the date of this Deed or are developed or acquired by the Independent Certifier, or its personnel, independently of its involvement with the Project or the performance of its obligations under this Deed or the Contract Deeds; and
- (b) are used by the Independent Certifier, or its personnel, in the performance of the Services or otherwise made available to TfNSW under or in connection with the Project, this Deed or the Contract Deeds.

Best Industry Practice means (subject to any express provisions of this Deed which impose higher standards) the practices which are adopted by consultants with respect to services similar to the Services, the HAC Services or the RMS Services and which, with respect to any purpose to which the performance of the Services, HAC Services or RMS Services are directed, may be expected, in the exercise of that expertise, to accomplish that purpose in a manner consistent with recognised professional standards.

Business Day means a day on which banks are open for general banking business, not being a Saturday, Sunday or public holiday in Sydney or 24, 27, 28, 29, 30 or 31 December or 2 January.

Certification and Monitoring Plan means the plan to be developed and implemented in accordance with Schedule 5.

Claim means any claim, action, demand or proceeding for the payment of money (including damages), for an extension of time or for any other form of relief:

- (a) under or arising out of, or in any way in connection with, this Deed or a Contract Deed;
- (b) arising out of, or in any way in connection with, the Services, the HAC Services, the RMS Services or any party's conduct prior to the date of this Deed; or
- (c) otherwise at Law including:
 - (i) under or for breach of any statute;
 - (ii) in tort for negligence or otherwise, including negligent misrepresentation; or
 - (iii) for restitution, including restitution based on unjust enrichment.

Consequential or Indirect Loss means:

- (a) any Loss that does not flow directly and naturally from the relevant breach of this Deed or a duty of care; and
- (b) any loss of income, loss of revenue, loss of profit, loss of financial opportunity, loss of business or loss of business opportunity, loss of contract (other than this Deed), loss of goodwill, loss of use, loss of production or failure to realise anticipated savings (whether the loss is direct or indirect).

Contract means each of the:

- (a) Remediation Contract;
- (b) Enabling Works Contract;
- (c) SOM Contract;
- (d) Infrastructure Contract;
- (e) CoPC Contract;
- (f) UrbanGrowth Contract;
- (g) HAC Development Agreement;
- (h) RMS Collaboration Agreement; and
- (i) RMS WAD.

Contract Deed means:

- (a) the RMS Deed Poll; and
- (b) the deed executed by each of the relevant Principal Parties and the Independent Certifier for the provision of Services in relation to a Contract.

Contract Fee means the fee payable by TINSW to the Independent Certifier in accordance with a Contract Deed, which will be determined in accordance with the fee allocation and rates contained in Schedule 3 to this Deed.

CoPC means City of Parramatta Council (ABN 804 239 602).

CoPC Contract means the deed that will be entered into between TfNSW and the CoPC in connection with the Project.

CoPC Contract Deed means the deed entered into by the Independent Certifier, TfNSW and CoPC a draft of which is exhibited in Exhibit J.

Deed means this deed, its schedules and its exhibits

Delivery Contract means the Remediation Contract, Enabling Works Contract, Infrastructure Contract and/or SOM Contract.

Design Documentation means the designs, drawings, specifications and other design materials produced pursuant to the Contracts.

Details means the details set out on page one of this Deed.

Enabling Works Contract means the deed that will be entered into between TfNSW and the Enabling Works Contractor in connection with the Project

Enabling Works Contract Deed means the Contract Deed entered into by the Independent Certifier, TfNSW and the Enabling Works Contractor, a draft of which is exhibited in Exhibit B.

Enabling Works Contractor means the contractor with whom TfNSW enters into the Enabling Works Contract.

Environmental Representative Fee means the fee to be paid in respect of the Environmental Representative Services as specified in Schedule 3.

Environmental Representative Services means the services so described in Schedule 1, as amended by this Deed or any Contract Deed.

HAC means the Health Administration Commission.

HAC Development Agreement means the development agreement between TfNSW and HAC dated 2 March 2018.

HAC Services means the services to be provided by the Independent Certifier in connection with the HAC Development Agreement.

Independent Arborist Fee means the fee to be paid in respect of the Independent Arborist Services as specified in Schedule 3

Independent Arborist Services means the services so described in Schedule 1, as amended by this Deed or any Contract Deed.

Independent Certifier Default means an event so described in clause 11.1(a).

Infrastructure Contract means the deed that will be entered into between TfNSW and the Infrastructure Contractor in connection with the Project.

Infrastructure Contract Deed means the Contract Deed to be entered into by the Infrastructure Contractor, TfNSW and the Independent Certifier, a draft of which is exhibited in Exhibit D.

Infrastructure Contractor means the contractor with whom TfNSW enters into the Infrastructure Contract.

Insolvency Event means when:

- (a) one party informs the other party in writing, or its creditors generally, that the party is insolvent or is unable to proceed with the Services, the HAC Services or the RMS Services under this Deed for financial reasons;
- (b) in relation to an individual, the individual (being a party) commits an act of bankruptcy, a bankruptcy petition is presented against the individual, or the individual is made bankrupt;
- (c) execution is levied against a party by a creditor, debenture holders or trustees or under a floating charge; or
- (c) in relation to a corporation any one of the following:
 - (i) notice is given of a meeting of creditors with a view to the corporation entering into a deed of company arrangement or scheme of arrangement (other than a solvent scheme of arrangement),
 - (ii) the corporation enters a deed of company arrangement or scheme of arrangement (other than a solvent scheme of arrangement) or composition with creditors;
 - (iii) an application is made for, a resolution is passed by the directors for the appointment of, or an order is made for, a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator to be appointed to the corporation;
 - (iv) a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator is appointed to the corporation;
 - (v) an application is made to a court for the sequestration or winding up of the corporation and not stayed, dismissed or discontinued within 21 days;
 - (vi) a sequestration order or winding up order is made in respect of the corporation;
 - (vii) the corporation resolves by special resolution that it be wound up voluntarily (other than for a members' voluntary winding-up), or a meeting of creditors of a party under administration or a deed of company arrangement resolves that the corporation be wound up;
 - (viii) a mortgagee of any property of the corporation takes possession of that property; or
 - (ix) the corporation ceases, suspends or threatens to cease or suspend the conduct of all or a substantial part of its business, or disposes or threatens to dispose of all or a substantial part of its assets.

Insurances means the insurances specified in Schedule 2 required to be effected and maintained under clause 9.

Intellectual Property Rights means all intellectual property rights including current and future registered and unregistered rights in respect of copyright, designs, circuit layouts, trade marks, trade secrets, know-how, confidential information, patents, inventions and discoveries and all other intellectual property as defined in Article 2 of the Convention establishing the World Intellectual Property Organisation 1967.

Key Individual means the person or persons employed by the Independent Certifier that is to make and issue the decisions, certifications and determinations required as part of the exercise of its Services, as specified in Schedule 4.

Key Personnel means the persons specified in Schedule 4, including the Key Individual(s).

Law means:

- (a) Commonwealth, New South Wales or local government legislation, including ordinances, instruments, codes of practice, policy and statutory guidance (but excluding the Building Code of Australia, any other building codes, or Standards Australia codes), requirements, regulations, by-laws and other subordinate legislation;
- (b) principles of law or equity established by decisions of courts; and
- (c) Authority Approvals (including any condition or requirement under them).

Liability includes any liability of any kind whether for debt, cost (including legal costs, deductibles or increased premiums), expense, loss, damage, compensation or charge and whether:

- (a) liquidated or not;
- (b) arising from or in connection with any obligation (whether as a principal obligation, a surety or an indemnity);
- (c) legal or equitable, and whether arising under or for breach of contract, in tort (including negligence), restitution or at Law;
- (d) present, prospective or contingent; or
- (e) owed, incurred or imposed by or to or on account of or for the account of any person alone or severally or jointly with another or others.

Loss means:

- (a) any cost, expense, loss, damage, liability or other amount; and
- (b) without being limited by paragraph (a) and only to the extent not prohibited by law, any fine or penalty,

whether direct, indirect, consequential, present, future, fixed, unascertained, actual or contingent and, for the avoidance of doubt, includes Consequential or Indirect Loss.

Lump Sum Fee means the Contract Fees payable by TfNSW to the Independent Certifier for the performance of Services (excluding any Variable Services) under each applicable Contract Deed and the Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services performed under this Deed, as apportioned in Schedule 3 and as adjusted in accordance with this Deed.

Maximum Term means the period commencing on the date of this Deed and ceasing on 30 June 2023 or the earlier expiration of the period stated in Part A of Schedule 1 in respect of the Services under a Contract Deed.

Other Party means in relation to any Contract, the Principal Party other than TfNSW.

Planning Approval means the Authority Approval exhibited to the applicable Delivery Contracts, as modified from time to time under the *Environmental Planning and Assessment Act 1979 (NSW)* in respect of the Project.

PLR Stage 1 means the 12km light rail system from Westmead to Carlingford via Parramatta CBD and Camelia, including all track, catenary systems, stops, LRVs, the SaM Facility, and the assets as more particularly described in the Contracts, including any modifications.

Primary Contract Deeds means the Remediation Contract Deed, Enabling Works Contract Deed, Infrastructure Contract Deed and SOM Contract Deed.

Principal Parties means TfNSW and each of the parties to the Contracts.

Project means the design, construction commissioning and operation of PLR Stage 1 which will be delivered through the Remediation Works, Enabling Works, Infrastructure Works and SOM Works, and any preceding, subsequent or consequent works.

Project Data Collaboration System (PDCS) means the web based project data and collaboration system to be used by the Principal Parties in connection with the Project, as notified by the Principal, from time to time.

Project IP means all Intellectual Property Rights arising out of or created by or on behalf of Independent Certifier, or its personnel, in performing the Services and its other obligations under this Deed or the Contract Deeds, including the Intellectual Property Rights in relation to all documentation, records and materials created as part of the performance of the Services.

Remediation Contract means the deed entered into between TfNSW and the Remediation Works Contractor in connection with the Project.

Remediation Contract Deed means the deed entered into by the Independent Certifier, TfNSW and the Remediation Contractor exhibited in Exhibit A.

Remediation Works Contractor means the contractor with whom TfNSW enters into the Remediation Contract.

Replacement Certifier means the successor of the Independent Certifier.

Representatives means the persons specified in the Details as replaced from time to time pursuant to this Deed.

RMS means the Roads and Maritime Service.

RMS Collaboration Agreement means the Parramatta Light Rail – Project Collaboration Agreement between TfNSW and RMS dated 5 February 2018.

RMS Deed Poll means the deed polls to be granted by the Independent Certifier in favour of RMS pursuant to the RMS Collaboration Agreement and the RMS WAD, drafts of which are exhibited in Exhibit G.

RMS Documents means the RMS Collaboration Agreement, the RMS Deed Poll and the RMS WAD.

RMS Services means the services to be performed under the RMS Documents.

RMS WAD means the Works Authorisation Deed between TfNSW and RMS in relation to certain aspects of the Infrastructure Works.

Roads Act Approval means the approval issued pursuant to the *Roads Act 1993* (NSW) as contemplated in the RMS Collaboration Agreement;

Services means the services and duties to be provided by the Independent Certifier to the Principal Parties under the Contract Deeds, including any Variable Services.

SOM Contract means the deed to be entered into between TfNSW and the SOM Contractor in connection with the Project.

SOM Contract Deed means the deed entered into by the Independent Certifier, the SOM Contractor and TfNSW a draft of which is exhibited in Exhibit C.

SOM Contractor means the contractor with whom TfNSW enters into the SOM Contract.

Stage 2 Remediation Works means the works described in section 2.5.2 of the works brief which forms part of the Remediation Contract.

Stage 2 Remediation Works Fee means, where TfNSW has given a direction under clause (d), the fee to be paid in respect of the Stage 2 Remediation Works as specified in Schedule 3.

Supplier has the meaning given to that term in clause 16.3.

UrbanGrowth means UrbanGrowth NSW Development Corporation (ABN 49 907 174 773).

UrbanGrowth Contract means the deed to be entered into between TfNSW and UrbanGrowth in connection with the Project.

UrbanGrowth Contract Deed means the deed entered into by the Independent Certifier, TfNSW and Urban Growth a draft of which is exhibited in Exhibit I.

Variable Services means services described in Schedule 3 as may be directed by TfNSW.

1.2 Interpretation

In this Deed unless the context otherwise requires:

- (a) references to a person include an individual, a body politic, the estate of an individual, a firm, a corporation, an authority, an association or joint venture (whether incorporated or unincorporated), or a partnership;
- (b) the words "including", "includes" and "include" will be read as if followed by the words "without limitation";
- (c) a reference to any party to this Deed includes that party's executors, administrators, successors, and permitted substitutes and assigns, including any person taking part by way of novation;
- (d) a reference to any Authority, institute, association or body is:
 - (i) if that Authority, institute, association or body is reconstituted, renamed or replaced or if the powers or functions of that Authority, institute, association or body are transferred to another organisation, deemed to refer to the reconstituted, renamed or replaced organisation or the organisation to which the powers or functions are transferred, as the case may be; and

- (ii) if that Authority, institute, association or body ceases to exist, deemed to refer to the organisation which serves substantially the same purposes or objects as that Authority, institute, association or body;
- (e) a reference to this Deed or to any other deed, agreement, document or instrument is deemed to include a reference to this Deed or such other deed, agreement, document or instrument as amended, novated, supplemented, varied or replaced from time to time;
- (f) a reference to any legislation or to any section or provision of it includes:
 - (i) any statutory modification or re-enactment of, or any statutory provision substituted for, that legislation, section or provision; and
 - (ii) ordinances, by-laws, regulations of and other statutory instruments issued under that legislation, section or provision;
- (g) words in the singular include the plural (and vice versa) and words denoting any gender include all genders;
- (h) headings are for convenience only and do not affect the interpretation of this Deed;
- (i) the obligations of TINSW under and in connection with this Deed and any Contract Deed are limited to those expressly stipulated in this Deed and the Contract Deed;
- (j) a reference to:
 - (i) a party, clause, Schedule or Exhibit is a reference to a party, clause, Schedule or Exhibit of or to this Deed; and
 - (ii) a paragraph or a sub-paragraph is a reference to a paragraph or sub-paragraph in the clause in which the reference appears;
- (k) a reference to this Deed includes all Schedules and Exhibits;
- (l) where any word or phrase is given a defined meaning, any other part of speech or other grammatical form of that word or phrase has a corresponding meaning;
- (m) where under this Deed:
 - (i) a direction is required to be given or must be complied with;
 - (ii) payment of money must be made;
 - (iii) an unconditional undertaking must be released; or
 - (iv) a default must be remedied,
 within a period of 7 days or less from a specified event, then only Business Days will be counted in computing the number of days;
- (n) for all purposes (otherwise designated as a Business Day), "day" means calendar day;
- (o) a reference to \$ is to Australian currency;

- (p) any reference to "information" will be read as including information, representations, statements, data, samples, calculations, assumptions, deductions, determinations, drawings, design, specifications, models, plans and other documents in all forms including the electronic form in which it was generated;
- (q) any reference to "work" will be read as referring to work or services, as the context permits; and
- (r) defined terms used in the Assumed Services in Schedule 1 but not defined in this Deed will have the meaning given to that term in the applicable Contract.

1.3 No bias against drafting party

No term or provision of this Deed will be construed against a party on the basis that the Deed or the term in question was put forward or drafted by or on behalf of that party.

1.4 Provisions limiting or excluding liability

Any provision of this Deed which seeks to limit or exclude a liability of a party, is to be construed as doing so only to the extent permitted by applicable Law.

1.5 Discretion

- (a) Subject to any express provision in the Deed to the contrary:
 - (i) a provision of the Deed which says that TfNSW or the TfNSW's Representative "may" do or not do something is not to be construed as imposing an obligation on TfNSW or TfNSW's Representative to do or not do that thing; and
 - (ii) there will be no procedural or substantive limitation upon the manner in which TfNSW or the TfNSW's Representative may exercise any discretion, power or entitlement conferred by the Deed.
- (b) Without limiting clause 1.5(a), neither TfNSW nor the TfNSW's Representative will be under any obligation to exercise any such discretion, power or entitlement, for the benefit of the Independent Certifier or as required by any other legal doctrine which in any way limits the express words used in the provision of the Deed conferring the discretion, power or entitlement.

2 Appointment of Independent Certifier

2.1 Scope

- (a) Subject to clause 2.1(d), the Independent Certifier must enter into the Contract Deeds from time to time when directed by TfNSW.
- (b) The Independent Certifier has reviewed and agreed to the terms of:
 - (i) the draft Contract Deeds; and
 - (ii) the RMS Deed Poll.

as set out in Exhibits A to G on the basis of the Assumed Services in respect of each Contract.

- (c) The Independent Certifier's appointment to perform the Services and any Variable Services in respect of a Contract will commence on the execution of the Contract Deed in respect of the relevant Contract.
- (d) The Independent Certifier may refuse to enter into a Contract Deed only if the terms of the Contract Deed as proposed by TfNSW are materially different to and materially less favourable in relation to the Independent Certifier than the terms of the relevant draft Contract Deed.
- (e) As conditions precedent to the right of the Independent Certifier to refuse to enter into a Contract Deed:
 - (i) the Independent Certifier must give written notice to the TfNSW Representative setting out in detail the grounds for its refusal;
 - (ii) the Representatives must meet to resolve whether the refusal can be resolved. Such meetings may involve the Other Party to the proposed Contract Deed if directed by the Principal's Representative; and
 - (iii) if, following such meetings, the Independent Certifier continues to refuse to enter into the relevant Contract Deed, it must give a further written notice to the TfNSW Representative setting out in detail the grounds for its refusal.
- (f) If the Independent Certifier gives notice pursuant to clause 2.1(e)(iii), TfNSW may:
 - (i) if:
 - (A) the Independent Certifier is not acting in good faith in refusing to enter into the relevant Contract Deed; or
 - (B) the terms of the Contract Deed as proposed by TfNSW are not materially different to and materially less favourable in relation to the Independent Certifier than the terms of the relevant draft Contract Deedterminate this Deed and any or all existing Contract Deeds pursuant to clause 11.2(b); or
 - (ii) otherwise terminate this Deed and any or all existing Contract Deeds pursuant to clause 11.2(c).
- (g) The Independent Certifier may not decline to enter into a Contract Deed solely on the basis that the Services in respect of the relevant Contract Deed are different to the Assumed Services.
- (h) TfNSW is not obliged to enter into any Contract or any Contract Deed.

2.2 Contract Deeds

- (a) TfNSW will prepare and deliver the Contract Deeds to the Independent Certifier for execution from time to time.
- (b) The Independent Certifier must, if requested by TfNSW, participate in negotiations in relation to a Contract Deed.

- (c) The Independent Certifier must bear all costs incurred by it in connection with the negotiation and formation of the Contract Deeds.
- (d) Upon the execution of a Contract Deed, that deed will constitute a separate contract between TfNSW, the Independent Certifier and the Other Party.

2.3 Copies of documents

- (a) TfNSW must deliver to the Independent Certifier copies of each executed Contract.
- (b) The Independent Certifier must familiarise itself with the Contracts including in relation to:
 - (i) the requirements of the Contracts;
 - (ii) the nature of the work necessary for the performance of the Services;
 - (iii) the accuracy and completeness of the description of the Services; and
 - (iv) all matters and things necessary or ancillary to the due and proper performance of the Services.

3 Services

3.1 Assumed Services

- (a) The Assumed Services described in Schedule 4 to this Deed reflect the known functions to be performed by the Independent Certifier under the Contracts as at the date of this Deed.
- (b) The Independent Certifier acknowledges that:
 - (i) the procurement process for each of the Delivery Contracts is ongoing;
 - (ii) following a period of alignment with each Contract, TfNSW intends to enter into a Contract Deed with the Independent Certifier and the relevant Principal Party, as contemplated by clause 2.2; and
 - (iii) the Contract Deeds will set out the scope of Services and corresponding Contract Fee in respect of the relevant Contract(s), which will be based on the Assumed Services, Lump Sum Fee and rates in this Deed to the extent applicable to that Contract.

3.2 Standard

- (a) The Independent Certifier must perform the Services in accordance with the Contract Deeds and the Environmental Representative Services, Acoustic Advisor Services and Independent Architect Services in accordance with this Deed.

- (b) The Independent Certifier warrants that it has the resources and expertise to perform the Services, the Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services
- (c) In performing the Services, the Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services, the Independent Certifier must:
 - (r) comply with this Deed;
 - (ii) comply with all Laws;
 - (iii) apply Best Industry Practice; and
 - (iv) perform the Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services:
 - (A) independently;
 - (B) promptly and with all due expedition; and
 - (C) in accordance with the requirements of the Planning Approval.

3.3 Variations

- (a) TfNSW may from time to time give the Independent Certifier a notice under this Deed that:
 - (i) changes the Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services;
 - (ii) deletes any Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services; and/or
 - (iii) adds new Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services.
- (b) If directed by TfNSW, the Independent Certifier must provide a detailed proposal in relation to the pricing, timing and resources impacts of a notice that TfNSW is contemplating giving under clause 3.3(a), together with any other information reasonably required by TfNSW within the time reasonably directed by TfNSW.
- (c) The Independent Certifier must comply with any notice given under clause 3.3(a).
- (d) If TfNSW issues a notice under clause 3.3(a), then:
 - (i) TfNSW and the Independent Certifier will seek to agree any required amendments to the Environmental Representative Fee, Acoustic Advisor Fee and/or Independent Arborist Fee and timing requirements; and
 - (ii) failing agreement, the adjustment to the Environmental Representative Fee, Acoustic Advisor Fee and/or Independent Arborist Fee and timing requirements will be determined by the TfNSW Representative:
 - (A) in relation to pricing;

- (aa) by applying the rates and prices in this Deed; and
 - (ab) in the absence of any applicable rates and prices, on the basis of reasonable rates and prices; and
- (B) in relation to timing requirements, acting reasonably.
- (e) If the Independent Certifier considers that the TfNSW Representative has not acted reasonably as required by this clause:
 - (i) the Independent Certifier must continue to perform the Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services;
 - (ii) the Independent Certifier may refer the TfNSW's Representative's determination to dispute under clause 19; and
 - (iii) if it is determined that the TfNSW Representative has not acted reasonably then the TfNSW Representative must re-consider its determination acting reasonably.
- (f) If TfNSW gives the Independent Certifier a notice under clause 3.3(a)(i) then TfNSW may have the deleted Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services undertaken by others.
- (g) If the Independent Certifier considers that any direction or other circumstance changes the Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services or adds new Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services and TfNSW has not given a notice under this clause, the Independent Certifier must, if it wishes to make a Claim against TfNSW for an adjustment to the Contract Fee or timing requirements:
 - (i) give a notice to TfNSW within 10 Business Days of becoming aware of the changed or new Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services (but in any event before commencing work on the subject matter of any direction), expressly specifying the direction, event, circumstance, act, omission, facts or matters giving rise to the alleged entitlement to Claim; and
 - (ii) continue to carry out the Environmental Representative Services, Acoustic Advisor Services and/or Independent Arborist Services in accordance with this Deed and all directions of TfNSW, including any direction in respect of which notice has been given under this clause 3.3(g).
- (h) Claims submitted by the Independent Certifier under clause 3.3(g) will be considered in the first instance by TfNSW's Representative, who may accept or reject the Claim in part or full, and may consult with relevant third parties to verify the alleged event, circumstance, act, omission, fact or matter giving rise to the Independent Certifier's Claim. If the Independent Certifier wishes to dispute the rejection of the Claim it may do so under clause 19.

- (i) If within 20 Business Days after first receipt of a Claim, under clause 3.3(g) TfNSW's Representative has not made a decision on the Claim, the Claim will be deemed to have been rejected by TfNSW.
- (j) TfNSW may from time to time give the Independent Certifier a notice under any Contract Deed to vary the relevant Services and the variation provisions in the Contract Deed will apply.

4 Administrative obligations

4.1 Plans

- (a) The Independent Certifier must develop and implement such plans as reasonably required by the TfNSW Representative in connection with the Services.
- (b) In developing the certification and monitoring plans under the Contract Deeds the Independent Certifier must implement the requirements in Schedule 5.

4.2 Reporting

- (a) The Independent Certifier must prepare a consolidated monthly report of a maximum of 20 A4 pages (plus attachments, if necessary) setting out:
 - (i) the tasks undertaken by the Independent Certifier during that month in respect of:
 - (A) Services performed under each Contract Deed;
 - (B) Environmental Representative Services;
 - (C) Acoustic Advisor Services; and
 - (D) Independent Arborist Services;
 - (ii) the visits made by the Independent Certifier to each relevant site and elsewhere in connection with the Project during that month;
 - (iii) the documents reviewed by the Independent Certifier during that month and the current status of those documents as they relate to each Contract;
 - (iv) a register of all notices given and received by the Independent Certifier to date under each Contract;
 - (v) the progress made under each Contract in the development of Design Documentation or the construction of works performed under each Contract with reference to the applicable Contract program(s);
 - (vi) early warning of any Design Documentation proposed for certification in the coming month that in the Independent Certifier's opinion is not likely to achieve certification;
 - (vii) tests attended by the Independent Certifier during that month and the results of those tests;

- (viii) details of any Defects identified by the Independent Certifier or alleged Defects notified to the Independent Certifier by any party in respect of any Contractor's Activities under a Contract; and
- (ix) any non-conformances or other issues identified by the Independent Certifier,

and submit that report to TfNSW no later than 5 Business Days after the end of the month to which the report relates.

- (b) The report prepared under clause 4.2(a) must separately identify the RMS Services performed by the Independent Certifier in a manner capable of being provided to RMS as a standalone report and which addresses all requirements of the Independent Certifier under the RMS Documents.

4.3 Review of documentation

- (a) The Independent Certifier must use the PDCS to manage and record all correspondence, including certificates, comments, determinations and all other records.
- (b) All information submitted or exchanged between the Independent Certifier and the Principal Parties and any relevant Authorities must occur within the PDCS.
- (c) The PDCS will be provided to the Independent Certifier at no cost, with training available from TfNSW as required.

4.4 Attendance

- (a) The Independent Certifier must attend all meetings, including all contract administration meetings, discipline-specific meetings, interface management meetings and issues resolution meetings, as contemplated by each Contract or as reasonably requested by TfNSW. The Independent Certifier must ensure that any personnel who will actually undertake the relevant review(s) be made available for any discipline specific meetings or other meetings that relate to their specific discipline. This obligation will not be satisfied by the Independent Certifier's Representative merely attending the relevant meeting and attendance at meetings is not limited to only one Independent Certifier representative.
- (b) The Independent Certifier must attend all safety and environmental inductions as required by a Principal Party or any Approval Authority in order for the Independent Certifier to discharge its obligations under this Deed or a Contract Deed.

5 Payment

- (a) In consideration for the Independent Certifier undertaking the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services in accordance with this Deed and the relevant Contract Deeds, TfNSW must pay the Independent Certifier
 - (i) the Contract Fee under each Contract Deed; and
 - (ii) the Environmental Representative Fee, Acoustic Advisor Fee and Independent Arborist Fee under this Deed.

- (b) The Lump Sum Fee contained in Schedule 3 to this Deed will be apportioned between the applicable Contract Deeds by TfNSW based on the proposed division in Schedule 3.
- (c) The Environmental Representative Fee, Acoustic Advisor Fee and the Independent Arborist Fee will be paid by TfNSW on a project-wide basis in accordance with this Deed.
- (c) TfNSW will notify the Independent Certifier whether the Stage 2 Remediation Works are to be performed under the Remediation Contract or the SOM Contract following which the Stage 2 Remediation Works Fee will become payable under either the Remediation Contract Deed or the SOM Contract Deed (as applicable).
- (e) The Lump Sum Fee, the Stage 2 Remediation Works Fee, the Environmental Representative Fee, Acoustic Advisor Fee and the Independent Arborist Fee, have been agreed on the basis of:
 - (i) the Assumed Services; and
 - (ii) the Maximum Term.
- (f) The cost to the Independent Certifier of complying with other obligations under this Deed, including under clauses 4, 6 and 9, are deemed to be included in the Lump Sum Fee in Schedule 3 and will be apportioned across each applicable Contract Deed in the manner contemplated by Schedule 3.
- (g) If the Services agreed in a Contract Deed are materially different to the applicable Assumed Services or a term materially differs from the relevant Maximum Term then:
 - (i) TfNSW and the Independent Certifier will seek to agree any required amendments to the Contract Fee and/or the Stage 2 Remediation Works Fee the timing requirements and the resources impacts applicable to the relevant Contract Deed; and
 - (ii) failing agreement the adjustment (by way of increase or decrease) to the Contract Fee and/or the Stage 2 Remediation Works Fee and the timing requirements will be determined by the TfNSW Representative:
 - (A) in relation to pricing:
 - (aa) by applying the rates and prices in this Deed; and
 - (ab) in the absence of any applicable rates and prices, on the basis of reasonable rates and prices; and
 - (B) in relation to timing requirements, acting reasonably
- (h) If the Independent Certifier considers that the TfNSW Representative has not acted reasonably as required by this clause:
 - (i) the Independent Certifier must continue to perform the Services;
 - (ii) the Independent Certifier may refer the Independent Certifier's determination to dispute under clause 19; and

- (iii) if it is determined that the TfNSW Representative has not acted reasonably then the TfNSW Representative must re-consider its determination acting reasonably.

6 Systems and documentation

6.1 Systems to be approved

The Independent Certifier must establish and maintain such systems as are required for the proper administration and recording of the Services, including in relation to quality assurance, communications, review of digital mediums, the making of determinations, analysis and records as approved by the TfNSW Representative.

6.2 Access

The Independent Certifier must allow access to all of premises, systems, records, documents and materials occupied or held by It in connection with the Services, the Acoustic Advisor Services, Environmental Representative Services, Independent Arborist Services to TfNSW and its nominees upon receiving 24 hours' notice from TfNSW that such access is required.

6.3 Intellectual Property Rights

- (a) All Project IP vests in and is the property of TfNSW and the Independent Certifier assigns all rights, title and interests in such Project IP to TfNSW on and from its creation. Upon request by TfNSW, the Independent Certifier must do all things necessary to vest that title and Intellectual Property Rights in TfNSW.
- (b) To the fullest extent permitted by Law, the Independent Certifier grants to TfNSW a perpetual, world-wide royalty-free, non-exclusive, transferable and irrevocable licence to use, modify and adapt Background IP for any purpose in connection with the documentation, records and materials created for the performance of the Services, Acoustic Advisor Services, Environmental Representative Services, Independent Arborist Services or otherwise for the performance of any of its obligations under this Deed or the Contract Deeds.

7 Independent Certifier's personnel

7.1 Independent Certifier's personnel

The Independent Certifier must ensure that its personnel:

- (a) undertake the minimum attendance;
- (b) have the minimum level of skill and expertise; and
- (c) apply the minimum level of surveillance,

as set out in Schedule 4.

7.2 Key Personnel

- (a) The Independent Certifier must ensure that the Key Personnel (including the Key Individual(s)) are engaged in the performance of the Services

the Acoustic Advisor Services, Environmental Representative Services, Independent Arborist Services in the manner specified in Schedule 4,

- (b) Subject to clause 7.2(c), the Independent Certifier must not terminate the appointment of any Key Personnel, or substitute another person for any Key Personnel to carry out the Services, Acoustic Advisor Services, Environmental Representative Services, Independent Arborist Services without the prior written approval of TfNSW.
- (c) If any Key Personnel resigns or is unable to work due to illness or other circumstances, the Independent Certifier must procure that they are replaced as soon as reasonably practicable. TfNSW and the Independent Certifier must agree the identity of the replacement Key Personnel in writing.

7.3 Environmental Representative

In consideration for the payment of the Environmental Representative Fee, the Independent Certifier must engage an environmental representative approved by TfNSW on terms approved by TfNSW by such time as reasonably directed by the TfNSW Representative.

7.4 Independent Arborist

In consideration for the payment of the Independent Arborist Fee, the Independent Certifier must engage an independent arborist approved by TfNSW on terms approved by TfNSW by such time as reasonably directed by the TfNSW Representative.

7.5 Acoustic Advisor

In consideration for the payment of the Acoustic Advisor Fee, the Independent Certifier must engage an acoustic advisor approved by TfNSW on terms approved by TfNSW by such time as reasonably directed by the TfNSW Representative.

8 Liability and exclusions

8.1 Liability caps

- (a) Subject to clause 8.1(b) and 8.1(c), the Independent Certifier's total aggregate liability to the Principal Parties under this Deed and each of the Contract Deeds for all claims (unless otherwise specified in this Deed or the relevant Contract Deed), will be limited to the amount specified in the Details.
- (b) The Independent Certifier's Liability to the Principal Parties under the relevant Contract Deeds will be capped in accordance with the terms and conditions specified in the relevant Contract Deed. Any Liability of the Independent Certifier which falls within a liability cap under a Contract Deed will be taken into account for the purposes of assessing whether the aggregate liability cap under clause 8.1(a) has been reached.
- (c) The limitations of Liability in clauses 8.1(a) and 8.1(b) will not limit the Liability of the Independent Certifier:
 - (i) for fraud, wilful misconduct, recklessness or illegal or unlawful acts;

- (ii) in the event of termination on the basis of the Independent Certifier's repudiation or default;
- (iii) in respect of injury to or death of persons caused or contributed to by the Independent Certifier;
- (iv) to the extent that the Independent Certifier:
 - (A) is indemnified in respect of that Liability by a policy of insurance required under this Deed or the relevant Contract Deed, up to the limit stated in Schedule 2 for the relevant type of insurance; or
 - (B) would have been indemnified in respect of that Liability by a policy of insurance required under this Deed or the relevant Contract Deed, up to the limit stated in Schedule 2 for the relevant type of insurance, if the Independent Certifier had:
 - (aa) diligently pursued a claim under that policy of insurance;
 - (ab) complied with the terms and conditions of that policy of insurance; or
 - (ac) complied with its insurance obligations under this Deed and the relevant Contract Deed; or
- (v) to the extent to which, by Law, the parties cannot limit or contract out of such Liability.

8.2 Exclusion of Consequential and Indirect Loss

- (a) Subject to clause 8.2(b), the Independent Certifier will have no Liability to the Principal Parties and the Principal Parties will have no Liability to the Independent Certifier for Consequential and Indirect Loss.
- (b) Clause 8.2(a) does not operate to limit or restrict the Independent Certifier's Liability to a Principal Party in respect of Consequential or Indirect Loss:
 - (i) to the extent that the Independent Certifier:
 - (A) is indemnified in respect of that Liability by a policy of insurance required under this Deed or the relevant Contract Deed; or
 - (B) would have been indemnified in respect of that Liability by a policy of insurance required under this Deed or the relevant Contract Deed if the Independent Certifier had:
 - (aa) diligently pursued a claim under that policy of insurance;
 - (ab) complied with the terms and conditions of that policy of insurance; or
 - (ac) complied with its insurance obligations under this Deed and the relevant Contract Deed;

- (ii) in respect of any Liability of a Principal Party to a third party, except to the extent that the Liability to the third party is in respect of Consequential or Indirect Loss arising under a contractual claim;
- (iii) arising from any criminal acts or fraud on the part of the Independent Certifier;
- (iv) arising from willful misconduct on the part of the Independent Certifier, or
- (v) to the extent to which, by Law, the parties cannot limit or contract out of such Liability.

9 Insurance

9.1 General

The Independent Certifier must:

- (a) obtain and maintain the Insurances as further defined in Schedule 2;
- (b) obtain and maintain such additional insurances and make such variations to existing insurances, as may reasonably be requested TINSW promptly after that request, provided that the Contract Fees must be adjusted to reflect the additional costs incurred as a result;
- (c) ensure that each insurance policy complies with the following requirements:
 - (i) the policy must contain provisions which are reasonably standard in the market for insurance of the type covered by the policy and which are approved by TINSW;
 - (ii) the insurers must be reputable, and approved by TINSW;
 - (iii) the named insured on the policy (except where the policy is for professional indemnity insurance) must be the Principal Parties or such other persons as TINSW reasonably requires; and
 - (iv) the insurance must at all times cover liability for an amount stated in Schedule 2; and
- (c) ensure that each insurance policy contains the following:
 - (i) the insurer must waive its right to set-off or reduce by way of counterclaim, or make any deduction or withholding, in relation to any payment to be made by it under any Insurances;
 - (ii) the insurer must waive its right to claim from the Principal Parties any insurance premiums, fees, commissions or the like;
 - (iii) the Insurances must continue unaltered in relation to each named insured, despite any act, omission, breach or misrepresentation by any other named insured or person;
 - (iv) each named insured may pay premiums not paid when due (in satisfaction of the premium due), but only the Independent Certifier has an obligation to do so;

- (v) each named insured must have rights which are of the same nature and extent as they would have had had a separate policy been individually taken out by that named insured (subject to limits on liability);
 - (vi) the insurer must undertake to promptly notify the Principal Parties of
 - (A) cancellation or avoidance of any Insurances;
 - (B) any change whatsoever of a restrictive nature which affects any Insurances;
 - (C) any act or omission or any event which might invalidate an Insurance policy or render it unenforceable; or
 - (D) any failure to pay an amount on account of premiums when due;
 - (vii) the insurer must undertake to notify each named insured of non-receipt of any renewal instructions no later than 5 Business Days prior to the due date for expiry of any Insurance;
 - (viii) despite the occurrence of an event referred to in clauses 9.1(d)(v) and 9.1(d)(vi), the Insurances must continue unaltered for the benefit of the Principal Parties for a period of at least 20 Business Days after notice is given to the Principal Parties under either of those clauses;
 - (ix) there must be no reduction of limits or coverage without the prior consent of the Principal Parties; and
 - (x) the insurer's indemnity must be a primary indemnity, without right of contribution in respect of any other indemnity or insurance cap; and
- (e) provide the Principal Parties with:
- (i) a true and complete copy of each Insurance policy, promptly after receipt of the policy by or on behalf of the Independent Certifier;
 - (ii) certificates of currency evidencing the maintenance of the Insurances, or a component of the Insurances, promptly after the Insurances (or a component) is or are renewed or extended;
 - (iii) if it will give the Principal Parties a copy of any notice received by the Independent Certifier from any insurer in respect of Insurances, promptly after receipt; and
 - (iv) such other details in respect of Insurances as the Principal Parties may from time to time reasonably request, promptly after the request; and
- (f) pay when due all premiums, commissions, stamp duties, charges and other expenses incurred or payable in relation to Insurances, and give evidence of that payment to the Principal Parties;
 - (g) do all things necessary or desirable to maintain the Insurances in full force;

- (h) not, without the Principal Parties' consent, vary, cancel or allow to lapse any Insurances;
- (i) do all things reasonably necessary or desirable to permit or facilitate the collection or recovery of any moneys payable by the insurers under Insurances;
- (j) not, without the consent of the Principal Parties do (or omit to do) anything which does or might (or the omission of which does or might) adversely affect the nature or extent of the rights of any named insured under Insurances, or extinguish, qualify or limit any indemnity of the insurer in respect of any Insurances;
- (k) immediately rectify anything which may have an adverse effect on the Insurances and reinstate any of the Insurances if it lapses;
- (l) not, without the consent of the Principal Parties, do, or take any steps to, cancel, materially change or reduce the amount of coverage of any Insurances;
- (m) not, without the consent of the Principal Parties:
 - (i) consent to any reduction in limits or coverage; or
 - (ii) enforce, conduct, settle or compromise any claims,
 in respect of any Insurances, whether or not any of them cover other property; and
- (n) notify the Principal Parties immediately when:
 - (i) an event occurs which gives rise or might give rise to a claim under or which could adversely affect any one of the Insurances; or
 - (ii) any of the Insurances are cancelled.

9.2 Failure to produce proof of insurance

If the Independent Certifier fails to comply with its obligations under this clause to effect any of the insurances TINSW may effect and maintain the insurances and pay the premiums. The Independent Certifier must pay to TINSW on demand a sum equal to the amount paid by TINSW and the amount of any such premiums and other costs incurred by TINSW will be deducted from the Contract Fee payable in respect of any Contract Deed.

10 Suspension of Services

- (a) TINSW may by notice to the Independent Certifier, instruct the Independent Certifier to suspend and, after a suspension has been instructed, to recommence, the performance of any or all of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services.
- (b) During the period which the Independent Certifier's performance of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services are suspended in accordance with clause 10(a), TINSW must pay the Independent Certifier:

- (i) subject to the provisions of this Deed, for the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services that are not suspended (if any); and
- (ii) subject to:
 - (A) the Independent Certifier using all reasonable endeavours to mitigate, minimise or avoid the effects and consequences of the costs associated with the suspension of any or all of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services; and
 - (B) provided that the suspension is not as a result of the Independent Certifier failing to comply with this Deed,

such unavoidable costs or expenses incurred arising in connection with the suspension of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services and costs and expenses incurred by the Independent Certifier in anticipation of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services not being suspended.

11 Default

11.1 Independent Certifier Default

- (a) Each of the following is an Independent Certifier Default:
 - (i) the Independent Certifier does not perform any of the Services, the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services to the standard of care required by this Deed or the relevant Contract Deed;
 - (ii) the Independent Certifier fails to comply with any obligation relating to insurance;
 - (iii) the Independent Certifier fails to act independently under a Contract Deed or in respect of the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services;
 - (iv) the Independent Certifier breaches a term of this Deed or a Contract Deed in a material way;
 - (v) the Independent Certifier persistently breaches this Deed or a Contract Deed;
 - (vi) the Independent Certifier becomes the subject of an Insolvency Event;
 - (vii) a representation or warranty made by or for the Independent Certifier in connection with this Deed or a Contract Deed is found to have been incorrect or misleading when made;
 - (viii) TfNSW terminates any Contract Deed on the basis of Independent Certifier default;

- (ix) the failure of the Independent Certifier to commit adequate resources to the performance of the Services, the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services; and
 - (x) the Independent Certifier ceases to carry on its business or a material part of it.
- (b) The termination of a Contract Deed or a Contract will not, of itself, automatically terminate this Deed or any Contract Deed other than the Contract Deed which relates to the Contract which was terminated.

11.2 Termination by TfNSW

- (a) If:
- (i) an Independent Certifier Default occurs; and
 - (ii) either:
 - (A) the Independent Certifier Default is not remedied by the Independent Certifier within 10 Business Days of notice of that default being given to the Independent Certifier by TfNSW; or
 - (B) the Independent Certifier Default cannot be remedied, and the Independent Certifier does not establish to the satisfaction of TfNSW that:
 - (aa) there was a reasonable explanation for the Independent Certifier Default; and
 - (ab) for the Independent Certifier Default will not be repeated,

then, TfNSW may terminate this Deed and/or any or all Contract Deeds by notice in writing to the Independent Certifier.

- (b) TfNSW may, without giving advance notice, terminate this Deed and/or any or all Contract Deeds by giving notice in writing to the Independent Certifier and each other Principal Party:
- (i) if an event described in clauses 11.1(a)(ii), 11.1(a)(iii), 11.1(a)(vi), 11.1(a)(vii), 11.1(a)(viii), or 11.1(a)(x) occurs; or
 - (ii) pursuant to clause 2.1(f).
- (c) TfNSW may terminate this Deed and/or any or all of the Contract Deeds at any time for convenience.
- (d) For the avoidance of doubt:
- (i) the Independent Certifier may not terminate this Deed or any Contract Deed;
 - (ii) only TfNSW may terminate this Deed or any Contract Deed; and
 - (iii) no Other Party may terminate this Deed or any Contract Deed.

11.3 Rights on termination

If this Deed and/or a Contract Deed is terminated under:

- (a) clauses 11.2(a), 11.2(b) or at Law:
- (i) the Independent Certifier must allow access to all of its premises, systems, records, documents and materials occupied or held by it in connection with the Services, Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services to TfNSW and its nominees as directed by the TfNSW Representative;
 - (ii) subject to clause 11.3(a)(ii) and TfNSW's rights of set off the Independent Certifier will only be entitled to payment of amounts due to it under this Deed or the relevant Contract Deed up to and including the date of termination;
 - (iii) TfNSW may suspend the payment of all Contract Fees, the Stage 2 Remediation Works Fee, the Environmental Representative Fee, Acoustic Advisor Fee and the Independent Arborist Fee until all of the Services, Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services that would have been performed by the Independent Certifier have been performed by others;
 - (iv) without limiting its rights, TfNSW may set off from any payment any amount which TfNSW would otherwise be obliged to make to the Independent Certifier any Loss incurred by TfNSW as a result of the termination of this Deed and/or a Contract Deed; and
 - (v) the rights of the parties will otherwise be on basis that the Independent Certifier has repudiated the Deed and the Contract Deed and the repudiation has been accepted by, in the case of this Deed, TfNSW and, in the case of a Contract Deed, the Principal Parties; or
- (b) clause 11.2(c), then the Independent Certifier will only be entitled to payment of all amounts due to under this Deed or the relevant Contract Deed up to and including the date of termination plus the reasonable costs incurred by it directly arising from early termination. For the avoidance of doubt, the Independent Certifier will have no Claim in respect of any foregone profit.

11.4 Return of records

- (a) Within 2 Business Days of the termination of this Deed and/or a Contract Deed, the Independent Certifier must deliver all documentation, records, and materials in the possession or control of the Independent Certifier relating to the Services, the Environmental Representative Services, Acoustic Advisor Services or the Independent Arborist Services (or in the case of the termination of a Contract Deed only, to the extent applicable to the relevant Contract) including all contracts, correspondence, records, plans, specifications and other documents:
- (i) where directed by TfNSW, to the Replacement Certifier; or
 - (ii) otherwise, to TfNSW, which will be received by TfNSW subject to clause 11.4(a).

- (b) The all documentation, records, and materials must be:
 - (i) delivered in such form as directed by the TfNSW Representative; and
 - (ii) indexed and organized as directed by the TfNSW Representative.
- (c) The Independent Certifier may not exercise any lien against any of the documentation, records, and materials referred to in this clause 11.4.
- (d) If this Deed and/or a Contract Deed is terminated, the Independent Certifier must co-operate with and assist TfNSW and the Replacement Certifier to ensure an effective and smooth transition of its duties and services under this Deed and/or the Contract Deed to the Replacement Certifier.
- (e) If TfNSW receives pursuant to clause 11.4(a)(ii), documentation, records, and materials that were provided to the Independent Certifier by the Other Party, TfNSW will deliver that documentation, records, and materials to the Other Party, as directed by the Other Party.

12 Novation

12.1 Termination of subcontracts

If this Deed and/or a Contract Deed is terminated, the Independent Certifier:

- (a) must novate to the Principal or the Replacement Certifier (as directed by TfNSW) those subcontracts that have been entered into by the Independent Certifier that the Principal directs; and
- (b) irrevocably appoints (for valuable consideration) the Principal and any authorised representative of the Principal to be the Independent Certifier's attorney to:
 - (i) execute, sign, seal and deliver all notices, deeds and documents; and
 - (ii) undertake actions in the name of the Independent Certifierfor the purpose of effecting such novation

12.2 Survival

This clause will survive the termination of this Deed and the applicable Contract Deed.

13 Replacement contractor

If a Contract is terminated then:

- (a) the relevant Contract Deed will terminate automatically;
- (b) subject to TfNSW's rights of termination under this Deed or a Contract Deed the other Contract Deeds will remain in full force and effect; and

- (c) the Independent Certifier must negotiate in good faith to provide services in relation to any replacement contract

14 Assignment

14.1 Assignment by the Independent Certifier

The Independent Certifier may not assign or transfer its rights or obligations under this Deed without the prior written consent of TfNSW (which may be given or withheld in its absolute discretion and with or without conditions).

14.2 Assignment by TfNSW

TfNSW may at any time assign, novate or otherwise transfer any of its rights or obligations under this Deed at any time to any entity which succeeds to its rights under the Contracts.

15 Notices

15.1 Delivery of Notices

- (a) Notices must be (subject to clause 15.4) uploaded onto PDCS.
- (b) A notice takes effect on the day that
- (i) if delivered by hand, upon actual receipt by the addressee; or
 - (ii) in the case of a notice sent through PDCS, at the time the document has been uploaded onto PDCS by the sender.
- (c) If a notice takes effect after 5.00 pm on a day, the notice will be deemed to have been received at 9.00 am on the next Business Day.

15.2 Delivery of Design Documentation

In the case of Design Documentation, Design Documentation is deemed to be delivered through the PDCS at the time the Design Documentation has been uploaded onto the PDCS by the sender.

15.3 PDCS

- (a) Subject to clause 15.4, at any time, and from time to time, the TfNSW Representative may notify the Independent Certifier that the PDCS will be used for giving notices under or in connection with this Deed. The TfNSW Representative's notice will set out:
- (i) the commencement date for use of the PDCS; and
 - (ii) any other information reasonably necessary for the effective use and service of notices via the PDCS
- (b) If a party is unable to use the PDCS as a result of the failure of the PDCS, that party must use one of the alternative means of communication set out in this clause.
- (c) With respect to notices sent through the PDCS:

- (i) all notices must be submitted by the party making it or (on that party's behalf) by the solicitor for, or any attorney, director, secretary or authorised agent of, that party;
- (ii) only the text in any notice, or subject to clause 15.3(c)(iii), any attachments to such notice which are referred to in the notice, will form part of the notice. Any text in the subject line will not form part of the notice; and
- (iii) an attachment to a notice will only form part of a notice if it is uploaded to the PDCS in:
 - (A) pdf format;
 - (B) a format compatible with Microsoft Office; or
 - (C) such other format as may be agreed between the parties in writing from time to time.
- (d) The Independent Certifier must:
 - (i) ensure that it has internet access which is sufficient to facilitate use of the full functionality of the PDCS;
 - (ii) ensure that relevant personnel log on and use PDCS and check whether notices have been received on each Business Day; and
 - (iii) at all times, ensure that it has access to personnel trained in the use of the PDCS so as to be able to view, receive and submit communications (including notices) using the PDCS.
- (e) TfNSW has no Liability for any losses the Independent Certifier may suffer or incur arising out of or in connection with its access to or use of PDCS or any failure of PDCS, and the Independent Certifier will not be entitled to make, and TfNSW will not be liable upon, any Claim against TfNSW arising out of or in connection with the Independent Certifier's access to or use of PDCS or any failure of PDCS.

15.4 Notices for delivery by hand and PDCS

The parties acknowledge and agree that notices issued pursuant to clauses 10 and 19 must be delivered by hand to the other party and by the PDCS, pursuant to this Deed.

16 GST

16.1 Interpretation

- (a) Except where the context suggests otherwise, terms used in this clause 16.1 have the meanings given to those terms by the *A New Tax System (Goods and Services Tax) Act 1999 (Cth)* (as amended from time to time).
- (b) Any part of a supply that is treated as a separate supply for GST purposes (including attributing GST payable to tax periods) will be treated as a separate supply for the purposes of this clause 16.1.
- (c) A reference to something done (including a supply made) by a party includes a reference to something done by any entity through which that party acts.

16.2 Reimbursements

Any payment or reimbursement required to be made under this Deed that is calculated by reference to a Cost or other amount paid or incurred will be limited to the total Cost or amount less the amount of any input tax credit to which an entity is entitled for the acquisition to which the cost or amount relates.

16.3 Additional amount of GST payable

Subject to clause 16.5, if GST becomes payable on any supply made by a party (Supplier) under or in connection with this Deed:

- (a) any amount payable or consideration to be provided under any provision of this Deed (other than this clause 16.1), for that supply is exclusive of GST;
- (b) any party (Recipient) that is required to provide consideration to the Supplier for that supply must pay an additional amount to the Supplier equal to the amount of the GST payable on that supply (GST Amount), at the same time as any other consideration is to be first provided for that supply; and
- (c) the Supplier must provide a tax invoice to the Recipient for that supply, no later than the time at which the GST Amount for that supply is to be paid in accordance with clause 16.3(b).

16.4 Variation

- (a) If the GST Amount properly payable in relation to a supply (as determined in accordance with clause 16.3 and clause 16.5, varies from the additional amount paid by the Recipient under clause 16.3, then the Supplier will provide a corresponding refund or credit to, or will be entitled to receive the amount of that variation from, the Recipient. Any payment, credit or refund under this clause 16.4(a) is deemed to be a payment, credit or refund of the GST Amount payable under clause 16.3.
- (b) The Supplier must issue an adjustment note to the Recipient in respect of any adjustment event occurring in relation to a supply made under or in connection with this Deed as soon as reasonably practicable after the Supplier becomes aware of the adjustment event.

16.5 Exchange of non-monetary consideration

- (a) To the extent that the consideration provided for the Supplier's taxable supply to which clause 16.3 applies is a taxable supply made by the Recipient in the same tax period (Recipient Supply), the GST Amount that would be otherwise be payable by the Recipient to the Supplier in accordance with clause 16.3 shall be reduced by the amount of GST payable by the Recipient on the Recipient Supply.
- (b) The Recipient must issue to the Supplier an invoice for any Recipient Supply on or before the time at which the Recipient must pay the GST Amount in accordance with clause 16.3 (or the time at which such GST Amount would have been payable in accordance with clause 16.3 but for the operation of clause 16.5(a)).

16.6 Indemnities

- (a) If a payment under an indemnity gives rise to a liability to pay GST, the payer must pay, and indemnify the payee against, the amount of that GST.

- (b) If a party has an indemnity for a cost on which that party must pay GST, the indemnity is for the cost plus all GST (except any GST for which that party can obtain an input tax credit).
- (c) A party may recover payment under an indemnity before it makes the payment in respect of which the indemnity is given.

16.7 No merger

This clause 16 will not merge on completion or termination of this Deed.

17 Representations and warranties

The Independent Certifier represents and warrants for the benefit of the Principal Parties that:

- (a) it has been incorporated as a company limited by shares in accordance with the laws of its place of incorporation, is validly existing under those laws and has power and authority to carry on its business as it is now being conducted;
- (b) it has power to enter into this Deed to which it is a party and comply with its obligations under it;
- (c) this Deed and the transactions under it which involve it do not contravene its constituent documents (if any) or any Law or obligation by which it is bound or to which any of its assets are subject or cause a limitation on its powers (or, to the extent applicable, the powers of its directors) to be exceeded;
- (d) it has in full force and effect the authorisations necessary for it to enter into this Deed, to comply with and perform the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services and exercise its rights under it, and allow it to be enforced;
- (e) the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services are valid and binding and are enforceable against it in accordance with its terms;
- (f) it benefits by entering into this Deed;
- (g) there are no reasonable grounds to suspect that it is unable to pay its debts as and when they become due and payable;
- (h) unless stated in this Deed, it does not enter into this Deed as trustee;
- (i) there is no pending or threatened proceeding affecting it or any of its assets before a court, governmental authority or arbitrator except those in which a decision against it would be insignificant;
- (j) it does not have immunity from the jurisdiction of a court or from legal process;
- (k) it has the appropriate qualifications and Authority Approvals to undertake all of the certification requirements forming part of the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services; and

- (i) it and all its representatives, employees, agents, contactors and consultants engaged in the performance of the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services possesses, and will continue to possess, the appropriate experience, skill, qualifications and resources which are required to properly perform the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services.

18 General

18.1 Set-off

Without limiting its rights TfNSW may set off any amount due for payment by TfNSW to the Independent Certifier against any amount due for payment by the Independent Certifier to TfNSW under this Deed.

18.2 Discretion in exercising rights

TfNSW may exercise a right or remedy or give or refuse its consent in any way it considers appropriate (including by imposing conditions), unless this Deed expressly states otherwise.

18.3 Partial exercising of rights

If TfNSW does not exercise a right or remedy fully or at a given time TfNSW may still exercise it later.

18.4 No liability for Loss

TfNSW is not liable for Loss caused by the exercise or attempted exercise of, failure to exercise, or delay in exercising, a right or remedy except to the extent of any fraud by TfNSW.

18.5 Conflict of interest

TfNSW's rights and remedies under this Deed may be exercised even if this involves a conflict of duty or TfNSW has a personal interest in the exercise.

18.6 Remedies cumulative

TfNSW's rights and remedies under this Deed are in addition to other rights and remedies given by law independently of this Deed.

18.7 Other encumbrances or judgments

- (a) This Deed does not merge with or adversely affect, and is not adversely affected by, any of the following:
- (i) any encumbrance or other right or remedy to which TfNSW is entitled; or
 - (ii) a judgment which TfNSW obtains against the Independent Certifier in connection with this Deed.
- (b) Notwithstanding clause 18.7(a), TfNSW may still exercise its rights under this Deed as well as under the judgment, the encumbrance or the right or remedy.

18.8 Variation and waiver

Unless this Deed expressly states otherwise, a provision of this Deed, or right created under it, may not be waived or varied except in writing signed by the Independent Certifier and TfNSW.

18.9 Confidentiality

- (a) All information provided by one party to another party under this Deed, a Contract Deed or a Contract and which is identified as confidential at the time it is provided, or which by its nature is confidential, must not be disclosed to any person except:
- (i) with the consent of the party providing the information;
 - (ii) if required by law or required by any stock exchange;
 - (iii) in connection with any legal proceedings relating to this Deed or any Contract;
 - (iv) if the information is generally and publicly available;
 - (v) to employees, legal advisers, auditors and other consultants to whom it needs to be disclosed; or
 - (vi) publication of a redacted copy of this Deed where the redactions have been agreed between the parties (acting reasonably).
- (b) The recipient of the information must do all things necessary to ensure that its respective employees, legal advisers, auditors and other consultants keep the information confidential and do not disclose it to any person.

18.10 Further steps

The Independent Certifier agrees to do anything TfNSW asks (such as obtaining consents, signing and producing documents, producing receipts and getting documents completed and signed):

- (a) to bind the Independent Certifier and any other person intended to be bound under this Deed; or
- (b) to show whether the Independent Certifier is complying with this Deed.

18.11 Counterparts

This Deed may consist of a number of copies, each signed by one or more parties to this Deed. If so, the signed copies are treated as making up the one document.

18.12 Applicable Law

This Deed is governed by the Law in force in New South Wales. The Independent Certifier and the Principal Parties submit to the non-exclusive jurisdiction of the courts of New South Wales.

18.13 Exclusion of Civil Liability Act 2002 (NSW)

To the extent permitted by Law, the operation of Part 4 of the *Civil Liability Act 2002* (NSW) is excluded in relation to any and all rights, obligations and liabilities

arising under or in relation to this Deed howsoever such rights, obligations or liabilities are sought to be enforced.

19 Dispute resolution

19.1 Application

- (a) Any dispute or difference between the parties arising solely out of, relating to or in connection with this Deed (but not a Contract Deed), including any dispute or difference as to the formation, validity, existence or termination of this Deed ("Dispute") must be determined in accordance with this clause 19.
- (b) Disputes arising out of, relating to or in connection with a Contract Deed, including any dispute or difference as to the formation, validity, existence or termination of that deed will be subject to the dispute resolution process in that deed.

19.2 Executive negotiation

- (a) If any dispute arises, a party to the dispute ("Referring Party") may, by giving notice to the other parties ("Dispute Notice"), refer the dispute to the Representatives for resolution.
- (b) The Dispute Notice must:
 - (i) be in writing;
 - (ii) state that it is given in accordance with this clause 19.2;
 - (iii) state whether it is in relation to this Deed only or a Contract Deed as well;
 - (iv) include or be accompanied by reasonable particulars of the dispute, including:
 - (A) a brief description of the circumstances in which the dispute arose; and
 - (B) references to any:
 - (aa) provisions of this Deed or the Contract Deed; and
 - (ab) acts or omissions of any person,relevant to the dispute.
- (c) Within 5 Business Days of the Referring Party giving the Dispute Notice, the Representatives must meet at least once to attempt to resolve the Dispute. The parties must not delegate the function of the Representative to any other person.
- (d) The Representatives may meet more than once to try and resolve a Dispute during the period of 10 Business Days after the service of the Dispute Notice and may meet in person, via telephone, videoconference, or any other agreed means of instantaneous communication to effect the meeting.

- (e) Discussions conducted in accordance with this clause 19.2 must be undertaken in good faith and will be held on a 'without prejudice' basis.

19.3 Arbitration

- (a) Any dispute not resolved through executive negotiation including any questions regarding the existence, validity or termination of the Deed or a Contract Deed, may be referred by either party to and finally resolved by arbitration administered by the Australian Disputes Centre (ADC).
- (b) The arbitration shall be conducted in Sydney in accordance with the ADC Rules for Domestic Arbitration operating at the time the Dispute is referred to ADC (Rules).
- (c) The terms of the Rules are hereby deemed incorporated into this Deed.
- (d) Notwithstanding anything also, to the extent permissible by Law, the arbitrator will have no power to apply or to have regard to the provisions of Part 4 of the *Civil Liability Act 2002* (NSW).

19.4 Continuance of performance

Despite the existence of a Dispute, the parties must continue to perform their respective Services under this Deed.

19.5 Summary relief

Nothing in this clause 19 will prevent a party from commencing proceedings to enforce payment due under this Deed or to seek urgent injunctive interlocutory or declaratory relief in respect of a Dispute.

19.6 Survives termination

This clause will survive the termination of this Deed and the applicable Contract Deed.

Parramatta Light Rail Umbrella Independent Certifier Deed

Schedule 1 Maximum Term and Assumed Services

PART A – MAXIMUM TERM

Contract	Maximum Term
Enabling Works Contract	24 months
Remediation Contract	150 Business Days from 9 May 2018 However, where a Portion 2 Notice to Proceed is issued then a further 200 Business Days from the issue of that notice.
Infrastructure Contract	38 months
SOM Contract	53 months
Environmental Representative Services	As required under the Planning Approval
Independent Arborist Services	As required under the Planning Approval
Acoustic Advisor Services	As required under the Planning Approval

PART B – ASSUMED SERVICES

1 Assumed Remediation Contract Services

The assumed Remediation Contract Services for the purposes of the Remediation Contract are:

Item	Function
Construction and completion phase services	
1	Quality management surveillance in accordance with project plans prepared by the Remediation Works Contractor at the request of TfNSW.
2	Inspect the Portion 1 Barrier Works for any Defects prior to Completion and notify TfNSW of any non-compliances at the request of TfNSW.
3	Issue a certificate that the Portion 1 Barrier Works have achieved Completion in accordance with the Remediation Contract at the request of TfNSW.
Post-completion phase services	
4	Inspect the Portion 1 Barrier Works for any Defects during the Defects Liability Period at the request of TfNSW.

Item	Function
5	Review and comment on any Defect rectification methodology at the request of TfNSW.
6	Inspect and certify the rectification of any Defects at the request of TfNSW.
Other	
7	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the Remediation Contract as specified in, or reasonably inferable from, the Remediation Contract.

2 Assumed Stage 2 Remediation Works Services

If a direction is given by TfNSW for the Stage 2 Remediation Works to be performed under the Remediation Contract or the SOM Contract, the assumed Stage 2 Remediation Works Services are:

Item	Function
Design phase services	
1	Review and comment on the Design Documentation and design report submitted by the Contractor at each Design Stage.
Construction and completion phase services	
2	Quality management surveillance in accordance with the SAQP and RWVP management plans prepared by the Contractor and approved by the Site Auditor.
3	Issue a certificate that the Portion 2 Optional Works have achieved Completion in accordance with the Remediation Contract.
Post-completion phase services	
4	Inspect the Stage 2 Remediation Works for any Defects during the Defects Liability Period at the request of TfNSW.
5	Review and comment on any Defect rectification methodology at the request of TfNSW.
6	Inspect and certify the rectification of any Defects at the request of TfNSW.
Other	
7	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the Remediation Contract as specified in, or reasonably inferable from, the Remediation Contract.

3 Assumed Enabling Works Contract Services

The assumed Enabling Works Contract Services for the purposes of the Enabling Works Contract are:

Item	Function
Design phase services	
1	<p>Where required to review Design Documentation, comment on whether the Design Documentation complies with the requirements of:</p> <ul style="list-style-type: none"> • the Works Brief; • the Third Party Agreements; • all Laws; • the Concept Design; and • the Enabling Works Contract. <p>Where required to review Design Documentation, comment on whether the Works which will be constructed in accordance with the Design Documentation comply with the requirements of:</p> <ul style="list-style-type: none"> • the Works Brief; • the Third Party Agreements; • all Laws; • the Concept Design; and • the Enabling Works Contract
2	For each Design Stage, collate and check all notified comments on Design Documentation (and the Survey Plan), provide a consolidated register of comments to the Contractor and Principal's Representative with proposed actions for how and when each comment will be closed out and direct the Contractor as to whether such comments must be addressed at the next Design Stage.
3	Make a written determination on any matter which is referred to the Independent Certifier by the Contractor because it disagrees with the Principal's Representative's determination regarding any comments on Design Documentation.
4	<p>In relation to Design Documentation (including re-submitted Design Documentation) for the "Approved for Construction" Design Stage only:</p> <ul style="list-style-type: none"> • collate comments received from the Principal's Representative, the Third Parties or relevant Authority; • undertake an independent review of whether the Design Documentation complies with the Enabling Works Contract; • notify the Contractor and Principal in writing of any deficiencies in the Design Documentation; and • issue an Independent Certifier's Certificate of Compliance for relevant Design Documentation.
Construction and completion phase services	
5	<p>Undertake minimum surveillance of the Contractor's Activities in accordance with the requirements of Schedule 4 in respect of the following signalised intersections:</p> <ul style="list-style-type: none"> • Factory and O'Connell streets • George and Church streets

Item	Function
	<ul style="list-style-type: none"> George and Harris streets
6	<p>Review and, where necessary, instruct the Contractor to amend the detailed procedure for progressive inspection and draft defects management plan it submits following notice that it anticipates achieving the Completion of the Works or a Portion within 21 days.</p>
7	<p>Undertake a joint inspection of the Works or a relevant Portion within 7 days' of receiving the Contractor's notice that it anticipates achieving Completion of the Works or a Portion.</p> <p>Following this joint inspection, issue a notice to the Principal's Representative and the Contractor which either:</p> <ul style="list-style-type: none"> lists items that are apparent and it believes must be completed before Completion is achieved; or stating that it believes that the Contractor is so far from achieving Completion of the Works or the Portion that compiling such a list is not practicable.
8	<p>Undertake another joint inspection of the Works or relevant Portion after receiving a Contractor's Certificate of Completion.</p> <p>Following this joint inspection, within 21 days of receiving a Contractor's Certificate of Completion, issue a notice to the Principal's Representative and the Contractor either:</p> <ul style="list-style-type: none"> stating the date on which the Independent Certifier determines Completion of the Works or the Portion was achieved and containing a list of minor Defects; or containing a list of items the Independent Certifier believes must be completed before Completion of the Works or relevant Portion is achieved or stating that it believes the Contractor is so far from achieving Completion of the Works or relevant Portion that compiling such a list is not practicable.
9	<p>Within 28 days before the date the Principal's Representative expects Final Completion to occur, undertake a joint inspection of the Works prior to Final Completion.</p> <p>Following this joint inspection, issue a notice to the Principal's Representative and the Contractor containing a list of items that are apparent and it believes must be completed before Final Completion.</p>
10	<p>Following receipt of the Contractor's Certificate of Final Completion, undertake another joint inspection of the Works.</p> <p>Following this joint inspection, within 21 days of receiving a Contractor's Certificate of Final Completion, issue a notice to the Principal's Representative and the Contractor either:</p> <ul style="list-style-type: none"> stating the date on which it determines that Final Completion was achieved; or containing a list of items which it believes must be completed before Final Completion is achieved or stating that it believes the Contractor is so far from achieving Final Completion that compiling such a list is not practicable.
11	<p>Where necessary, issue a list of Roads Act Approval Defects to the Principal's Representative which will become Defects under the Enabling Works Contract and comply with obligations in the Roads Act Approval – Pass Through Matrix</p>

Item	Function
12	Review: <ul style="list-style-type: none"> • notices containing details of the works necessary to remove and dispose of any Hazardous Material identified; • notices containing details of the steps the Contractor proposes to take in response to Contamination and the Remediation Action Plan; • a Survey Plan for the Works or the relevant Portion and a compliant Survey Certificate
Other	
13	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the Enabling Works Contract as specified in, or reasonably inferable from, the Enabling Works Contract.

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Parramatta Light Rail Umbrella Independent Certifier Deed

4 Assumed Infrastructure Contract Services

The assumed Infrastructure Contract Services for the purposes of the Infrastructure Contract are:

Item	Function
Design phase services:	
1	<p>Review, comment, direct changes to and approve as compliant with the Infrastructure Contract the following Project Plans:</p> <ul style="list-style-type: none">• Quality Management Plan• Systems Engineering, Assurance and Design Management Plan• Construction Environment Management Plan• Interface Management Plan• Testing and Commissioning Plan
2	<p>Where it is required to review Design Documentation, comment on whether it complies with:</p> <ul style="list-style-type: none">• the SPR;• the Contractor's Outline Design to the extent that the Contractor's Outline Design includes higher or additional obligations than the SPR;• the Third Party Agreements;• all Laws, Authority Approvals, Codes and Standards; and• the Infrastructure Contract. <p>Where it is required to review Design Documentation, comment on whether the Infrastructure Works which will be constructed in accordance with the Design Documentation will comply with:</p> <ul style="list-style-type: none">• the SPR;• the Contractor's Outline Design to the extent that the Contractor's Outline Design includes higher or additional obligations than the SPR;• the Third Party Agreements;• all Laws, Authority Approvals, Codes and Standards; and• the Infrastructure Contract.
3	<p>Review and comment to the Contractor and the Principal's Representative on the completeness and appropriateness of the Contractor's Requirements Verification Traceability Matrix in accordance with the Management Requirements for the purpose of enabling the Independent Certifier to certify compliance of Design Documentation with the Infrastructure Contract.</p>

Item	Function
4	<p>For every Design Stage, provide a consolidated register of all comments on the Design Documentation (including re-submitted Design Documentation and amended AFC Design Documentation) to the Contractor and the Principal's Representative (and a copy to applicable Third Parties, Authority and SOM Contractor) of:</p> <ul style="list-style-type: none"> • non-compliances with the Infrastructure Contract with proposed actions for how and when each non-compliance will be closed out; and • all other comments and observations with reasons why the comment is not considered to be a non-compliance with the Infrastructure Contract.
5	<p>For:</p> <ol style="list-style-type: none"> (a) requirements nominated by the Infrastructure Contractor for design verification in the Requirement Verification and Traceability Matrix at the PDR Design Stage (as defined by the Management Requirements), and (b) all Design Documentation received at the DDR Design Stage and all subsequent Design Stages, including for amended AFC Design Documentation, <p>undertake an independent review within the Review Period of whether the Design Documentation is complete and complies with the Infrastructure Contract and either:</p> <ol style="list-style-type: none"> (c) give the Infrastructure Contractor the Principal's Representative and the SOM Contractor a consolidated register of all comments on Design Documentation which relate to non-compliance with a requirement of this Deed and a proposed action for how and when each comment must be closed out by the Infrastructure Contractor; or (d) issue to the Infrastructure Contractor, the Principal's Representative and the SOM Contractor an Independent Certifier's Certificate of Design Compliance for the relevant Design Documentation, which may include a register of comments that do not clearly relate to a specific obligation of the Infrastructure Contractor under the Infrastructure Contract and the Independent Certifier's reasons why the comment was not classified by the Independent Certifier as a non-conformance.
6	<p>In respect of Temporary Works:</p> <ul style="list-style-type: none"> • review the design to the extent any element of Temporary Works relates to public safety or amenity; and • provide an Independent Certifier's Certificate of Design Compliance to the extent any element of Temporary Works relates to public safety or amenity.
7	<p>Meet with the Infrastructure Contractor, each relevant Designer and the Principal's Representative to review the registers of comments on Design Documentation and agree all actions to be taken by either the Contractor or Principal.</p>
8	<p>Attend all design presentation workshops delivered by the Contractor, engage with the Contractor's design personnel to obtain or provide (as applicable) an explanation of any Design Documentation, and request or provide (as applicable) any review information necessary to explain the Design Documentation to assist certification of compliance with the Infrastructure Contract.</p>

Item	Function
9.	Maintain a record of the close out of all comments provided on Design Documentation, including amended AFC Design Documentation.
10.	Provide an Independent Certifier's Certificate of Design Compliance for all Design Stages nominated in the Infrastructure Contract and certify the applicable Design Documentation as "Approved for Construction".
Construction and completion phase services	
11.	For a claim for an extension of time due to failure by a relevant Utility Service Provider to respond within time to the Infrastructure Contractor's submission in respect of Utility Service design, give written certification: <ul style="list-style-type: none"> that the submission made by the Infrastructure Contractor is a competent submission which complies with the Infrastructure Contract; and of the date that competent submission was made to the relevant Utility Service Provider.
12.	Undertake minimum surveillance of the Contractor's Activities in accordance with the requirements of Schedule 4 of this Deed to the extent: <ul style="list-style-type: none"> applicable to the Infrastructure Works; and deemed necessary by the Independent Certifier to be able to issue the certificates required by the Infrastructure Contract
13.	Approve subdivision of the Contractor's Activities into lots or work areas and liaise with the Infrastructure Contractor in relation to the identification of unknown lots.
14.	Attend and participate in tests of the Incident Management Plan.
15.	Certify inspection and test plans (ITPs).
16.	Evaluate sampling, inspection, test and verification records.
17.	Validate the Testing and Commissioning Plan.
18.	Nominate Hold Points and Witness Points during the performance of the Contractor's Activities. Nominate persons to attend or witness the release of any Hold Point or to attend a Witness Point. Release Hold Points in accordance with the Infrastructure Contract, as necessary, witnessing any inspections and tests conducted prior to a Hold Point being released.
19.	Raise non-compliances, comments and observations with respect to: <ul style="list-style-type: none"> the Infrastructure Contractor's requirements management system established under the Management Requirements, Annexure 3; and safety assurance reports developed by the Infrastructure Contractor.
20.	Undertake surveillance, process quality audits, Quality Management System Audits and product quality audits and audits for design validation in accordance with the Management Requirements.

Item	Function
21	Advise the Infrastructure Contractor of apparent non-conformances, receive reports of non-conformances from the Infrastructure Contractor, review corrective action plans submitted by the Infrastructure Contractor, review corrective actions (taking all durability objectives, safety objectives and performance requirements into account), issue Corrective Action Requests and "Non-Conforming Product Notifications" and approve proposed rectification methods in accordance with the Management Requirements.
22	Certify whether the Safety Case Documentation includes all materials relating to the Infrastructure Works within the Portion that are required in order for the SOM Contractor to obtain accreditation as a Rail Transport Operator under the Rail Safety National Law, including all safety performance reports prepared and certified by an AEO.
23	Approve a "Final Clean Management Plan" as a condition precedent to Portion Completion of a Portion.
24	Following receipt of a notice from the Infrastructure Contractor prior to the date it anticipates achieving Construction Completion, undertake an inspection of the Infrastructure Works and issue to the Principal's Representative and the Contractor a notice outlining whether it considers that Construction Completion is achievable by the date estimated by the Infrastructure Contractor.
25	<p>Following receipt of a Contractor's Certificate of Construction Completion, undertake a joint inspection of the relevant Infrastructure Works.</p> <p>After this joint inspection the Independent Certifier must:</p> <ul style="list-style-type: none"> • if Construction Completion has been achieved, provide the Principal's Representative, the Infrastructure Contractor and the SOM Contractor with an Independent Certifier's Certificate of Construction Completion; or • if Construction Completion has not been achieved, provide a notice to the Infrastructure Contractor, Principal and the SOM Contractor stating the items which remain to be completed before Construction Completion will be achieved.
26	<p>Following receipt of an executed Contractor's Certificate of Portion Completion, the Independent Certifier must:</p> <ul style="list-style-type: none"> • if Portion Completion has been achieved, provide to the Principal's Representative, the Infrastructure Contractor and the SOM Contractor an Independent Certifier's Certificate of Portion Completion; or • if Portion Completion has not been achieved, provide a notice to the Infrastructure Contractor, the Principal and the SOM Contractor stating the items which remain to be completed before Portion Completion of the Portion will be achieved.
27	<p>Prior to Portion Completion of the last Portion:</p> <ul style="list-style-type: none"> • review any written reports provided by the Contractor with details of Defects detected and actions proposed to correct that Defect including estimated time requirement; • notify the Infrastructure Contractor from time to time of matters the Independent Certifier alleges are defects; • review and comment on the Defects Rectification Methodology;

Item	Function
	<ul style="list-style-type: none"> inspect the rectification of Defects; and following an inspection, certify whether or not the rectification works have resulted in the rectification of the Defect/s.
28	<p>By direction of the Principal's Representative:</p> <ul style="list-style-type: none"> issue a Certificate of Construction Completion in respect of Infrastructure Works that make up part of a Section or Portion; or inspect Infrastructure Works that make up part of a Section or Portion to ascertain whether those Infrastructure Works have reached Construction Completion. <p>Issue a Certificate of Portion Completion of a Portion noting certain elements that have been deferred by the Principal's Representative.</p>
29	<p>The Independent Certifier may at any time</p> <ul style="list-style-type: none"> inspect the Contractor's Activities, the Infrastructure Works and the PLR Stage 1; and seek comments from others in respect of the Contractor's Activities.
Post-completion phase services	
30	<p>During the Defects Rectification Period:</p> <ul style="list-style-type: none"> review any written reports provided by the Infrastructure Contractor with details of Defects detected and actions proposed to correct that Defect including estimated time requirement; notify the Infrastructure Contractor from time to time of matters the Independent Certifier alleges are defects; review and comment on the Defects Rectification Methodology; and following an inspection, certify whether or not the rectification works have resulted in the rectification of the Defect/s.
Issue resolution	
31	<p>Make a written determination on any matter of interpretation of the SPR or Management Requirements which is referred by the Infrastructure Contractor or the Principal's Representative to the Independent Certifier, including a failure to agree whether Design Documentation complies with the SPR or the Management Requirements.</p>
32	<p>Determine whether or not there is a Defect in the event that the Principal's Representative directs the rectification of a Defect and the Infrastructure Contractor notifies the Independent Certifier that it disagrees with the Principal's Representative's determination.</p>
33	<p>Review disputed IC Interface Determinations in accordance with the Co-operation and Integration Deed.</p>
Other	
34	<p>Ensure the Infrastructure Contractor reinstates the Site to a high standard, on removal or relocation of site facilities, and in accordance with the requirements of the Planning Approval.</p>

Item	Function
35	Notify the Infrastructure Contractor of defects in the site offices.
36	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the Infrastructure Contract as specified in, or reasonably inferable from, the Infrastructure Contract.

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5 Assumed SOM Contract Services

The assumed SOM Contract Services for the purposes of the SOM Contract are:

Item	Function
Design phase services	
1	<p>Review, comment, direct changes to and approve as compliant with the SOM Contract the following Project Plans:</p> <ul style="list-style-type: none">• Quality Management Plan• Systems Engineering, Assurance and Design Management Plan• Construction Environment Management Plan• Interface Management Plan• Testing and Commissioning Plan• Operations Management Plan
2	<p>Where it is required to review Design Documentation, comment on if the Design Documentation complies with:</p> <ul style="list-style-type: none">• the SPR;• the Contractor's Outline Design to the extent that the Contractor's Outline Design includes higher or additional obligations than the SPR;• the Third Party Agreements;• all Laws, Authority Approvals, Codes and Standards; and• the SOM Contract. <p>Where it is required to review Design Documentation, comment on whether the SOM Works which will be constructed in accordance with the Design Documentation will comply with:</p> <ul style="list-style-type: none">• the SPR;• the Contractor's Outline Design to the extent that the Contractor's Outline Design includes higher or additional obligations than the SPR;• the Third Party Agreements;• all Laws, Authority Approvals, Codes and Standards; and• the SOM Contract.
3	<p>Review and comment to the Contractor and the Principal's Representative on the completeness and appropriateness of the Contractor's Requirements Verification Traceability Matrix for the purpose of enabling the Independent Certifier to certify compliance of Design Documentation with the SOM Contract.</p>

4	<p>For every Design Stage, provide a consolidated register of all comments on the Design Documentation (including re-submitted Design Documentation and amended AFC Design Documentation) to the SOM Contractor and the Principal's Representative (and a copy to applicable Third Parties and Authorities) of:</p> <ul style="list-style-type: none"> • non-compliances with the SOM Contract with proposed actions for how and when each non-compliance will be closed out; and • all other comments and observations with reasons why the comment is not considered to be a non-compliance with the SOM Contract.
5	<p>For:</p> <p>(a) requirements nominated by the SOM Contractor for design verification in the Requirement Verification and Traceability Matrix (RVTM) at the PDR Design Stage (as defined by the Management Requirements), and</p> <p>(b) all Design Documentation submitted by the Contractor at the DDR Design Stage and all subsequent Design Stages,</p> <p>the Independent Certifier will undertake an independent review within the Review Period of whether the Design Documentation is complete and complies with the SOM Contract; and either</p> <ul style="list-style-type: none"> • give the SOM Contractor and the Principal's Representative a consolidated register of all comments on Design Documentation which relate to non-compliance with a requirement of this Deed and a proposed action for how and when each comment must be closed out by the SOM Contractor; or • issue to the SOM Contractor and the Principal's Representative an Independent Certifier's Certificate of Design Compliance for the relevant Design Documentation, which may include a register of comments and observations that do not clearly relate to a specific obligation of the SOM Contractor under the SOM Contract and the Independent Certifier's reasons for why the comment was not classified by the Independent Certifier as a non-conformance.
6	<p>In respect of Temporary Works:</p> <ul style="list-style-type: none"> • review the design to the extent any element of Temporary Works relates to public safety or amenity; and • provide an Independent Certifier's Certificate of Design Compliance to the extent any element of Temporary Works relates to public safety or amenity.
7	<p>Attend all design presentation workshops delivered by the SOM Contractor, engage with the Contractor's design personnel to obtain or provide (as applicable) an explanation of any Design Documentation, and request or provide (as applicable) any information necessary to explain the Design Documentation to assist certification of compliance with the SOM Contract.</p>
8	<p>Meet with the SOM Contractor, each relevant Designer and the Principal's Representative to review the registers of comments on Design Documentation and agree the actions to be taken by either the SOM Contractor or Principal.</p>
9	<p>Meet with the SOM Contractor, Principal's Representative, the Infrastructure Contractor and the Infrastructure Contractor's designers to review the register of comments on the design documentation for the Infrastructure Contract and agree the actions to be taken by either the Infrastructure Contractor or the Principal.</p>
10	<p>Maintain a record of the close out of all comments provided on Design Documentation and design documentation under the Infrastructure Management Requirements, including amended AFC Design Documentation.</p>

11	Provide an Independent Certifier's Certificate of Design Compliance for all Design Stages nominated in the SOM Contract and any other certificates required under Schedule 6.
12	<p>For:</p> <ul style="list-style-type: none"> (a) requirements nominated by the Infrastructure Contractor for design verification in the Requirement Verification and Traceability Matrix at the PDR Design Stage (each as defined by the Infrastructure Management Requirements); and (b) all design documentation received at the DDR Design Stage and all subsequent Design Stages (each as defined in the Infrastructure Management Requirements). <p>the Independent Certifier will undertake an independent review within the applicable period of whether the design documentation is complete and complies with the Infrastructure SPR and Infrastructure Management Requirements and either:</p> <ul style="list-style-type: none"> • give the Infrastructure Contractor, the Principal's Representative and the SOM Contractor a consolidated register of all comments on "design documentation" (as that term is defined in the Infrastructure Management Requirements) which relate to non-compliance with a requirement of the Infrastructure SPR or Infrastructure Management Requirements and a proposed action for how and when each comment must be closed out by the Infrastructure Contractor; or • issue an Independent Certifier's Certificate of Infrastructure Design Compliance for the relevant design documentation, which may include a consolidated register of comments and observations that do not clearly relate to a specific obligation of the Infrastructure Contractor under the Infrastructure SPR or Infrastructure Management Requirements and the Independent Certifier's reasons why the comment was not classified by the Independent Certifier as a non-conformance.
13	<p>For every design stage under the Infrastructure Management Requirements, prepare and give to the Infrastructure Contractor, the SOM Contractor and the Principal's Representative</p> <ul style="list-style-type: none"> • a consolidated register of all comments on the "design documentation" (as that term is defined in the Infrastructure Management Requirements) relating to non-compliance with a requirement of the Infrastructure SPR or Infrastructure Management Requirements and proposed action for how and when the comment is to be closed out by the Infrastructure Contractor; and • a consolidated register of all other comments or observations that do not clearly relate to a specific obligation under the Infrastructure SPR or Infrastructure Management Requirements and reasons why the comment was not classified as a non-conformance.
Construction and completion phase services	
14	<p>Undertake minimum surveillance of the Contractor's Activities in accordance with the requirements of Schedule 4 of this Deed to the extent:</p> <ul style="list-style-type: none"> (a) applicable to the Infrastructure Works; and (b) deemed necessary by the Independent Certifier to be able to issue the certificates required by the Infrastructure Contract.

15	<p>Nominate Hold Points and Witness Points during the performance of the Contractor's Activities.</p> <p>Nominate persons to attend or witness the release of any Hold Point or to attend a Witness Point.</p> <p>Release Hold Points in accordance with the SOM Contract, as necessary, witnessing any inspections and tests conducted prior to a Hold Point being released.</p>
16	<p>Undertake surveillance, process quality audits, Quality Management System Audits and product quality audits and audits for design validation in accordance with the Management Requirements.</p>
17	<p>Advise the SOM Contractor of apparent non-conformances, receive reports of non-conformances from the SOM Contractor, reviewing corrective action plans submitted by the SOM Contractor, review corrective actions (taking all durability objectives, safety objectives and performance requirements into account), issue Corrective Action Requests and 'Non-Conforming Product Notifications' and approve proposed rectification methods in accordance with the Management Requirements.</p>
18	<p>Attend and participate in tests of the Incident Management Plan.</p>
19	<p>Raise non-compliances, comments and observations with respect to:</p> <ul style="list-style-type: none"> • the SOM Contractor's requirements management system established under the Management Requirements, Annexure 3; and • safety assurance reports developed by the SOM Contractor.
20	<p>Certify inspection and test plans (ITPs).</p>
21	<p>Evaluate sampling, inspection, test and verification records.</p>
22	<p>Approve subdivision of the Contractor's Activities into lots or work areas and liaise with the Contractor in relation to the identification of unknown lots.</p>
23	<p>Provide a copy to the SOM Contractor of the certification given under the Infrastructure Contract as to whether the Safety Case Documentation provided by the Principal from the Infrastructure Contractor fulfils the requirements of the Rail Safety National Law.</p>
24	<p>Issue to the SOM Contractor an Independent Certifier's Certificate of Construction Completion identifying the work covered with:</p> <ul style="list-style-type: none"> • a register of deficiency notices; and • a register of concessions granted for non-conforming work.
25	<p>Undertake a joint inspection with the SOM Contractor and the Principal's Representative following receipt from the Infrastructure Contractor of the Infrastructure Contractor's Certificate of Construction Completion relating to a Portion or Section under the Infrastructure Contract.</p>
26	<p>Provide the SOM Contractor with a Certifier of Infrastructure Portion Completion issued under the Infrastructure Contract.</p> <p>Provide the SOM Contractor with a notice given under the Infrastructure Contract that Infrastructure Portion Completion has not been achieved, stating the items which remain to be completed before Infrastructure Portion Completion will be achieved.</p>
27	<p>Review all Test Procedures, certify or deem that Services Completion Test, Service Performance Test and Capacity Tests have been passed, certify the completion of Operational Exercises, certify the Services Completion Test Period, issue Passenger Service Commencement Notice.</p>

28	Following receipt of a notice from the SOM Contractor estimating when Readiness for First Passenger Service will be achieved, inspect the SOM Works and notify the Principal and the SOM Contractor whether it considers that Readiness for First Passenger Service is achievable by the estimated date in the SOM Contractor's notice.
29	<p>Following receipt from the SOM Contractor of a Certificate of Readiness for First Passenger Service, undertake a joint inspection with the Principal's Representative of the SOM Works.</p> <p>After this joint inspection the Independent Certifier must:</p> <ul style="list-style-type: none"> • if it considers that Readiness for First Passenger Service has been achieved, provide to the Principal's Representative an IC Certificate of Readiness for First Passenger Service; or • if Readiness for First Passenger Service has not been achieved, provide a notice to the SOM Contractor and the Principal which sets out the items which remain to be completed before Readiness for First Passenger Service will be achieved.
30	The Independent Certifier may at any time inspect the Contractor's Activities, the SOM Works and the PLR Stage 1.
31	<p>Review any reports provided by the SOM Contractor with details of:</p> <ul style="list-style-type: none"> • Defects; • Infrastructure Defects; • Latent Infrastructure SPR Non-Compliances; • other defects in the Infrastructure Works; • defects in Existing Infrastructure which is not the subject of Infrastructure Works; • Stage 1 Remediation Works Defects; and • actions proposed to correct the Defect, including the estimated time.
32	<p>Record all notices received from the SOM Contractor:</p> <ul style="list-style-type: none"> • of alleged defects in the Infrastructure Works, including any failure to remediate any Contamination as required under the Infrastructure SPR; and • disputing a determination of the Principal's Representative that a matter is not an Infrastructure Defect.
33	Determine questions referred to it by the SOM Contractor as to whether or not an Infrastructure Defect exists and provide comments on the Infrastructure Contractor's defects rectification methodology and program.
34	Provide the SOM Contractor with a monthly report produced by the Infrastructure Contractor of all items contained in the database which identifies those matters which the Infrastructure Contractor considers to be defects and those matters which the Infrastructure Contractor considers are not defects in the Infrastructure Works.
35	Participate in a joint inspection (with the SOM Contractor and the Principal's Representative) of rectification work completed by the Infrastructure Contractor and certify whether a defect in the Infrastructure Works has been rectified.

36	Where the Principal directs the Contractor that it does not exercise Option 2 in Schedule 25 and is notified by the SOM Contractor, the Independent Certifier must jointly inspect the Stage 2 Remediation Works as part of the completion process for the Stage 2 Remediation Works.
37	Notify the SOM Contractor of defects in the site offices.
Post-completion phase services	
38	Determine whether an Infrastructure Defect is a Latent Infrastructure SPR Non-Compliance.
Issue resolution	
39	Make a written determination on any matter of interpretation of the SPR or Management Requirements which is referred by the SOM Contractor or the Principal's Representative to the Independent Certifier, including a failure to agree whether Design Documentation complies with the SPR or the Management Requirements.
40	Make a written determination on any matter of interpretation of the Infrastructure SPR or Infrastructure Management Requirements which is referred by the SOM Contractor and provide a copy of the determination to the SOM Contractor.
41	Determine whether or not there is a Defect in the event that the Principal's Representative determines there is a Defect and the Contractor notifies the Independent Certifier that it disagrees with that determination.
42	Determine questions referred to it by the SOM Contractor as to whether or not an Infrastructure Defect exists.
43	Determine disputes as to whether: (a) there is a defect in the Existing Infrastructure which is not the subject of Infrastructure Works; or (b) the Existing Infrastructure which is the subject of a defect is Existing Infrastructure which is subject to the Infrastructure Works.
44	Review disputed IC Interface Determinations in accordance with the Co-operation and Integration Deed.
Other	
45	Ensure the Contractor reinstates the Site to a high standard, on removal or relocation of site facilities.
46	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the SOM Contract as specified in, or reasonably inferable from, the SOM Contract.

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6 Assumed CoPC Contract Services

The assumed CoPC Contract Services for the purposes of the CoPC Contract are:

Item	Function
1	Receive comments from CoPC regarding Category 1 Design Documents and, unless the Principal agrees with a claimed non-compliance with the Category 1 Requirements, determining whether those matters constitute non-compliances with the Category 1 Requirements.
2	Receive comments from CoPC regarding Category 2 Works Detailed Designs and any notice that CoPC is withholding approval for non-compliance with the Category 2 Requirements. Unless the Principal agrees with a claimed non-compliance with Category 2 Requirements, the Independent Certifier must determine whether those matters constitute non-compliances with the Category 2 Requirements.
Construction and completion phase services	
3	Jointly inspect the Category 2 Works following request by Contractor for a Certificate of Practical Completion (Category 2 Works). Within 5 Business Days of completing this joint inspection, the Independent Certifier must give the Principal (and a copy to CoPC) either: (a) a Certificate of Practical Completion (Category 2 Works) which must contain a list of any Minor Defects existing at Practical Completion, if Practical Completion has been achieved; or (b) the reasons for not issuing that certificate, and provide a detailed list of work required to be completed in order for that certificate to be issued.
Post-completion phase services	
4	Inspect the Enabling Works for any Defects during the Defects Liability Period, at the request of CoPC, and giving a Defects Notice (Enabling Works) to the Principal (with a copy to CoPC) detailing Defects and requiring their rectification.
5	Give notice in writing to CoPC and the Principal of any Defects in the Enabling Works which in the Independent Certifier's reasonable opinion still remain to be rectified and specify a reasonable time for their rectification, following notice from the Principal that Defects subject to a Defects Notice (Enabling Works) have been rectified (or the Principal failing to provide such notice in the time required under the Defects Notice (Enabling Works)).
6	At the request of CoPC, inspect the Category 2 Works for any Defects during the Defects Liability Period, and give a Defects Notice (Category 2 Works) to the Principal (with a copy to CoPC) detailing Defects.
7	Give notice in writing to CoPC and the Principal of any Defects in the Category 2 Works which in the Independent Certifier's reasonable opinion still remain to be rectified and specify a reasonable time for their rectification, following notice from the Principal that Defects subject to a Defects Notice (Category 2 Works) have been rectified (or the Principal failing to provide such notice in the time required under the Defects Notice (Category 2 Works)).
8	At the end of the Defects Liability Period for a Separable Portion, if all Defects in a Defects Notice (Category 2 Works), and all Defects required to be rectified by the Principal, have been rectified, issue a Final Certificate stating that the

Item	Function
	<p>Category 2 Works have been completed in accordance with the CoPC Contract.</p> <p>If Defects still need to be rectified at the end of the Defects Liability Period the Independent Certifier must issue a Final Certificate, stating that Final Completion has been achieved, as soon as all Defects the subject of Defects Notices (Category 2 Works), and all Defects required to be rectified by the Principal, have been rectified.</p>
Other	
9	<p>Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the CoPC Contract as specified in, or reasonably inferable from, the CoPC Contract.</p>

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7 Assumed RMS Services

7.1 RMS Collaboration Agreement

The assumed RMS Contract Services for the purposes of the RMS Collaboration Agreement (excluding the attached Indicative Roads Act Approval) are:

Item	Function
Design phase services	
1	Review (taking into account RMS' comments) and endorse each Relevant Design Documentation with a certificate in the form contained in Annexure A to the Independent Certifier Deed Poll – the Independent Certifier Design Certificate, as required under the Roads Act Approval.
Construction and completion phase services	
2	Issue the Independent Certifier Certificate of Relevant Works Completion, as required under the Roads Act Approval.
Other	
3	Execute the Independent Certifier's Deed Poll.
4	Complete the Independent Certifier Certificate - Road Safety Audit, as required under the Roads Act Approval.
5	Complete the Independent Certifier Certificate - Project Plans, as required under the Roads Act Approval.
6	Provide a monthly progress report to the Principal and RMS, setting out the information required by clause 5 of the Independent Certifier's Deed Poll.
7	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the RMS Collaboration Agreement as specified in, or reasonably inferable from, the RMS Collaboration Agreement.

7.2 Roads Act Approval

The assumed RMS Contract Services for the purposes of the Roads Act Approval are:

Item	Function
Design phase services	
1	Review and certify the Relevant Design Documentation, Relevant Design Documentation (Bridges and Complex Structures) or Relevant Design Documentation (Traffic Signals) (as applicable) and when requested by the Consent Authority meet to discuss those documents.
2	Review the Relevant Design Documentation, the Relevant Design Documentation (Bridges and Complex Structures) and the Relevant Design Documentation (Traffic Signals). At Design Stage 2, notify the Principal of any non-compliances with the Consent Conditions. At Design Stage 3, provide certifications, with a certificate in the form agreed by the Consent Authority and the Principal.

Item	Function
3	<p>Address any comments from the Consent Authority when reviewing the Relevant Design Documentation, Relevant Design Documentation (Traffic Signals) or Relevant Design Documentation (Bridges and Complex Structures).</p> <p>Provide a written response in relation to the Consent Authority's comments, indicating which of those comments have been incorporated and, if any comments have not been incorporated, the reasons why those comments have not been incorporated.</p>
4	<p>Provide to the Consent Authority all communications with respect to the Relevant Design Documentation, Relevant Design Documentation (Bridges and Complex Structures) or Relevant Design Documentation (Traffic Signals) which have been commented upon by the Consent Authority.</p> <p>If requested by the Consent Authority, meet the Consent Authority within 5 Business Days of such request to discuss the resolution of any comments by the Consent Authority on those documents.</p>
Construction and completion phase services	
5	<p>Inspect each discrete part of the Relevant Works (Completion) jointly with the Consent Authority, and determine if the discrete part is complete in accordance with the Consent Conditions.</p> <p>Receive submissions from the Consent Authority as to whether the discrete part is complete, and details of any defects to be rectified.</p> <p>Provide an independent review of whether the requirements of the Consent Conditions have been met including that the Relevant Works comply with all relevant codes and standards current as at the date of the certificate and that the quality of work and materials incorporated into the Relevant Works are in accordance with the Relevant Design Documentation, Relevant Design Documentation (Bridges and Complex Structures) or Relevant Design Documentation (Traffic Signals) (as applicable). Determine a Defects List (including any details of defects provided by the Consent Authority) and provide it to the Principal and Consent Authority.</p> <p>If the Independent Certifier determines that the discrete part of the Relevant Works (Completion) is complete, the Independent Certifier must, within 5 Business Days of the date of inspection, execute and provide to the Consent Authority a certificate in the form agreed by the Principal and Consent Authority.</p>
Other	
6	<p>Review the Project Plans and receive and address the Consent Authority's comments in that review.</p> <p>Audit the Project Plans for compliance with the requirements of the Consent Conditions.</p> <p>Certify the Project Plans.</p>
7	<p>Issue the certificates required by the Project Requirements as and when those certificates are required.</p>
8	<p>Make determinations on any matters that the Consent Conditions require be determined by the Independent Certifier.</p>
9	<p>Certify to the Consent Authority that all findings / non-conformances found during Road Safety Audits have been satisfactorily addressed and closed out.</p>
10	<p>Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the Roads Act Approval as specified in, or reasonably inferable from, the Roads Act Approval.</p>

7.3 RMS WAD

The assumed RMS Contract Services for the purposes of the RMS WAD are:

Item	Function
Design phase services	
1	<p>Receive and review the Design Documents for Design Stage 1 and Design Stage 2, consider the written comments received from RMS and:</p> <ul style="list-style-type: none"> • make comments in writing to the Principal and RMS in relation to the compliance of the Design Documents with the RMS WAD; and • provide detailed written reasons to RMS if it does not give full effect to any RMS comments. <p>Receive and review the Design Documents for Design Stage 3, consider the written comments received from RMS and:</p> <ul style="list-style-type: none"> • provide detailed written reasons to RMS if it does not give full effect to any RMS comments, and not provide certification until RMS is satisfied those comments have been resolved under clause 11 of the WAD; and • either reject the Design Documents with reasons or certify (including identification of Minor Non-Compliances) they comply with the RMS WAD, in writing (in the form of the approved certificate – Schedule 3) to the Principal and RMS. <p>Carry out related processing of Design Documents under the relevant clauses, including taking into account RMS' comments.</p> <p>Undertake the same review and certification process for the amendment of Design Documents.</p>
2	Attend inspection and testing sessions and certify summaries of results of all inspections and tests (in the form of the approved certificate – Schedule 7).
Construction and completion phase services	
3	Inspect the Road Works and determine any items required to be determined by the Independent Certifier in accordance with the regime for determining Practical Completion in clause 15 of the RMS WAD and issue a certificate in the form of Schedule 4 (including identification of Minor Non-Compliances) or notice of all items to be completed to achieve Practical Completion.
4	Determine any items required to be determined by the Independent Certifier in accordance with the regime for determining Final Completion in clause 16 of the RMS WAD and issue a certificate in the form of Schedule 5 once it is satisfied all defects have been rectified.
5	Verify As-Built Drawings and that the Works as constructed comply with all Statutory Approvals, Laws and the requirements of the RMS WAD.
Other	
6	Execute the Independent Certifier's Deed Poll.

Item	Function
7	Attend Risk Management Workshops in accordance with the RMS WAD and identify any deficiency in a Design Document in addressing any risk.
8	<p>Conduct the activities and functions described in clause 23 of the RMS WAD, including:</p> <ul style="list-style-type: none"> • continually monitoring the integrity and efficiency of the Quality System of the Infrastructure Contractor and certifying that Quality System; • continually monitoring and verifying the compliance of the design and construction of the Works and Temporary Works with the RMS WAD; • issuing certificates certifying and verifying the above matters in the form set out in Schedule 10 within 10 Business Days of the end of each month from the commencement of the Works until the last Date of Practical Completion or at other times agreed between the Principal and RMS.
9	<p>Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the RMS WAD as specified in, or reasonably inferable from, the RMS WAD.</p> <p>As well as any other Services which the Independent Certifier is required to undertake in accordance with the Deed of Appointment of Independent Certifier.</p>

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8 Assumed UrbanGrowth Contract Services

The assumed UrbanGrowth Contract Services for the purposes of the UrbanGrowth Contract are:

Item	Function
Design phase services	
1	Receive comments from UrbanGrowth regarding Category 1 Design Documents and, unless the Principal agrees with a claimed non-compliance with the Category 1 Requirements, determine whether those matters constitute non-compliances with the Category 1 Requirements.
2	Receive comments from UrbanGrowth regarding Category 2 Works Detailed Designs and any notice that UrbanGrowth is withholding approval for non-compliance with the Category 2 Requirements. Unless the Principal agrees with a claimed non-compliance with Category 2 Requirements, the Independent Certifier must determine whether those matters constitute non-compliances with the Category 2 Requirements.
Construction and completion phase services	
3	Review the Category 2 Works following request by Contractor for a Certificate of Practical Completion (Category 2 Works). Within 5 Business Days of receipt of the Contractor's request, the Independent Certifier must give the Principal (and a copy to UrbanGrowth) either: (a) a Certificate of Practical Completion (Category 2 Works); or (b) the reasons for not issuing that certificate, and provide a detailed list of work required to be completed in order for that certificate to be issued.
Post-completion phase services	
4	Inspect the Category 2 Works for any Defects during the Defects Liability Period, at the request of UrbanGrowth and give a Defects Notice (Category 2 Works) to the Principal (with a copy to UrbanGrowth) detailing Defects and requiring their rectification.
5	Give notice in writing to UrbanGrowth and the Principal of any Defects in the Category 2 Works which in the Independent Certifier's reasonable opinion still remain to be rectified, following notice from the Principal that Defects subject to a Defects Notice (Category 2 Works) have been rectified.
6	Determine whether works on outstanding Defects have not been commenced and rectified by the Principal within a reasonable time.
7	When Defects the subject of a Defects Notice (Category 2 Works) have been rectified (as determined by the Independent Certifier acting reasonably) and all Defects required to be rectified by the Principal under the UrbanGrowth Contract have been rectified, issue a Final Certificate stating that the Category 2 Works have been completed in accordance with the UrbanGrowth Contract.
Other	
6	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the UrbanGrowth Contract as specified in, or reasonably inferable from, the UrbanGrowth Contract.

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9 Assumed HAC Services

Item	Function
Design phase services	
1	Receive (pursuant to the Principal's nomination to receive such documents) comments from HAC regarding Category 1 Design Documents and, unless the Principal agrees with a claimed non-compliance with the Category 1 Requirements, determine between the Principal and the Contractor whether those matters constitute non-compliances with the Category 1 Requirements.
2	Receive (pursuant to the Principal's nomination to receive such documents) comments from HAC regarding Category 2 Works Detailed Designs and any notice that HAC is withholding approval for non-compliance with the Category 2 Requirements. Unless the Principal agrees with a claimed non-compliance with Category 2 Requirements, determine between the Principal and the Contractor whether those matters constitute non-compliances with the Category 2 Requirements.
3	In relation to Category 3 Works, provide a peer review and comments on 80 and 100% design documentation provided by TfNSW.
Construction and completion phase services	
4	Jointly inspect the Category 2 Works following a request by the Contractor for a draft Certificate of Practical Completion (Category 2 Works), and give to the Principal (and a copy to HAC) either: <ul style="list-style-type: none"> • a draft Certificate of Practical Completion (Category 2 Works); or • the reasons for not issuing that certificate, and provide a detailed list of work required to be completed in order for that certificate to be provided.
5	In relation to Category 3 Works: <ul style="list-style-type: none"> • provide site surveillance as necessary to certify that the Category 3 Works have been carried out in accordance with design documentation; • inspecting Category 3 Works prior to notified date for completion of those works; and • certify to TfNSW that the Category 3 Works have been completed in accordance with the design documentation provided by TfNSW.
Post-completion phase services	
6	When Defects the subject of a Defects Notice (Category 2 Works) have been rectified (as determined by HAC acting reasonably and in good faith) and all Defects required to be rectified by the Principal under the HAC Contract have been rectified, issue a draft Final Certificate stating that the Category 2 Works have been completed in accordance with the HAC Contract.
Other	
7	Any other Services incidental or necessary to discharge the Independent Certifier's obligations under the HAC Contract as specified in, or reasonably inferable from, the HAC Contract.

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10 Assumed Environmental Representative Services

The Environmental Representative must undertake the functions outlined in conditions A21 and A25 of the Planning Approval (a copy of the final conditions forms part of relevant Contracts).

In addition to the functions outlined in the Planning Approval, the Environmental Representative is to undertake the Assumed Environmental Representative Services for the purposes of the Planning Approval for the Project as set out in the table below:

Item	Function
1	Review and provide comment on environmental documentation prepared to meet the requirements of each Contract, the Planning Approval conditions, relevant environmental legislation, other relevant regulatory requirements and relevant standards
2	Monitor and report on the effective ongoing implementation of, and performance against, the environmental documentation referred to in paragraph (2), including compliance with the conditions of the Planning Approval and other relevant regulatory authorisations for the Project, using the TfNSW compliance monitoring system.
3	Carry out weekly physical inspections (surveillance) of the Site to verify compliance with environmental controls as documented in any Construction Environmental Management Plan, "Environmental Control Maps" and any other relevant Project Plans prepared pursuant to a Contract.
4	Maintain an action tracking register of issues raised during site inspections or other compliance reviews, and the dates for close out (in a format agreed with TfNSW).
5	Provide an inspection report (in a format agreed with TfNSW) and updated action tracking register to TfNSW and the relevant Contractor(s) within 24 hours of conducting an inspection.
6	Review and certify the "Environmental Control Maps" prior to their implementation.
7	Carry out regular, and as a minimum 6 monthly, compliance audits of each Contractor's performance against its Construction Environmental Management Plan.
8	Provide independent guidance and advice to TfNSW throughout construction in relation to key emerging environmental and compliance issues, Planning Approval conditions, relevant environmental legislation, other relevant regulatory requirements and relevant standards and best practice environmental management.
9	Monitor site environmental controls and management in relation to site environmental plans and discuss any identified issues with the Independent Certifier's construction surveillance team under each of the Contracts for inclusion in the Independent Certifier's construction issues register.
10	Review and certify revisions to the environmental management documentation as required.

11	Provide regular (i.e. every two months or more frequent when required) training sessions / tool box talks for each Contractor and associated subcontractors on key aspects of the Project (i.e. erosion and sediment control, groundwater management, noise and vibration mitigation etc).
12	Attend regular environmental management coordination meetings with TfNSW and the Contractor(s) to review environmental performance, upcoming activities and strategies to minimise adverse impacts and maximise beneficial opportunities.

11 Assumed Independent Arborist Services

The IC must commission an independent, experienced and suitably qualified arborist. The arborist must be suitably experienced and have a minimum AQF Level 5 qualification in Arboriculture.

The Independent Arborist must undertake the functions outlined in conditions A103, A104, A107 (in relation to consultation and endorsement of the justification for alternatives to the vegetation offset strategy) of the Planning Approval (a copy of the tender final conditions forms part of the relevant Contracts).

In addition to the functions outlined in the Planning Approval, the assumed Independent Arborist Services for the Project are to:

- (a) verify and certify that opportunities to avoid, minimise and manage impacts on trees arising from any Contractor's Activities have been undertaken in accordance with the requirements of the Planning Approval and TfNSW's Vegetation Offset Guide;
- (b) verify and certify any updates to the Tree Register produced under any Contract;
- (c) verify and certify the elements of each Contractor's Environmental Design Review Report relating to tree impacts and endorse the proposed level of impact and mitigation measures prior to the impact occurring;
- (d) oversee the interfacing between Project contractors on matters relating to tree impacts and ensuring a whole of project outcome is achieved;
- (e) endorse (along with the Environment Representative) that each Project contractor has demonstrated that it is not feasible or reasonable to retain a tree(s) that meet the following criteria:
 - large mature trees (refer to definition in Planning Approval); and
 - trees of medium or high retention value, as assessed under the IACA (2010) Significance of a Tree, Assessment Rating System (STARS).

12 Assumed Acoustic Advisor Services

The Acoustic Advisor must undertake the functions outlined in conditions A26 and A29 of the Planning Approval (a copy of the tender final conditions forms part of relevant Contracts).

In addition to the functions outlined in the Planning Approval:

- Review and provide comment on environmental documentation prepared to meet the requirements of each Contract, the Planning Approval conditions, relevant

environmental legislation, other relevant regulatory requirements and relevant standards in relation to noise and vibration.

- Monitor and report on the effective ongoing implementation of, and performance against, the conditions of the Planning Approval and other relevant regulatory authorisations for the Project, as relevant to noise and vibration.
- Provide independent guidance and advice to TfNSW throughout construction in relation to key emerging compliance issues relating to hours of work and construction noise and vibration.
- Attend regular environmental management coordination meetings with TfNSW and the Contractor(s) to review environmental performance, upcoming activities and strategies to minimise adverse impacts and maximise beneficial opportunities.
- Advise on the interface between each Contract, as relevant to noise and vibration during construction, such as overlap of activities and resultant impacts.

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Schedule 2 Insurances

1 Public liability

Coverage: The legal liabilities of the Independent Certifier, the Principal Parties and their employees and agents to third parties for bodily injury and property damage and resulting loss of use arising from the or in connection with the Services, the HAC Services and the RMS Services.

The policy must permit the making of claims both during and at any time after the expiration of the Insurance Term.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services, the HAC Services and the RMS Services.

Limit: A minimum of \$20 million for any one occurrence, (unlimited in any period of insurance) arising out of or in the course of or caused by the execution of the Services, the HAC Services and the RMS Services.

2 Professional indemnity

Coverage: The professional activities and duties of the Independent Certifier and its employees and agents in respect of the Services, the HAC Services and the RMS Services.

The policy must be on a project specific basis and insure the Independent Certifier in respect of claims that arise only out of the performance of the Services, the HAC Services and the RMS Services. The Independent Certifier must not be insured under the policy in respect of any other project or services.

The policy must permit the making of claims both during and at any time after the expiration of the Insurance Term.

Insurance Term: From the date of this Deed until the seventh anniversary of the last Contract to achieve final completion (as set out in that Contract).

Limit: A minimum of \$50 million for any one occurrence and in the aggregate subject to an automatic reinstatement.

3 Workers' compensation insurance

Coverage: A suitable policy against any liability, loss, claim, demand, suit or proceeding, Costs and expenses arising at common law or under any statute (including the Workers Compensation Act 1987 (NSW)) or other legislative provision relating to workers compensation, as a result of personal injury or death of any person employed or taken to be employed by the Independent Certifier.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services, the HAC Services and the RMS Services.

4 Other insurances

Such other insurances as may be reasonably required by the Principal Parties from time to time which are obtainable with a reasonable premium (having regard to the nature of the risk to be insured against) including, without limitation, motor vehicle insurance covering third party property damage for all vehicles for a minimum of \$20 million for any one occurrence.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services, the HAC Services and the RMS Services.

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Schedule 3 Payment Schedule

1 Fee allocation

Subject to the terms of this Deed and each applicable Contract Deed, the Lump Sum Fee payable by TfNSW to the Independent Certifier will be apportioned as set out in the table below:

[Note to Tenderers: Amounts to be inserted from successful Tender.]

	Contract Deed	Fee	Project services	Amount
(1)	Remediation Contract Deed	Remediation Contract Fee (Schedule of rates)	Assumed Remediation Contract Services	\$(#)
(2)	Remediation or SOM Contract Deed as directed by TfNSW	Stage 2 Remediation Works Fee (Lump Sum Fee)	Assumed Stage 2 Remediation Works Services	\$(#)
(3)	Enabling Works Contract Deed	Enabling Works Contract Fee (Lump Sum Fee and Schedule of rates)	Assumed Enabling Works Contract Services To the extent applicable to the Enabling Works: <ul style="list-style-type: none"> • Assumed CoPC Contract Services • Assumed RMS Services 	\$(#)
(4)	Infrastructure Contract Deed	Infrastructure Contract Fee (Lump Sum Fee and Schedule of rates)	Assumed Infrastructure Contract Services To the extent applicable to the Infrastructure Works: <ul style="list-style-type: none"> • Assumed CoPC Contract Services • Assumed RMS Services • Assumed UrbanGrowth Contract Services • Assumed HAC Services 	\$(#)

	Contract Deed	Fee	Project services	Amount
(5)	SOM Contract Deed	SOM Contract Fee	Assumed SOM Contract Services To the extent applicable to the SOM Works: <ul style="list-style-type: none"> Assumed CoPC Contract Services Assumed RMS Services Assumed UrbanGrowth Contract Services 	\$(#)
(6)	CoPC Contract Deed	Included as part of other Contract Fees	Assumed CoPC Contract Services	Nil
(7)	UrbanGrowth Contract Deed	Included as part of other Contract Fees	Assumed UrbanGrowth Contract Services	Nil
(8)	RMS Deed Poll	Included as part of other Contract Fees	Assumed RMS Services	Nil
(9)	Umbrella IC Deed	Environmental Representative Fee	Assumed Environmental Representative Services	\$(#)
(10)	Umbrella IC Deed	Independent Arborist Fee	Assumed Independent Arborist Services	\$(#)
(11)	Umbrella IC Deed	Acoustic Advisor Fee	Assumed Acoustic Advisor Services	\$(#)
Lump Sum Fee				\$(#)

The Lump Sum Fee is not subject to rise and fall and is payable for the performance of the Assumed Services and the Independent Certifier's other obligations under this Deed, as may be adjusted under this Deed or any Contract Deed.

The Lump Sum Fee does not include payment for the performance of any services directed by TfNSW where it is expressly stated in this Payment Schedule that those Services will be paid for on a Schedule of Rates basis (in which case the rates in this Schedule 3 will apply).

2 Monthly payment schedule

The Independent Certifier is not entitled to payment or to make a claim for payment to the extent that any Services, Environmental Representative Services, Acoustic Advisor Services or Independent Arborist Services have not been carried out for the month in question.

Subject to paragraphs 3 and 4 of this Payment Schedule, the indicative monthly payment to be made is set out in the following table:

Month	Contract Fee (1)	Contract Fee (2)	Contract Fee (3)	Contract Fee (4)	Contract Fee (5)	ER Contract Fee (9)	IA Contract Fee (10)	Maximum Fee
1								

Month	Contract Fee (1)	Contract Fee (2)	Contract Fee (3)	Contract Fee (4)	Contract Fee (5)	ER Contract Fee (9)	IA Contract Fee (10)	Maximum Fee
2								
3								

[Note: To be inserted from successful Tender]

3 Adjustments to the Lump Sum Fee

Adjustments may be made to the amounts payable in paragraphs 1 and 2 of this Payment Schedule by TfNSW in accordance with the appropriate rates set out in the schedule of rates in paragraph 4 below in circumstances where clause 3.3 or clause 5 of this Deed apply.

4 Schedule of rates

The Independent Certifier is entitled to include in a payment claim the cost of performing any Variable Services as described below which are the subject of a written direction by TfNSW.

Variable Services will be valued by the TfNSW Representative using the applicable rates in the schedule of rates table below.

Item	Variable Services	Contract
Remediation Works Services		
1	All Remediation Works Services as directed by TfNSW under the Remediation Contract Deed.	
Enabling Works Contract Services		
2	All Post-Completion Phase Services	
Infrastructure Contract Services		
3	All Post-Completion Phase Services	
4	All Issue Resolution Services after the last Date for Portion Completion.	
SOM Contract Services		
5	All Post-Completion Phase Services	
6	All Issue Resolution Services after the Date for First Passenger Service.	
Other		
7	<i>[As may be agreed with the successful Tenderer]</i>	

The rates contain allowances for the provision of all labour, materials, work, telecommunications, disbursements (other than as described in and payable under paragraph 3) and other costs necessary for and arising out of or in connection with any

services for which the Independent Certifier is to be paid on a schedule of rates basis under this Deed.

In order to avoid any double up of payment, the Independent Certifier may not make a payment claim for the performance of Services on a schedule of rates basis to the extent that the IC personnel whose Services are the basis of such claim are covered by the payment of either rates or a lump sum for the performance of other services.

The rates will be increased every 12 months with the first adjustment to occur on the date which is 12 months after the date of this Deed. On each occasion on which the rates are to be adjusted the rates will be increased by [#]%

[Note to Tenderers: Percentage to be inserted from successful Tender.]

When claiming payment for any Services for which the Independent Certifier is to be paid on a schedule of rates basis the Independent Certifier must provide details of the time expended by the Independent Certifier in performing the Services for which the Independent Certifier is entitled to be paid on a schedule of rates basis together with such further evidence as may be requested by TfNSW

Role	Nominated Personnel	Additional Personnel	Hourly Rate \$ (excl GST)	Daily Rate \$ (excl GST)
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[Note: To be inserted from successful Tender]

5 Payment claims

- (a) At the end of each month after the date of this Deed, the Independent Certifier must submit to TfNSW a payment claim on account of the Lump Sum Fee and any Variable Services:
- (i) setting out the value of the Services, Environmental Representative Services, Acoustic Advisor Services and Independent Arborist Services performed in accordance with this Deed and each Contract Deed during the relevant month;
 - (ii) calculated in accordance with this Payment Schedule; and
 - (iii) in such form and with such details and supporting documentation as TfNSW may reasonably require, broken down for this Deed and each Contract Deed, including:
 - (A) a list or schedule of design and construction surveillance, monitoring and audits undertaken by the Independent Certifier during the reporting period, including:
 - (aa) the visits made by the Independent Certifier to the site and elsewhere in connection with the Project; and
 - (ab) any attendance at tests;
 - (B) a comprehensive schedule of the status of all correspondence and documentation exchanged between the Independent Certifier and the Principal Parties;

- (C) details of any Defects (as that term is defined under the Contract) raised by the Independent Certifier or TfNSW and details of the rectification of Defects, and
- (D) details of the current version of the Certification and Monitoring Plan and a summary of any amendments, updates and developments to the Certification and Monitoring Plan during the reporting period.

(b) Each account for payment submitted by the Independent Certifier must be accompanied by an executed Subcontractor's Statement and Supporting Statement in the form set out at paragraph 11 of this Payment Schedule.

6 Payment and notification of disputed amounts

- (a) The parties agree that TfNSW will pay 100% of the Lump Sum Fee and any Variable Services.
- (b) Subject to paragraph 7 of this Payment Schedule, TfNSW must, within 15 Business Days after receipt of the account for the month (submitted in accordance with paragraph 5, pay the Independent Certifier any portion of the Contract Fee attributable to the Services performed during the month which is not disputed.
- (c) If TfNSW disagrees with an amount included in an account submitted by the Independent Certifier then, within 10 Business Days of receipt of the Independent Certifier's account, TfNSW must notify the Independent Certifier in writing of the reasons for any amount which is disputed.
- (d) If the parties do not resolve the matter within 10 Business Days after the issue of TfNSW's written notice, TfNSW's Representative (acting reasonably and independently) must determine the dispute. Any determination by TfNSW's Representative in respect of the amount payable must be given effect to by the parties unless and until it is reversed or overturned in any subsequent court proceedings.

7 GST

All lump sums, rates and amounts in this Payment Schedule exclude GST.

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Schedule 4 Minimum Resources, Key Personnel and Surveillance Levels

1 Minimum resources commitment

The Independent Certifier acknowledges and agrees that the minimum levels of resources, including man-days, set out in this Schedule 4 (Minimum Resources, Key Personnel and Surveillance Levels) are minimum requirements only and do not in any way limit or otherwise affect the obligations of the Independent Certifier to perform the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services in accordance with the Umbrella Deed or the Contract Deeds.

In this Schedule 4, a reference to "days" excludes public holidays and includes only those days which are stated in the Contracts as working days.

1.1 Remediation Contract Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below, to perform the relevant aspects of the Remediation Contract Services:

Role/Position	Name	Minimum Attendance (in man-days) and Location

Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.2 Stage 2 Remediation Works Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below, to perform the Stage 2 Remediation Works Services if directed by TfNSW:

Role/Position	Name	Minimum Attendance (in man-days) and Location

Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.3 Enabling Works Contract Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below, to perform the Enabling Works Contract Services (including the CoPC Contract Services and RMS Services to the extent applicable to the Enabling Works)

Role/Position	Name	Minimum Attendance (in man-days) and Location

Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.4 Infrastructure Contract Services

The Independent Certifier must provide the following personnel, as a minimum in the roles/positions for the durations and at the locations set out below, to perform the relevant aspects of the Infrastructure Contract Services (including the CoPC Contract Services, RMS Services, UrbanGrowth Services and HAC Services to the extent applicable to the Infrastructure Works).

Role/Position	Name	Minimum Attendance (in man-days) and Location

Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.5 SOM Contract Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below to perform the relevant aspects of the SOM Contract Services (including the CoPC Contract Services, RMS Services and UrbanGrowth Services to the extent applicable to the SOM Works).

Role/Position	Name	Minimum attendance (in man-days) and Location

Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.6 Environmental Representative Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below to perform the Environmental Representative Services:

Role/Position	Name	Minimum attendance (in man-days) and Location
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Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

Whilst it is the Independent Certifier's responsibility to appropriately resource the Environmental Representative Services, the start-up phase of each Contract is considered to be the most resource intensive period. Therefore, it is suggested that multiple resources would be required particularly during this start-up phase.

1.7 Independent Arborist Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below to perform the Independent Arborist Services:

Role/Position	Name	Minimum attendance (in man-days) and Location
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Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

1.8 Acoustic Advisor Services

The Independent Certifier must provide the following personnel, as a minimum, in the roles/positions for the durations and at the locations set out below to perform the Acoustic Advisor Services:

Role/Position	Name	Minimum attendance (in man-days) and Location
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Note: In the table above, full time means a minimum of [#] hours per day Monday to Friday and a minimum of [#] hours on Saturday.

2 Minimum ability, knowledge, skill, expertise and experience of Independent Certifier's Key Personnel

2.1 General

- (a) The Independent Certifier's must provide at least two Key Personnel at all times that have a demonstrated understanding of and experience with the Authorised Engineering Organisation (AEO) framework administered by the Asset Standards Authority (ASA) within TNSW.

2.2 Independent Certifier's project director

- (a) The Independent Certifier's project director must possess a recognised qualification relevant to the position and the Services and have extensive experience in the project certification of large projects similar to PLR Stage 1.
- (b) The Independent Certifier's project director must at all times have authority to act on behalf of the Independent Certifier in respect of the Services.

[Note: To be updated to reflect other key personnel once agreed.]

3 Minimum surveillance commitment

The Independent Certifier acknowledges and agrees that the minimum surveillance levels set out in this Schedule 4 ("Minimum Resources, Key Personnel and Surveillance Levels") are minimum requirements only and do not in any way limit or otherwise affect the obligations of the Independent Certifier to perform the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services in accordance with this Deed.

Notwithstanding the minimum surveillance requirements specified in this Schedule 4, the Independent Certifier must carry out all surveillance activities considered necessary by the Independent Certifier to be able to issue the certificates required by the Contracts.

The Independent Certifier must carry out, as a minimum, the following surveillance activities at the frequencies set out below:

Surveillance Activity	Minimum Frequency
Third Party Works and property adjustment works Modification to existing and establishment of new works: <ul style="list-style-type: none">• Roadworks• Pedestrian areas• Stormwater infrastructure• Interfaces with Utility Services• Street Furniture• Street Lighting• Landscaping• Paths• Signage, wayfinding and linemarking	Weekly

Surveillance Activity	Minimum Frequency
<p>Stops, Precinct and Public Domain and Architectural Building Works</p> <p>Finishes, fixtures, fittings and material for each Stop and public domain area including:</p> <ul style="list-style-type: none"> • Pavements and footpaths • Street furniture • Shelters • Landscaping • Finishes, fixtures, fittings and material for each Stop. 	<p>Upon completion</p>
<p>Trackwork</p> <ul style="list-style-type: none"> • Installation of track including <ul style="list-style-type: none"> ○ Track fastening system ○ Turnouts ○ Trackform • Non-destructive testing of track • No destructive testing of welds 	<p>Each test</p>
<p>Civil and structural works</p> <p>Structural works</p> <p>Civil works including:</p> <ul style="list-style-type: none"> • Earthworks • Retaining Walls • Roadworks • Drainage works and drainage systems <p>Site Contamination remediation</p>	<p>Twice weekly</p> <p>Twice weekly</p> <p>Twice weekly</p>

Surveillance Activity	Minimum Frequency
<p>Rolling Stock</p> <ul style="list-style-type: none"> • Static testing including: <ul style="list-style-type: none"> - Detrainment - LRV control - Fire system - Torsional stiffness - Static wheel loading - Waterproofing - Bogie rotation - Static interior and exterior noise - Climatic testing • Dynamic testing • Integrated Factory Acceptance Tests for LRVs, signalling and control systems 	<p>Each test event</p>
<p>Maintenance and Stabling Facilities</p> <ul style="list-style-type: none"> • Maintenance facility • Servicing tracks • Component exchange facility • Automatic train wash • Automatic wheel monitoring • Power supply • Vehicle access, internal roads, car parking and stormwater drainage • Permanent Utility Services connections • Administration building • Fire systems • Landscaping • Security and outdoor lighting 	<p>Every other day, or as defined for Hold and Witness Points</p>

Surveillance Activity	Minimum Frequency
Operation Control Centre <ul style="list-style-type: none"> • Management and control facilities • Administration offices and data storage rooms • Equipment rooms • Security • Staff amenities including toilets, kitchens and break out areas • Furniture, fixtures and fittings 	Twice Weekly
Utility Services Treatments Monitor all works affecting Utility Services	Twice Weekly
Testing and Commissioning <ul style="list-style-type: none"> • First article inspection tests of defined unproven items • Type tests of defined unproven items • Factory inspection tests of define unproven items • Integrated factory acceptance tests for LRVs, signalling and control systems • PLR site tests • PLR railway initial performance test • Trial running of PLR • Permanent Light Rail Corridor Tests • System performance Test • Capacity performance Test • Final Performance Test 	Each test event
Signalling and Movement Control Systems <ul style="list-style-type: none"> • Civil Works and hardware installation • Cable and major equipment installation • Major equipment and systems testing • Major systems commissioning 	Weekly As required Each test event Each test event

Surveillance Activity	Minimum Frequency
Earthing and Bonding, Electrolysis and EMC <ul style="list-style-type: none"> • Earthing and bonding installations • Final Earthing and Bonding testing • Base line electrolysis model • Electrolysis mitigations/installations • Final Electrolysis verification/testing • Base line EMC model • EMC mitigations/installations • Final EMC verification 	Weekly Each test event Each test event Weekly Each test event Each test event Weekly Each test event
Communications Systems and Passenger Information <ul style="list-style-type: none"> • Cable and major equipment installation • PLR connections into other parties' networks/systems • Major equipment and systems testing • Major systems commissioning 	Twice Weekly Each event Each test event Each test event
Ticketing System <ul style="list-style-type: none"> • Civil and cabling works for power supply to ETS equipment at stations • Secure storage for rotables and consumables • Storage and charging of portable card readers • Civil works for ETS equipment • Data communications infrastructure 	Weekly
Low Voltage Distribution and Building Services <ul style="list-style-type: none"> • Switchboards and distribution boards • Electrical works • UPS and facilities • Cable installation 	Weekly

Surveillance Activity	Minimum Frequency
<p>High Voltage Supply and Reticulation</p> <ul style="list-style-type: none"> • Bulk power supply equipment and cables including protection and control equipment • HV reticulation equipment and cables including protection and control equipment • SCADA and communications equipment • Auxiliary systems and backup power supply • Lighting and surge protection equipment • Harmonic suppression and filtering • Isolation and earthing equipment 	<p>Twice weekly, or as otherwise defined by Hold and Witness Points</p>
<p>Traction Power, Electrification Systems and Control (SPR Appendix 29)</p> <ul style="list-style-type: none"> • Traction power supply equipment and cables, including Traction return, rectification, protection and control equipment • Overhead wiring systems • SCADA and communications equipment for operational control and monitoring by a Power Control System (PCS) • Auxiliary systems and backup power supply for operations critical and safety service components including protection, control and monitoring devices • Lightning and surge protection equipment • Harmonic suppression and filtering • Rail voltage limiting devices • Isolation and earthing equipment 	<p>Twice weekly, or as otherwise defined by Hold and Witness Points</p>

Surveillance Activity	Minimum Frequency
<p>Hydraulic Systems</p> <ul style="list-style-type: none"> <li>• Water services systems <li>• Potable domestic cold water <li>• Potable domestic heated water <li>• Recycled non-potable cold water, where external supply is available <li>• Drainage systems <li>• Sewer drainage, including tradewaste management <li>• Rainwater capture and drainage <li>• Tunnel drainage of all tunnel water inflows, including seepage water <li>• Associated equipment and system component supports, connections, discharge points, risers, civil and structural works, and acoustic treatments <li>• Respective power supply, control, and monitoring systems and interfaces <li>• Respective fire separation, fire stopping, fire proofing, and fire system interfaces 	<p>Twice Weekly</p>

Surveillance Activity	Minimum Frequency
<p>Environmental Observation</p> <ul style="list-style-type: none"> • Observe the implementation of physical environmental controls, in accordance with Contractors' Construction Environmental Management Plans and sub-plans, including: <ul style="list-style-type: none"> - noise and vibration; - air quality; - mud, dirt and debris on roadways; - water quality; - contamination; - property accesses; - temporary pedestrian pathways and cycleways; - working within the approved hours; - spoil stockpiling and disposal; - waste management and disposal; - heritage management; - landscape maintenance; and - report to TfNSW and relevant Contractors. 	<p>Daily</p>

Surveillance Activity	Minimum Frequency
<p>Traffic and Transport Surveillance</p> <ul style="list-style-type: none"> • Monitor the traffic and transport management and control provisions for compliance with the relevant Project Plans, compliance with road occupancy licences and compliance with property access provisions including: <ul style="list-style-type: none"> - layouts for compliance with approved Traffic and Transport Management Plans and control plans, including sign maintenance and delineation; - provisions for cyclists, pedestrians, disabled persons, public transport passengers, public transport operators and road traffic; - timing and duration of road occupancies; - qualifications of traffic control personnel; and - truck haulage routes off the Construction Site 	Daily
<p>Work Health and Safety Observation</p> <ul style="list-style-type: none"> • In conjunction with provision of the other Services, advise Contractors of issues that the Independent Certifier becomes aware of which may affect the safety of persons or property. 	As required
<p>Quality Management Surveillance</p> <ul style="list-style-type: none"> • Inspect Contractors' Activities for compliance with the requirements of the Project Deed. • Inspect circumstances where significant non-conformances are or will be reported. • Check compliance with the Project Plans, process control plans and work processes. • Check implementation of inspection and test plans, including: <ul style="list-style-type: none"> - testing frequencies; - test methods; - test result verifications; and - release of Hold Points. 	<p>Weekly</p> <p>Each occurrence</p> <p>Each method statement</p> <p>} Weekly</p> <p>All Hold Points</p> <p>All Hold Points</p>

Surveillance Activity	Minimum Frequency
<ul style="list-style-type: none"> Monitor the rectification of non-conforming product or work. 	All rectifications
Construction Surveillance	
<ul style="list-style-type: none"> Monitor the Contractors' obligations to inform the local community of planned investigations and construction operations and changes that affect properties, residences and businesses. 	Weekly
<ul style="list-style-type: none"> Check that the Project Works and Temporary Works are being constructed using Design Documentation in compliance with the Project Deed. 	Weekly
<ul style="list-style-type: none"> Check that durability requirements of the PLR works are being addressed and applied; 	Weekly
<ul style="list-style-type: none"> Witness construction trials and commissioning tests, including: <ul style="list-style-type: none"> – use of any materials, plant and equipment that differs from accepted industry standards; – concrete including in-situ concrete and precast elements; – water collection, treatment and discharge systems; and – Utility Service diversions. 	Each trial and test
<ul style="list-style-type: none"> Record photographically and catalogue general and detailed work in progress. 	20 digital photographs/day of work areas
<ul style="list-style-type: none"> Witness the construction of the PLR works and Temporary Works including: <ul style="list-style-type: none"> – provisions to access, secure, support and hand over the Third Party Works, Property Adjustment Works, Utility Services works and any unknown works; – Utility Service diversions; and – adjustments to or demolition of existing infrastructure and buildings. 	Twice Weekly
Quality Product Surveillance Monitoring	
<ul style="list-style-type: none"> Monitor structure foundation and subgrade preparation and treatments. 	Initial preparation and treatment

Surveillance Activity	Minimum Frequency
<ul style="list-style-type: none"> • Monitor compaction of earthworks and spoil. 	Weekly
<ul style="list-style-type: none"> • Monitor manufacture of off-site elements. 	Weekly
<ul style="list-style-type: none"> • Monitor concreting and associated works, including: <ul style="list-style-type: none"> – preparation; – formwork; – bracing; – reinforcement; – placing; – stressing; – finishing; – curing; and – stripping formwork 	Initial activity and weekly thereafter
<ul style="list-style-type: none"> • Sprayed concrete, including: <ul style="list-style-type: none"> – batching and mixing; – application; – depth control; – curing; – production tests; – monitor steel fabrication; and – reviews of welding procedures. 	Initial activity and weekly thereafter
<ul style="list-style-type: none"> • Monitoring of the fabrication and welding processes for major members (off-site). 	Initial activity and weekly thereafter
<ul style="list-style-type: none"> • Monitor protective treatment systems (off-site). 	Weekly
<ul style="list-style-type: none"> • Monitor equipment monitors of construction impacts including: <ul style="list-style-type: none"> – audit of measurements – audits of equipment; and – review of results. 	Initial activity and weekly thereafter

Parramatta Light Rail Umbrella Independent Certifier Deed

Schedule 5 Requirements for Certification and Monitoring Plan

The Certification and Monitoring Plan must, as a minimum, address and detail:

- (a) the detailed schedule of functions, obligations, duties and services which the Contracts contemplate will be discharged by the Independent Certifier;
- (b) the detailed functions, obligations, duties and services which will be discharged by the Environmental Representative, Acoustic Advisor and Independent Arborist;
- (c) the management team structures, positions, nominated personnel and subcontractors to be engaged on and off the site for the Project and the roles and tasks of the nominated personnel and subcontractors;
- (d) the minimum skill, expertise and experience levels of each position and details of personnel resource levels;
- (e) the Independent Certifier's internal and external lines of authority, communication and reporting, including those with the parties to the Contracts;
- (f) the identification of delegated authorities of the Independent Certifier's personnel, including identification of personnel with delegated authority to execute certificates on behalf of the Independent Certifier;
- (g) all compliance records to be maintained;
- (h) the proposed timing of progressive performance of discrete elements of the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services, including the timing for conducting reviews, audits of Design Documentation and other aspects of the Project;
- (i) the Independent Certifier's comprehensive plans for:
 - (i) continual observation, monitoring, auditing, reviewing, assessment and testing of the Project;
 - (ii) without limiting sub-paragraph (i), observation, monitoring, auditing, reviewing, assessment and testing of the quality and durability of the physical works to determine, verify and ensure compliance with the Contracts;
 - (iii) audit and surveillance, including identification of resources, methodology, scope, levels of surveillance, inspection, testing and survey; and
 - (iv) off-site surveillance of critical activities.
- (j) the Independent Certifier's strategies, processes, methodologies and procedures for:

- (i) reviewing the plans and progress of the Project;
 - (ii) addressing environmental monitoring and protection;
 - (iii) audit, surveillance and monitoring of design and construction activities for the Works, including the processes used for determining the levels and scope of surveillance of activities;
 - (iv) identifying and managing the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services to be subcontracted, including quality, reporting and communication aspects of the Services, the Environmental Representative Services, Acoustic Advisor Services and the Independent Arborist Services;
 - (v) ensuring that the contractors for the Works have addressed all issues of review, comment and consultation with TfNSW in respect of the Design Documentation and the Works; and
 - (vi) risk management of the work covered by sub-paragraphs (ii), (iii) and (iv) above;
- (k) the Independent Certifier's strategies, systems, procedures, processes, methodologies and reporting protocols to be applied whereby all certificates and determinations required as part of the Works will be achieved and satisfied; and
- (l) the Independent Certifier's proposed standards including:
- (i) committed surveillance activities; and
 - (ii) committed surveillance resources.

Parramatta Light Rail Umbrella Independent Certifier Deed

Signing page

EXECUTED as a deed

Signing page

DATED: _____

EXECUTED by **TRANSPORT FOR NSW (ABN 18 804 239 602)** by its authorised delegate in the presence of:

.....
Signature of witness

.....
Name of witness (block letters)

.....
Signature of secretary/other director

Executed as a deed in accordance with section 127 of the *Corporations Act 2001* by [***** Limited]:

Director Signature

Print Name

Director/Secretary Signature

Print Name

DATED: _____

DRAFT

Exhibit A – Draft Remediation Contract Deed

DRAFT

Exhibit B – Draft Enabling Works Contract Deed

DRAFT

Exhibit C – Draft SOM Contract Deed

DRAFT

Exhibit D – Draft Infrastructure Contract Deed

DRAFT

Exhibit E – Draft CoPC Contract Deed

DRAFT

Exhibit F – Draft Urban Growth Contract Deed

DRAFT

Parramatta Light Rail Umbrella Independent Certifier Deed

Exhibit G – Draft RMS Deed Poll



Transport
for NSW

IC ITT VERSION: 23/3/2018
Post-tender mark-up 15/6/2018

PLR Stage 1

Independent Certifier Contract Deed for [#] Contract

Dated

Contract Number: ISD-YY-XXXX

PARRAMATTA LIGHT RAIL
PLR STAGE 1

Transport for NSW (ABN 18 804 239 602) ("TfNSW")

[insert] Pty Ltd (ABN XXX) ("Independent Certifier")

[insert] Pty Ltd (ABN XXX) ("Other Party")

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Independent Certifier Contract Deed for [#] Contract Details

Parties	TfNSW	
TfNSW	Name	Transport for NSW
	ABN	18 804 239 602
	Formed in	Australia
	Address	Level 10, 130 George Street Parramatta NSW 2150
	Email	[insert details]
	Attention	[insert details]
	Independent Certifier	Name
	ABN	[##]
	Formed in	[##]
	Address	[##]
	Email	[##]
	Attention	[##]
Other Party	Name	[##]
	ABN	[##]
	Formed in	[##]
	Address	[##]
	Email	[##]
	Attention	[##]
Governing law	New South Wales	
Representatives	[##]	
Term		
Liability Cap	[##]	

**Aggregate
Liability Cap**

[##]

**Business Day
place(s)**

Sydney

Preamble

- A** TfNSW and the Independent Certifier have entered into the Umbrella IC Deed.
- B** TfNSW and the Other Party have entered into the Contract.
- C** The Umbrella IC Deed and the Contract provide for certain functions to be carried out by the Independent Certifier.
- D** By this Deed, TfNSW, the Independent Certifier and the Other Party set out their rights and obligations in relation to the performance of the Independent Certifier of the Services in connection with the Contract.

Independent Certifier Contract Deed for [#] Contract

General terms

1 Interpretation

Authority includes any governmental or semi-governmental or local government authority, administrative or judicial body or tribunal, department, commission, public authority, agency, Minister, statutory corporation or instrumentality (and includes ASA), and any private electricity, telecommunications, gas or other utility company having statutory rights in relation to the PLR Stage 1.

Authority Approval means any licence, permit, consent, approval, determination, exemption, certificate, memorandum of understanding, notification or permission from any Authority or under any Law, or any requirement made under any Law, which must be obtained or satisfied (as the case may be) to carry out the Services.

Best Industry Practice means (subject to any express provisions of this Deed which impose higher standards) the practices which are adopted by consultants with respect to services similar to the Services and which, with respect to any purpose to which the performance of the Services is directed, may be expected, in the exercise of that expertise, to accomplish that purpose in a manner consistent with recognised professional standards.

Business Day means a day on which banks are open for general banking business, not being a Saturday, Sunday or public holiday in Sydney or 24, 27, 28, 29, 30 or 31 December or 2 January.

Certification and Monitoring Plan means the plan to be developed and implemented in accordance with Schedule 4.

Claim means any claim, action, demand or proceeding for the payment of money (including damages), for an extension of time or for any other form of relief:

- (a) under or arising out of, or in any way in connection with, this Deed or a Contract;
- (b) arising out of, or in any way in connection with, the Services or any party's conduct prior to the date of this Deed; or
- (c) otherwise at Law including:
 - (i) under or for breach of any statute;
 - (ii) in tort for negligence or otherwise, including negligent misrepresentation; or
 - (iii) for restitution, including restitution based on unjust enrichment.

Consequential or Indirect Loss means:

- (a) any Loss that does not flow directly and naturally from the relevant breach of this Deed or a duty of care; and
- (b) any loss of income, loss of revenue, loss of profit, loss of financial opportunity, loss of business or loss of business opportunity, loss of

contract (other than this Deed), loss of goodwill, loss of use, loss of production or failure to realise anticipated savings (whether the loss is direct or indirect).

Contract means the deed entered into by TfNSW and the Other Party dated [###] in relation to [insert details].

Contract Deed has the meaning given in the Umbrella IC Deed.

Contract Fee means the fee specified in Schedule 2.

Deed means this document and its schedules.

Design Documentation means the designs, drawings, specifications and other design materials produced pursuant to the Contract and any other Project Contract (as applicable).

Details means the details set out on page one of this Deed.

Environmental Representative Fee means the fee to be paid in respect of the Environmental Representative Services as specified in Schedule 2.

Environmental Representative Services means the services described in Schedule 1, as amended by the Contract.

HAC means the Health Administration Commission.

Independent Certifier Default means an event so described in clause 12.1(a).

Insolvency Event means when:

- (a) one party informs the other party in writing, or its creditors generally, that the party is insolvent or is unable to proceed with its Services under this Deed for financial reasons;
- (b) in relation to an individual, the individual (being a party) commits an act of bankruptcy, a bankruptcy petition is presented against the individual, or the individual is made bankrupt;
- (c) execution is levied against a party by a creditor, debenture holders or trustees or under a floating charge; or
- (d) in relation to a corporation any one of the following:
 - (i) notice is given of a meeting of creditors with a view to the corporation entering into a deed of company arrangement or scheme of arrangement (other than a solvent scheme of arrangement);
 - (ii) the corporation enters a deed of company arrangement or scheme of arrangement (other than a solvent scheme of arrangement) or composition with creditors;
 - (iii) an application is made for, a resolution is passed by the directors for the appointment of, or an order is made for, a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator to be appointed to the corporation;
 - (iv) a controller, administrator, receiver, receiver and manager, provisional liquidator or liquidator is appointed to the corporation;

- (v) an application is made to a court for the sequestration or winding up of the corporation and not stayed, dismissed or discontinued within 21 days;
- (vi) a sequestration order or winding up order is made in respect of the corporation;
- (vii) the corporation resolves by special resolution that it be wound up voluntarily (other than for a members' voluntary winding-up), or a meeting of creditors of a party under administration or a deed of company arrangement resolves that the corporation be wound up;
- (viii) a mortgagee of any property of the corporation takes possession of that property; or
- (ix) the corporation ceases, suspends or threatens to cease or suspend the conduct of all or a substantial part of its business, or disposes or threatens to dispose of all or a substantial part of its assets.

Insurances means the insurances specified in Schedule 3 required to be effected and maintained under clause 10.

Key Individual means the person employed by the Independent Certifier that is to make and issue the decisions, certifications and determinations required as part of the exercise of its Services, as specified in Schedule 7.

Law means:

- (a) Commonwealth, New South Wales or local government legislation, including ordinances, instruments, codes of practice, policy and statutory guidance (but excluding the Building Code of Australia, any other building codes, or Standards Australia codes), requirements, regulations, by-laws and other subordinate legislation;
- (b) principles of law or equity established by decisions of courts; and
- (c) Authority Approvals (including any condition or requirement under them).

Liability includes any liability of any kind whether for debt, cost (including legal costs, deductibles or increased premiums), expense, loss, damage, compensation or charge and whether:

- (a) liquidated or not;
- (b) arising from or in connection with any obligation (whether as a principal obligation, a surety or an indemnity);
- (c) legal or equitable, and whether arising under or for breach of contract, in tort (including negligence), restitution or at Law;
- (d) present, prospective or contingent; or
- (e) owed, incurred or imposed by or to or on account of or for the account of any person alone or severally or jointly with another or others.

Loss means:

- (a) any cost, expense, loss, damage, liability or other amount; and

- (b) without being limited by paragraph (a) and only to the extent not prohibited by law, any fine or penalty,

whether direct, indirect, consequential, present, future, fixed, unascertained, actual or contingent and, for the avoidance of doubt, includes Consequential or Indirect Loss.

Payment Schedule means Schedule 2.

PLR Stage 1 means the 12km light rail system from Westmead to Carlingford via Parramatta CBD and Camellia, including all track, catenary, systems, stops, and the maintenance yard.

Principal Parties means TfNSW and the Other Party.

Project Contracts means the various contracts that will be entered into by TfNSW for the delivery of the Project, being primarily those referred to in the Umbrella IC Deed.

Project Data Collaboration System (PDCS) means the web based project data and collaboration system to be used by the Principal Parties in connection with the Project, as notified by the Principal, from time to time.

Replacement Certifier means the successor of the Independent Certifier.

Representatives means the persons specified in the Details as replaced from time to time pursuant to this Deed.

RMS means the Roads and Maritime Service.

Services means the services set out in Schedule 1.

Term means the period specified in the Details.

Umbrella IC Deed means the deed entered into by TfNSW and the Independent Certifier, which is set out in Schedule 5.

Variable Services means services described in Schedule 2 as may be directed by TfNSW.

2 Services

2.1 Standard

- (a) The Independent Certifier must perform the Services during the Term.
- (b) The Independent Certifier warrants that it has the resources and expertise to perform the Services.
- (c) In performing the Services, the Independent Certifier must:
- (i) comply with this Deed;
 - (ii) comply with all Laws;
 - (iii) apply Best Industry Practice; and
 - (iv) perform all its Services;

- (A) independently;
- (B) within the times specified in this Deed, and if no time is specified, promptly and with all due expedition;
- (C) in a manner which will not delay or disrupt the Principal Parties; and
- (D) in accordance with the requirements of the Contract.

2.2 Variations

- (a) TfNSW may from time to time give the Independent Certifier a notice that:
 - (i) changes the Services;
 - (ii) deletes any Services;
 - (iii) adds new Services; and/or
 - (iv) changes the Term.
- (b) If directed by TfNSW, the Independent Certifier must provide a detailed proposal in relation to the pricing, timing and resources impacts of a notice that TfNSW is contemplating giving under clause 2.2(a), together with any other information reasonably required by TfNSW within the time reasonably directed by TfNSW.
- (c) The Independent Certifier must comply with any notice given under clause 2.2(a).
- (d) If TfNSW issues a notice under clause 2.2(a), then:
 - (i) TfNSW and the Independent Certifier will seek to agree any required amendments to the Contract Fee and timing requirements; and
 - (ii) failing agreement, the adjustment to the Contract Fee and timing requirements will be determined by the TfNSW Representative:
 - (A) in relation to pricing:
 - (aa) by applying the rates and prices in this Deed; and
 - (ab) in the absence of any applicable rates and prices, on the basis of reasonable rates and prices; and
 - (B) in relation to timing requirements, acting reasonably.
- (e) If the Independent Certifier considers that the TfNSW Representative has not acted reasonably as required by this clause:
 - (i) the Independent Certifier must continue to perform the Services;
 - (ii) the Independent Certifier may refer the TfNSW's Representative's determination to dispute under clause 19; and

- (iii) if it is determined that the TfNSW Representative has not acted reasonably then the TfNSW Representative must re-consider its determination acting reasonably.
- (f) If TfNSW gives the Independent Certifier a notice under clause 2.2(a)(ii) then TfNSW may have the deleted Services undertaken by others.
- (g) If the Independent Certifier considers that any direction or other circumstance changes the Services or adds new Services in relation to some or all of the Contracts, and TfNSW has not given a notice under this clause, the Independent Certifier must, if it wishes to make a Claim against TfNSW for an adjustment to the Contract Fee or timing requirements:
 - (i) give a notice to TfNSW within 10 Business Days of becoming aware of the changed or new Services (but in any event before commencing work on the subject matter of any direction), expressly specifying the direction, event, circumstance, act, omission, facts or matters giving rise to the alleged entitlement to Claim; and
 - (ii) continue to carry out the Services in accordance with this Deed and all directions of TfNSW, including any direction in respect of which notice has been given under this clause 2.2(g).
- (h) Claims submitted by the Independent Certifier under clause 2.2(g) will be considered in the first instance by TfNSW's Representative, who may accept or reject the Claim in part or full, and may consult with any Other Party to verify the alleged event, circumstance, act, omission, fact or matter giving rise to the Independent Certifier's Claim. If the Independent Certifier wishes to dispute the rejection of the Claim it may do so under clause 19.
- (i) If within 20 Business Days after first receipt of a Claim under clause 2.2(g) TfNSW's Representative has not made a decision on the Claim, the Claim will be deemed to have been rejected by TfNSW.

3 Certification and Monitoring Plan

- (a) The Independent Certifier must develop and implement the Certification and Monitoring Plan.
- (b) In developing the Certification and Monitoring Plan, the Independent Certifier must implement the requirements in Schedule 4.

4 Contract Fees

4.1 Contract Fee

In consideration of the Independent Certifier undertaking the Services in accordance with this Deed, TfNSW must pay the Independent Certifier the Contract Fee.

4.2 Payment

- (a) At the end of each month the Independent Certifier must submit to TfNSW's Representative a claim for payment of the Contract Fee in accordance with the Umbrella Deed that:

- (i) sets out the amount due in respect of the Services and any expert advice obtained by the Independent Certifier in accordance with this Deed; and
 - (ii) is in such form and with such details and supporting documentation as TfNSW's Representative reasonably requires including details of the time expended by the Independent Certifier and its staff and contractors in performing the Services.
- (b) Each claim for payment submitted by the Independent Certifier must be accompanied by:
- (i) a supporting statement which complies with section 13 of the *Building and Construction Industry Security of Payment Act 1999* (NSW); and
 - (ii) a duly signed written statement in a form which complies with the Contractor's Services under section 127 of the *Industrial Relations Act 1996* (NSW), Schedule 2 Part 5 of the *Payroll Tax Act 2007* (NSW) and section 175B of the *Worker's Compensation Act 1987* (NSW) to provide a statement to the "principal contractor" as contemplated by that legislation.
- (c) Within 10 Business Days after receipt of the claim for the month the TfNSW's Representative must assess the amount and issue a payment statement to the Independent Certifier setting out the portion of the payment claim which is agreed and any portion which is disputed.
- (d) The Independent Certifier must give the TfNSW Representative a valid tax invoice for the amount assessed and within 3 Business Days of receipt of a payment statement under clause 4.2(c).
- (e) TfNSW must, within the later of:
- (i) 5 Business Days of the payment statement; and
 - (ii) receipt of a valid tax invoice under clause 4.2(d),
- but in any event within 15 Business Days of receipt of a claim for payment received under clause 3.2(a), pay the Independent Certifier the portion of each claim for payment which is not disputed.
- (f) If the TfNSW Representative disputes an amount included in claim submitted by the Independent Certifier then within 10 Business Days of receipt of the Independent Certifier's claim, the TfNSW Representative must notify the Independent Certifier in writing of the reasons for any amount which is disputed.

4.3 Payment on account only

Payments made by TfNSW are on account only and are not:

- (a) evidence of the value of the Services performed by the Independent Certifier; or
- (b) an admission of Liability on the part of the Principal Parties.

5 Relationship

5.1 No conflict of interest

The Independent Certifier warrants for the benefit of the Principal Parties that it has no conflict of interest with respect to the carrying out of the Services.

5.2 Nature of relationship

- (a) The Independent Certifier is an independent contractor and is not an employee or agent of any of the Principal Parties.
- (b) The Independent Certifier's employees, contractors, consultants and agents are not the employees, contractors, consultants or agents of any of the Principal Parties.
- (c) The Independent Certifier assumes full responsibility for the benefit of the Principal Parties for the acts and omissions of its employees, contractors, consultants and agents.
- (d) No Principal Party is liable for, nor will they be taken to have a Liability for, or to have assumed or become (on enforcement of any of its powers or otherwise) liable for, the performance of any obligation of the Independent Certifier under this Deed.

5.3 Authority to act

The Independent Certifier has no authority to represent the Principal Parties and, in particular:

- (a) to give directions to any Principal Party;
- (b) to waive or alter any terms of any Contract; or
- (c) to discharge or release a party from any of its obligations under any Contracts.

5.4 Representatives

- (a) The parties have appointed the Representatives.
- (b) The Representatives have authority to give and receive directions and instructions and are the agents of the parties for the purposes of this Deed.
- (c) The parties may change their Representatives by notice in writing to the other parties.

6 Independent Certifier's powers

In performing the Services the Independent Certifier:

- (a) will act as an expert and not as an arbitrator;
- (b) will not be bound to observe the rules of evidence;
- (c) must take into consideration all documents, information and other written material that the Principal Parties place before the Independent Certifier; and

- (d) will not be expected or required to obtain or refer to any other documents or information or material but may do so if the Independent Certifier requires them.

7 Determinations

- (a) All determinations made by the Independent Certifier in connection with the Contract must be:
 - (i) in writing;
 - (ii) delivered within the time required under the Contract; and
 - (iii) supported by detailed reasons.
- (b) In making a determination in connection with the Contract the Independent Certifier must not obtain any expert advice without the prior written consent of the Principal Parties (including in relation to the cost), not to be unreasonably withheld.
- (c) If it obtains expert advice the Independent Certifier must:
 - (i) ensure that such advice is in writing and sets out:
 - (A) the advice;
 - (B) the basis of the advice in detail; and
 - (C) all materials reviewed and other investigations undertaken in relation to the advice; and
 - (ii) deliver the advice to the Principal Parties together with the determination and explain in detail the manner in which the expert advice has been utilised in making the determination.
- (d) If the Independent Certifier obtains expert advice then such advice will be deemed to form part of the Independent Certifier's determination.

8 Assistance access and information

8.1 Co-operation and assistance

- (a) The Principal Parties must:
 - (i) co-operate with the Independent Certifier;
 - (ii) reasonably assist the Independent Certifier; and
 - (iii) act honestly and fairly,to enable the Independent Certifier to perform the Services.
- (b) Subject to any Law or duty of confidentiality and without limiting any other clause in this Deed, each Principal Party must:
 - (i) provide to the Independent Certifier any information reasonably necessary to enable the Independent Certifier to perform the Services; and

- (ii) provide the Independent Certifier with any such information within the time required by this Deed or any relevant Contracts.

8.2 Information provided to Independent Certifier

- (a) The Independent Certifier may rely on information provided to it by any of the Principal Parties as being true and correct in all material respects unless:
 - (i) such information is:
 - (A) manifestly incorrect;
 - (B) expressly provided on the basis that it cannot be relied on; or
 - (C) actually known or ought to have been known by the Independent Certifier to be untrue or incorrect; or
 - (ii) the relevant Principal Party subsequently informs the Independent Certifier of any change to the information provided to it.
- (b) The Principal Parties must use their best endeavours to ensure that all information provided to the Independent Certifier is accurate and true.
- (c) Where a Principal Party is entitled to comment on Design Documentation that party agrees:
 - (i) to provide all comments in a format reasonably required by the Independent Certifier, which as a minimum must contain:
 - (A) a unique reference number;
 - (B) a description of the Design Documentation; and
 - (C) the reasons for the non-compliance; and
 - (ii) make available the author of the comment or appropriate personnel to meet with the Independent Certifier to clarify any comments.

8.3 Access

- (a) A Principal Party must give access to the Independent Certifier to such places that it controls as may be reasonably necessary to enable the Independent Certifier to perform the Services.
- (b) A Principal Party must, within a reasonable time of request by the Independent Certifier, allow the Independent Certifier access to any records held or systems maintained by it or its subcontractors or sub-consultants in relation to the works to which the Services relate, which are reasonably necessary to enable the Independent Certifier to perform the Services.
- (c) The Independent Certifier must within a reasonable time of any request, give the Principal Parties, access to and copies of any records, reports, advice or other documents received, prepared, or generated by or for the Independent Certifier in the course of performing the Services.

- (d) The Independent Certifier must comply with the reasonable requirements of the Principal Parties when accessing any place under the control of a Principal Party, including in relation to safety.

8.4 Copies of notices and documents

All notices and documents:

- (a) provided by the Independent Certifier to one Principal Party must be copied to the Other Party; and
- (b) provided by a Principal Party to the Independent Certifier must be provided by the Independent Certifier to the Other Party.

9 Independent Certifier's personnel

9.1 Independent Certifier's personnel

The Independent Certifier must ensure that its personnel:

- (a) undertake the minimum attendance;
- (b) have the minimum level of skill and expertise; and
- (c) apply the minimum level of surveillance,

as set out in schedule 7.

9.2 List of personnel

Upon the request at any time by any Principal Party, the Independent Certifier must promptly provide a list of the personnel which it will use or will be using to perform the Services and detailing the qualifications and experience of each person.

9.3 Removal of personnel

- (a) If TfNSW considers that the:
 - (i) conduct of the Independent Certifier's personnel (including the Key Individual) is prejudicial to the provision of the Services; or
 - (ii) Independent Certifier has not engaged personnel (including the Key Individual) who are sufficiently competent, experienced and qualified to perform the Services.
- (b) TfNSW may, after consultation with the Independent Certifier and the Other Party, by written notice to the Independent Certifier require the removal of any person from any involvement in the provision of the Services. The Independent Certifier must within 10 Business Days replace the person named in that notice with the person approved by TfNSW.

9.4 Key Individuals

- (a) Subject to clause 9.4(b), the Independent Certifier must not terminate the appointment of the Key Individual, or substitute another person for the Key Individual to carry out the Services under this Deed without the prior written approval of TfNSW.

- (b) If the Key Individual resigns or is unable to work due to illness or other circumstances, the Independent Certifier must procure that they are replaced as soon as reasonably practicable and in any event with 10 Business Days. TfNSW and the Independent Certifier must agree the identity of the replacement Key Individual in writing. In endeavouring to reach agreement under this clause 9.4(b), the parties must act reasonably.

9.5 Subcontracting

- (a) The Independent Certifier must not subcontract the performance of any of the Services without the prior written consent of TfNSW.
- (b) The Independent Certifier remains responsible for the performance of the Services in accordance with this Deed, notwithstanding any such subcontracting.
- (c) The Subcontracts contained in Schedule 6 have been consented to by TfNSW.

9.6 Adequacy of resourcing

- (a) The Independent Certifier acknowledges and agrees that the Principal Parties are relying on the performance by the Independent Certifier of the Services in a timely manner.
- (b) If the Independent Certifier fails to perform the Services in a timely manner TfNSW may direct the Independent Certifier to:
 - (i) commit additional resources to the performance of the Services; and/or
 - (ii) provide a plan for the improvement of the performance of the Services.
- (c) Any additional resources committed to the performance of the Services by the Independent Certifier pursuant to a direction from TfNSW or pursuant to a plan developed by the Independent Certifier will be at its own cost, except to the extent that the inadequacy of resourcing is attributable to:
 - (i) an increase in the scope of the Services;
 - (ii) the need to perform the Services for a longer period due to causes beyond the control of the Independent Certifier; or
 - (iii) the failure of any Principal Party to comply with a Contract.

10 Insurance

10.1 General

The Independent Certifier must:

- (a) obtain and maintain the Insurances as further defined in Schedule 3;
- (b) obtain and maintain such additional insurances and make such variations to existing Insurances, as may reasonably be requested

TfNSW promptly after that request, provided that the Contract Fee must be adjusted to reflect the additional costs incurred as a result;

- (c) ensure that each insurance policy will comply with the following requirements:
- (i) the policy must contain provisions which are reasonably standard in the market for insurance of the type covered by the policy;
 - (ii) the insurers must be reputable, and approved by the TfNSW;
 - (iii) the named insured on the policy (except where the policy is for professional indemnity insurance) must be the Principal Parties or such other persons as TfNSW reasonably require; and
 - (iv) Insurance must at all times cover liability for an amount stated in Schedule 3; and
- (d) ensure that each insurance policy must contain the following:
- (i) the insurer must waive its right to set-off or reduce by way of counterclaim, or make any deduction or withholding, in relation to any payment to be made by it under any Insurances;
 - (ii) the insurer must waive its right to claim from the Principal Parties any insurance premiums, fees, commissions or the like;
 - (iii) the Insurances must continue unaltered in relation to each named insured, despite any act, omission, breach or misrepresentation by any other named insured or person;
 - (iv) each named insured may pay premiums not paid when due (in satisfaction of the premium due), but only the Independent Certifier has an obligation to do so;
 - (v) each named insured must have rights which are of the same nature and extent as they would have had had a separate policy been individually taken out by that named insured (subject to limits on liability); and
 - (vi) the insurer must undertake to promptly notify the Principal Parties of:
 - (A) cancellation or avoidance of any Insurances;
 - (B) any change whatsoever of a restrictive nature which affects any Insurances;
 - (C) any act or omission or any event which might invalidate an Insurance policy or render it unenforceable; or
 - (D) any failure to pay an amount on account of premiums when due; and
 - (vii) the insurer must undertake to notify each named insured of non-receipt of any renewal instructions no later than 5 Business Days prior to the due date for expiry of any Insurance;
 - (viii) despite the occurrence of an event referred to in clauses 10.1(d)(vi) and clause 10.1(d)(vii), the Insurances must continue

unaltered for the benefit of the Principal Parties for a period of at least 20 Business Days after notice is given to the Principal Parties under either of those clauses;

- (ix) there must be no reduction of limits or coverage without the prior consent of the Principal Parties; and
 - (x) the insurer's indemnity must be a primary indemnity, without right of contribution in respect of any other indemnity or insurance cap; and
- (e) provide the Principal Parties with:
- (i) a true and complete copy of each Insurance policy, promptly after receipt of the policy by or on behalf of the Independent Certifier;
 - (ii) certificates of currency evidencing the maintenance of the Insurances, or a component of the Insurances, promptly after the Insurances (or a component) is or are renewed or extended;
 - (iii) it will give the Principal Parties a copy of any notice received by the Independent Certifier from any insurer in respect of Insurances, promptly after receipt; and
 - (iv) such other details in respect of Insurances as the Principal Parties may from time to time reasonably request, promptly after the request; and
- (f) pay when due all premiums, commissions, stamp duties, charges and other expenses incurred or payable in relation to Insurances, and give evidence of that payment to the Principal Parties;
- (g) do all things necessary or desirable to maintain the Insurances in full force;
- (h) not, without the Principal Parties' consent, vary, cancel or allow to lapse any Insurances;
- (i) do all things reasonably necessary or desirable to permit or facilitate the collection or recovery of any moneys payable by the insurers under Insurances;
- (j) not, without the consent of the Principal Parties do (or omit to do) anything which does or might (or the omission of which does or might) adversely affect the nature or extent of the rights of any named insured under Insurances, or extinguish, qualify or limit any indemnity of the insurer in respect of any Insurances;
- (k) immediately rectify anything which may have an adverse effect on the Insurances and reinstate any of the Insurances if it lapses;
- (l) not, without the consent of the Principal Parties, do, or take any steps to, cancel, materially change or reduce the amount of coverage of any Insurances;
- (m) not, without the consent of the Principal Parties:
- (i) consent to any reduction in limits or coverage; or
 - (ii) enforce, conduct, settle or compromise any claims,

in respect of any Insurances, whether or not any of them cover other property; and

- (n) notify the Principal Parties immediately when:
 - (i) an event occurs which gives rise or might give rise to a claim under or which could adversely affect any one of the Insurances; or
 - (ii) any of the Insurances are cancelled.

10.2 Failure to produce proof of insurance

If the Independent Certifier fails to comply with its obligations under this clause to effect any of the insurances, TfNSW may effect and maintain the insurances and pay the premiums. The Independent Certifier must pay to TfNSW on demand a sum equal to the amount paid by the Principal Parties and the amount of any such premiums and other costs incurred by TfNSW will be deducted from the Contract Fee.

11 Suspension of Services

- (a) TfNSW may by notice to the Independent Certifier, instruct the Independent Certifier to suspend and, after a suspension has been instructed, to recommence, the performance of any or all of the Services.
- (b) During the period which the Independent Certifier's performance of the Services are suspended in accordance with clause 11(a), TfNSW must pay the Independent Certifier:
 - (i) subject to the provisions of this Deed, for the Services that are not suspended (if any); and
 - (ii) subject to:
 - (A) the Independent Certifier using all reasonable endeavours to mitigate, minimise or avoid the effects and consequences of the costs associated with the suspension of any or all of the Services; and
 - (B) provided that the suspension is not as a result of the Independent Certifier failing to comply with this Deed,

such unavoidable costs or expenses incurred arising in connection with the suspension of the Services and costs and expenses incurred by the Independent Certifier in anticipation of their Services not being suspended.

12 Default

12.1 Independent Certifier Default

- (a) Each of the following is an Independent Certifier Default:
 - (i) the Independent Certifier does not perform any of the Services to the standard of care required by this Deed;

- (ii) the Independent Certifier fails to comply with any obligation relating to Insurance;
- (iii) the Independent Certifier fails to act independently;
- (iv) the Independent Certifier breaches a term of this Deed in a material way;
- (v) the Independent Certifier persistently breaches this Deed;
- (vi) the Independent Certifier becomes the subject of an Insolvency Event;
- (vii) a representation or warranty made by or for the Independent Certifier in connection with this Deed is found to have been incorrect or misleading when made;
- (viii) the Independent Certifier fails to commit adequate resources to the performance of the Services; and
- (ix) the Independent Certifier ceases to carry on its business or a material part of it.

(b) This Deed will terminate automatically upon termination of the Contract.

12.2 Termination by TfNSW

- (a) If:
- (i) an Independent Certifier Default occurs, and either:
 - (A) the Independent Certifier Default is not remedied by the Independent Certifier within 10 Business Days of notice of that default being given to the Independent Certifier by TfNSW; or
 - (B) if the Independent Certifier Default cannot be remedied, the Independent Certifier does not establish to the satisfaction of TfNSW that:
 - (aa) there was a reasonable explanation for the Independent Certifier Default; and
 - (ab) the Independent Certifier Default will not be repeated; or
 - (ii) TfNSW terminates:
 - (A) the Contract;
 - (B) any Contract Deed on the basis of Independent Certifier default; or
 - (C) the Umbrella IC Deed on the basis of Independent Certifier default;

then TfNSW may terminate this Deed by notice in writing to the Independent Certifier.

(b) TfNSW may, without giving advance notice, terminate this Deed by giving notice in writing to the Independent Certifier and the Other Party if

an event described in clause 12.1(a)(i), 12.1(a)(iii), 12.1(a)(vi), 12.1(a)(ix), or 12.2(a)(ii) occurs.

- (c) TfNSW may terminate this Deed at any time for convenience.
- (d) For the avoidance of doubt:
 - (i) the Independent Certifier may not terminate this Deed;
 - (ii) only TfNSW may terminate this Deed whether:
 - (A) pursuant to this clause 12.2;
 - (B) otherwise under this Deed; or
 - (C) pursuant to Law; and
 - (iii) the Other Party may not terminate this Deed whether:
 - (A) pursuant to this clause 12.2;
 - (B) otherwise under this Deed; or
 - (C) pursuant to Law.

12.3 Rights on termination

If this Deed is terminated under:

- (a) clause 12.2(a) or at Law:
 - (i) the Independent Certifier will only be entitled to payment of amounts due to it under clause 4 up to and including the date of termination;
 - (ii) TfNSW may suspend the payment of the Contract Fee and the Environmental Representative Fee until all of the Services that would have been performed by the Independent Certifier have been performed by others;
 - (iii) without limiting its rights TfNSW may set off from any payment any amount which TfNSW would otherwise be obliged to make to the Independent Certifier any Loss incurred by TfNSW as a result of the termination of this Deed; and
 - (iv) the rights of the parties will otherwise be on basis that the Independent Certifier has repudiated the Deed and the repudiation has been accepted by the Principal Parties, or
- (b) clause 12.1(b) or clause 12.2(c), then the Independent Certifier will only be entitled to payment of all amounts due to it under clause 4 up to and including the date of termination plus the reasonable costs incurred by it directly arising from early termination. For the avoidance of doubt the Independent Certifier will have no Claim in respect of any foregone profit.

12.4 Return of records

- (a) Within 2 Business Days of the termination of this Deed, the Independent Certifier must deliver all documentation, records, and materials in the possession or control of the Independent Certifier relating to the Services

including all contracts, correspondence, records, plans, specifications and other documents:

- (i) where directed by TfNSW, to the Replacement Certifier; or
 - (ii) otherwise, to TfNSW, which will be received by TfNSW subject to clause 12.4(e).
- (b) The documentation, records, and materials must be:
- (i) delivered in such form as directed by the TfNSW Representative; and
 - (ii) indexed and organized as directed by the TfNSW Representative.
- (c) The Independent Certifier may not exercise any lien against any of the documentation, records, and materials referred to in this clause 12.4.
- (d) If this Deed is terminated, the Independent Certifier must co-operate with and assist TfNSW and the Replacement Certifier to ensure an effective and smooth transition of its duties and Services under this Deed to the Replacement Certifier.
- (e) If TfNSW receives pursuant to clause 12.4(a)(ii) documentation, records, and materials that were provided to the Independent Certifier by the Other Party, TfNSW will deliver that documentation, records, and materials to the Other Party, as directed by the Other Party.

12.5 Novation

If this Deed is terminated, the Independent Certifier

- (a) must novate to the Principal or the Replacement Certifier (as directed by TfNSW) those subcontracts that have been entered into by the Independent Certifier that the Principal directs; and
- (b) irrevocably appoints (for valuable consideration) the Principal and any authorised representative of the Principal to be the Independent Certifier's attorney to
 - (i) execute, sign, seal and deliver all notices, deeds and documents; and
 - (ii) undertake actions in the name of the Independent Certifier.

12.6 Survival

This clause will survive the termination of this Deed.

13 Indemnity

- (a) The Independent Certifier is liable for and indemnifies each Principal Party against any Liability or Loss brought against, suffered or incurred by a Principal Party to the extent that Liability or Loss arises out of:
 - (i) any damage to, loss of or loss of use of (whether total or partial) any real or personal property;

- (ii) illness or death of or injury to any person; or
- (iii) any negligent act or omission of or any breach of this Deed by the Independent Certifier or its agents, subcontractors or consultants.

that arises out of the performance of the Services.

- (b) This clause will survive the termination of this Deed.

14 Assignment

14.1 Assignment by the Independent Certifier

Neither the Independent Certifier nor any Other Party may assign or transfer its rights or obligations under this Deed without the prior written consent of TINSW (which may be given or withheld in its absolute discretion and with or without conditions)

14.2 Assignment by TINSW

The Independent Certifier acknowledges and agrees TINSW may at any time assign, novate or otherwise transfer any of its rights or obligations under this Deed at any time to any entity which succeeds to its rights under the Contract.

15 Notices

15.1 Delivery of Notices

- (a) Notices must be (subject to clause 15.4) uploaded onto PDCS.
- (b) A notice takes effect on the day that:
 - (i) if delivered by hand, upon actual receipt by the addressee, or
 - (ii) in the case of a notice sent through PDCS, at the time the direction has been uploaded onto PDCS by the sender.
- (c) If a notice takes effect after 5.00 pm on a day, the notice will be deemed to have been received at 9.00 am on the next Business Day.

15.2 Delivery of Design Documentation

In the case of Design Documentation, Design Documentation is deemed to be delivered through the PDCS at the time the Design Documentation has been uploaded onto the PDCS by the sender.

15.3 PDCS

- (a) Subject to clause 15.4, at any time, and from time to time, the TINSW Representative may notify the Independent Certifier that the PDCS will be used for giving notices under or in connection with this Deed. The TINSW Representative's notice will set out
 - (i) the commencement date for use of the PDCS; and
 - (ii) any other information reasonably necessary for the effective use and service of notices via the PDCS.

- (b) If a party is unable to use the PDCS as a result of the failure of the PDCS, that party must use one of the alternative means of communication set out in this clause.
- (c) With respect to notices sent through the PDCS:
 - (i) all notices must be submitted by the party making it or (on that party's behalf) by the solicitor for, or any attorney, director, secretary or authorised agent of, that party;
 - (ii) only the text in any notice, or subject to clause 15.3(c)(iii), any attachments to such notice which are referred to in the notice, will form part of the notice. Any text in the subject line will not form part of the notice; and
 - (iii) an attachment to a notice will only form part of a notice if it is uploaded to the PDCS in:
 - (A) pdf format;
 - (B) a format compatible with Microsoft Office; or
 - (C) such other format as may be agreed between the parties in writing from time to time.
- (d) The Independent Certifier must:
 - (i) ensure that it has internet access which is sufficient to facilitate use of the full functionality of the PDCS;
 - (ii) ensure that relevant personnel log on and use PDCS and check whether notices have been received on each Business Day; and
 - (iii) at all times, ensure that it has access to personnel trained in the use of the PDCS so as to be able to view, receive and submit communications (including notices) using the PDCS.
- (e) The Principal Parties have no Liability for any losses the Independent Certifier may suffer or incur arising out of or in connection with its access to or use of PDCS or any failure of PDCS, and the Independent Certifier will not be entitled to make, and the Principal Parties will not be liable upon, any Claim against the Principal Parties arising out of or in connection with the Independent Certifier's access to or use of PDCS or any failure of PDCS.

15.4 Notices for delivery by hand and PDCS

The parties acknowledge and agree that notices issued pursuant to clauses 11 and 19 must be delivered by hand to the other party and by the PDCS, pursuant to this Deed.

16 GST

16.1 Interpretation

- (a) Except where the context suggests otherwise, terms used in this clause 16.1 have the meanings given to those terms by the *A New Tax System (Goods and Services Tax) Act 1999 (Cth)* (as amended from time to time).

- (b) Any part of a supply that is treated as a separate supply for GST purposes (including attributing GST payable to tax periods) will be treated as a separate supply for the purposes of this clause 15.1.
- (c) A reference to something done (including a supply made) by a party includes a reference to something done by any entity through which that party acts.

16.2 Reimbursements

Any payment or reimbursement required to be made under this Deed that is calculated by reference to a cost or other amount paid or incurred will be limited to the total cost or amount less the amount of any input tax credit to which an entity is entitled for the acquisition to which the cost or amount relates.

16.3 Additional amount of GST payable

Subject to clause 16.5, if GST becomes payable on any supply made by a party (Supplier) under or in connection with this Deed or a Contract:

- (a) any amount payable or consideration to be provided under any provision of this Deed (other than this clause 15.1), for that supply is exclusive of GST;
- (b) any party (Recipient) that is required to provide consideration to the Supplier for that supply must pay an additional amount to the Supplier equal to the amount of the GST payable on that supply (GST Amount), at the same time as any other consideration is to be first provided for that supply, and
- (c) the Supplier must provide a tax invoice to the Recipient for that supply, no later than the time at which the GST Amount for that supply is to be paid in accordance with clause 16.3(b).

16.4 Variation

- (a) If the GST Amount properly payable in relation to a supply (as determined in accordance with clause 16.3 and clause 16.5, varies from the additional amount paid by the Recipient under clause 16.3, then the Supplier will provide a corresponding refund or credit to, or will be entitled to receive the amount of that variation from, the Recipient. Any payment, credit or refund under this clause 16.4(a) is deemed to be a payment, credit or refund of the GST Amount payable under clause 16.3.
- (b) The Supplier must issue an adjustment note to the Recipient in respect of any adjustment event occurring in relation to a supply made under or in connection with this Deed as soon as reasonably practicable after the Supplier becomes aware of the adjustment event.

16.5 Exchange of non-monetary consideration

- (a) To the extent that the consideration provided for the Supplier's taxable supply to which clause 16.3 applies is a taxable supply made by the Recipient in the same tax period ('Recipient Supply'), the GST Amount that would be otherwise be payable by the Recipient to the Supplier in accordance with clause 16.3 shall be reduced by the amount of GST payable by the Recipient on the Recipient Supply.
- (b) The Recipient must issue to the Supplier an invoice for any Recipient Supply on or before the time at which the Recipient must pay the GST Amount in accordance with clause 16.3 (or the time at which such GST

Amount would have been payable in accordance with clause 16.3 but for the operation of clause 16.5(a)).

16.6 Indemnities

- (a) If a payment under an indemnity gives rise to a liability to pay GST, the payer must pay, and indemnify the payee against, the amount of that GST.
- (b) If a party has an indemnity for a cost on which that party must pay GST, the indemnity is for the cost plus all GST (except any GST for which that party can obtain an input tax credit).
- (c) A party may recover payment under an indemnity before it makes the payment in respect of which the indemnity is given.

16.7 No merger

This clause 15.1 will not merge on completion or termination of this Deed.

17 Representations and warranties

The Independent Certifier represents and warrants that:

- (a) it has been incorporated as a company limited by shares in accordance with the laws of its place of incorporation, is validly existing under those laws and has power and authority to carry on its business as it is now being conducted;
- (b) it has power to enter into this Deed to which it is a party and comply with its obligations under it;
- (c) this Deed and the transactions under it which involve it do not contravene its constituent documents (if any) or any Law or obligation by which it is bound or to which any of its assets are subject or cause a limitation on its powers (or, to the extent applicable, the powers of its directors) to be exceeded;
- (d) it has in full force and effect the authorisations necessary for it to enter into this Deed, to comply with and perform the Services and exercise its rights under it, and allow it to be enforced;
- (e) the Services are valid and binding and are enforceable against it in accordance with its terms;
- (f) it benefits by entering into this Deed;
- (g) there are no reasonable grounds to suspect that it is unable to pay its debts as and when they become due and payable;
- (h) unless stated in this Deed, it does not enter into this Deed as trustee;
- (i) there is no pending or threatened proceeding affecting it or any of its assets before a court, governmental authority or arbitrator except those in which a decision against it would be insignificant;
- (j) it does not have immunity from the jurisdiction of a court or from legal process;

- (k) it has the appropriate qualifications and Authority Approvals to undertake all of the certification requirements forming part of the Services; and
- (l) it and all its representatives, employees, agents, contactors and consultants engaged in the performance of the Services possesses, and will continue to possess, the appropriate experience, skill, qualifications and resources which are required to properly perform the Services.

18 General

18.1 Set-off

Without limiting its rights TfNSW may set off any amount due for payment by TfNSW to the Independent Certifier against any amount due for payment by the Independent Certifier to TfNSW under this Deed.

18.2 Discretion in exercising rights

A Principal Party may exercise a right or remedy or give or refuse its consent in any way it considers appropriate (including by imposing conditions), unless this Deed expressly states otherwise.

18.3 Partial exercising of rights

If a Principal Party does not exercise a right or remedy fully or at a given time that Principal Party may still exercise it later.

18.4 No liability for Loss

The Principal Parties are not liable for Loss caused by the exercise or attempted exercise of, failure to exercise, or delay in exercising, a right or remedy except to the extent of any fraud by any Principal Party.

18.5 Conflict of interest

The Principal Parties' rights and remedies under this Deed may be exercised even if this involves a conflict of duty or the Principal Parties have a personal interest in their exercise.

18.6 Remedies cumulative

The Principal Parties' rights and remedies under this Deed are in addition to other rights and remedies given by law independently of this Deed.

18.7 Other encumbrances or judgments

- (a) This Deed does not merge with or adversely affect, and is not adversely affected by, any of the following:
 - (i) any encumbrance or other right or remedy to which the Principal Parties are entitled; or
 - (ii) a judgment which the Principal Parties obtain against the Independent Certifier in connection with this Deed.
- (b) Notwithstanding clause 18.7(a), the Principal Parties may still exercise their rights under this Deed as well as under the judgment, the encumbrance or the right or remedy.

18.8 Variation and waiver

Unless this Deed expressly states otherwise, a provision of this Deed, or right created under it, may not be waived or varied except in writing signed by the Other Party, Independent Certifier and TfNSW.

18.9 Confidentiality

- (a) All information provided by one party to another party under this Deed or a Contract and which is identified as confidential at the time it is provided, or which by its nature is confidential, must not be disclosed to any person except
- (i) with the consent of the party providing the information;
 - (ii) if required by law or required by any stock exchange;
 - (iii) in connection with any legal proceedings relating to this Deed or any Contract;
 - (iv) if the information is generally and publicly available;
 - (v) to employees, legal advisers, auditors and other consultants to whom it needs to be disclosed; or
 - (vi) publication of a redacted copy of this Deed where the redactions have been agreed between the parties (acting reasonably).
- (b) The recipient of the information must do all things necessary to ensure that its respective employees, legal advisers, auditors and other consultants keep the information confidential and do not disclose it to any person.

18.10 Further steps

The Independent Certifier agrees to do anything TfNSW asks (such as obtaining consents, signing and producing documents, producing receipts and getting documents completed and signed) to:

- (a) bind the Independent Certifier and any other person intended to be bound under this Deed; or
- (b) show whether the Independent Certifier is complying with this Deed.

18.11 Counterparts

This Deed may consist of a number of copies, each signed by one or more parties to this Deed. If so, the signed copies are treated as making up the one document.

18.12 Applicable Law

This Deed is governed by the Law in force in New South Wales. The Independent Certifier and the Principal Parties submit to the non-exclusive jurisdiction of the courts of New South Wales.

18.13 Exclusion of Civil Liability Act 2002 (NSW)

To the extent permitted by Law, the operation of Part 4 of the *Civil Liability Act 2002 (NSW)* is excluded in relation to any and all rights, Services and liabilities

arising under or in relation to this Deed howsoever such rights, obligations or liabilities are sought to be enforced.

19 Dispute resolution

19.1 Application

- (a) Any dispute or difference between the parties arising out of, relating to or in connection with this Deed, including any dispute or difference as to the formation, validity, existence or termination of this Deed ("Dispute") must be determined in accordance with this clause 19.
- (b) Disputes arising out of, relating to or in connection with a Contract, including any dispute or difference as to the formation, validity, existence or termination of that Deed will be subject to the dispute resolution process in that deed.

19.2 Executive negotiation

- (a) If any dispute arises, a party to the dispute ("Referring Party") may, by giving notice to the other parties ("Dispute Notice"), refer the dispute to the Representatives for resolution.
- (b) The Dispute Notice must:
 - (i) be in writing;
 - (ii) state that it is given in accordance with this clause 19.2;
 - (iii) state whether it is in relation to this Deed only or the Umbrella IC Deed;
 - (iv) include or be accompanied by reasonable particulars of the dispute, including:
 - (A) a brief description of the circumstances in which the dispute arose; and
 - (B) references to any:
 - (aa) provisions of this Deed or the Contract; and
 - (ab) acts or omissions of any person,relevant to the dispute.
- (c) Within 5 Business Days of the Referring Party giving the Dispute Notice, the Representatives must meet at least once to attempt to resolve the Dispute. The parties must not delegate the function of the Representative to any other person.
- (d) The Representatives may meet more than once to try and resolve a Dispute during the period of 10 Business Days after the service of the Dispute Notice ("Resolution Period") and may meet in person, via telephone, videoconference, or any other agreed means of instantaneous communication to effect the meeting.
- (e) Discussions conducted in accordance with this clause 19.2 must be undertaken in good faith and will be held on a 'without prejudice' basis.

19.3 Arbitration

- (a) Any dispute not resolved through executive negotiation including any questions regarding the existence, validity or termination of the Deed or a Contract, may be referred by either party to and finally resolved by arbitration administered by the Australian Disputes Centre (ADC).
- (b) The arbitration shall be conducted in Sydney in accordance with the ADC Rules for Domestic Arbitration operating at the time the dispute is referred to ADC (Rules).
- (c) The terms of the Rules are hereby deemed incorporated into this Deed.
- (d) Notwithstanding anything else, to the extent permissible by Law, the arbitrator will have no power to apply or to have regard to the provisions of Part 4 of the *Civil Liability Act 2002 (NSW)*.

19.4 Continuance of performance

Despite the existence of a Dispute, the parties must continue to perform their respective Services under this Deed.

19.5 Summary relief

Nothing in this clause 19 will prevent a party from commencing proceedings to enforce payment due under this Deed or to seek urgent injunctive interlocutory or declaratory relief in respect of a Dispute.

19.6 Survives termination

This clause will survive the termination of this Deed and the applicable Contract.

20 Liability and exclusions

20.1 Liability

- (a) Subject to clause 20.1(b), the Independent Certifier's Liability to the Principal Parties under and in connection with this Deed will be capped at the Liability Cap specified in the Details.
- (b) The Principal Parties acknowledge and agree that:
 - (i) the aggregate Liability of the Independent Certifier in respect of all services provided by it in connection with the Project is capped at the Aggregate Liability Cap set out in Details;
 - (ii) the Aggregate Liability Cap might be eroded by claims made by third parties that TfNSW has entered into contracts with in respect of the Project (Balance Aggregate Liability Cap); and
 - (iii) if the Balance Aggregate Liability Cap is eroded to the extent that it is less than the Liability Cap, then the Liability of the Independent Certifier under and in connection with this Deed will be capped at the Balance Aggregate Liability Cap.
- (c) The limitations of Liability referred to in clause 20.1(a) will not limit the Liability of the Independent Certifier in respect of:
 - (i) fraud, willful misconduct, recklessness or illegal or unlawful acts;

- (ii) termination on the basis of the Independent Certifier's repudiation or default;
- (iii) in respect of injury to or death of persons caused or contributed to by the Independent Certifier;
- (iv) to the extent that the Independent Certifier:
 - (A) is indemnified in respect of that Liability by a policy of insurance required under this Deed; or
 - (B) would have been indemnified in respect of that Liability by a policy of insurance required under this Deed if the Independent Certifier had:
 - (aa) diligently pursued a claim under that policy of insurance;
 - (ab) complied with the terms and conditions of that policy of insurance; or
 - (ac) complied with its insurance obligations under this Deed; or
- (v) to the extent to which, by Law, the parties cannot limit or contract out of such Liability.

20.2 Exclusion of Consequential and Indirect Loss

- (a) Subject to clause 20.2(b), the Independent Certifier will have no Liability to the Principal Parties and the Principal Parties will have no Liability to the Independent Certifier for Consequential and Indirect Loss.
- (b) Clause 20.2(a) does not operate to limit or restrict the Independent Certifier's Liability to a Principal Party in respect of Consequential or Indirect Loss:
 - (i) to the extent that the Independent Certifier:
 - (A) is indemnified in respect of that Liability by a policy of insurance required under this Deed; or
 - (B) would have been indemnified in respect of that Liability by a policy of insurance required under this Deed if the Independent Certifier had:
 - (aa) diligently pursued a claim under that policy of insurance;
 - (ab) complied with the terms and conditions of that policy of insurance; or
 - (ac) complied with its insurance obligations under this Deed;
 - (ii) in respect of any Liability of a Principal Party to a third party, except to the extent that the Liability to the third party is in respect of Consequential or Indirect Loss arising under a contractual claim;

- (iii) arising from any criminal acts or fraud on the part of the Independent Certifier;
- (iv) arising from wilful misconduct on the part of the Independent Certifier; or
- (v) to the extent to which, by Law, the parties cannot limit or contract out of such Liability.

EXECUTED as a deed



Independent Certifier Contract Deed for [#] Contract

Schedule 1 Services

The Services for the purposes of the Contract are:

[Note: To be inserted from Umbrella Deed with such changes agreed by the parties.]

Independent Certifier Contract Deed for [#] Contract

Schedule 2 Payment Schedule

1 Contract Fee

[insert]

2 Monthly payment schedule

The Independent Certifier is not entitled to payment or to make a claim for payment to the extent that the Services have not been carried out for the month in question. Subject to paragraphs 3 and 4 of this Payment Schedule, the indicative monthly payment to be made is set out in the following table:

Month	Contract Fee (\$ excluding GST)

3 Schedule of rates

The Independent Certifier is entitled to include in a payment claim the cost of performing any Variable Services as described below which are the subject of a written direction by TfNSW.

Variable Services will be valued by the TfNSW Representative using the applicable rates in the schedule of rates table below.

Item	Variable Services	Contract
Phase		
1	<i>[As may be agreed with the successful Tenderer]</i>	

The rates contain allowances for the provision of all labour, materials, work, telecommunications, disbursements (other than as described in and payable under paragraph 3) and other costs necessary for and arising out of or in connection with any services for which the Independent Certifier is to be paid on a schedule of rates basis under this Deed.

In order to avoid any double up of payment, the Independent Certifier may not make a payment claim for the performance of Services on a schedule of rates basis to the extent that the Independent Certifier's personnel whose Services are the basis of such claim are covered by the payment of either rates or a lump sum for the performance of other services.

The rates will be increased every 12 months with the first adjustment to occur on the date which is 12 months after the date of this Deed. On each occasion on which the rates are to be adjusted the rates will be increased by [#]%

When claiming payment for any Services for which the Independent Certifier is to be paid on a schedule of rates basis the Independent Certifier must provide details of the time expended by the Independent Certifier in performing the Services for which the Independent Certifier is entitled to be paid on a schedule of rates basis together with such further evidence as may be requested by TfNSW.

Role	Nominated Personnel	Additional Personnel	Hourly Rate \$ (excl GST)	Daily Rate \$ (excl GST)
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[To be inserted from successful Tender]

4 Payment claim

- (a) At the end of each month after the date of this Deed, the Independent Certifier must submit to TfNSW an account for payment on account of the Contract Fee:
- (i) setting out the value of the Services performed in accordance with this Deed during the relevant month;
 - (ii) calculated in accordance with this Payment Schedule; and
 - (iii) in such form and with such details and supporting documentation as TfNSW may reasonably require, broken down for each Contract Deed, including:
 - (A) a list or schedule of design and construction surveillance, monitoring and audits undertaken by the Independent Certifier during the reporting period, including:
 - (aa) the visits made by the Independent Certifier to the site and elsewhere in connection with the Project; and
 - (ab) any attendance at tests;
 - (B) a comprehensive schedule of the status of all correspondence and documentation exchanged between the Independent Certifier and the Principal Parties;
 - (C) details of any Defects (as that term is defined under the Contract) raised by the Independent Certifier or TfNSW and details of the rectification of Defects; and
 - (D) details of the current version of the Certification and Monitoring Plan and a summary of any amendments, updates and developments to the Certification and Monitoring Plan during the reporting period.
- (b) Each account for payment submitted by the Independent Certifier must be accompanied by an executed Subcontractor's Statement and

Supporting Statement in the form set out at paragraph 11 of this Payment Schedule.

5 Payment and notification of disputed amounts

- (a) The parties agree that TfNSW will pay 100% of the Contract Fee.
- (b) Subject to paragraph 7 of this Payment Schedule, TfNSW must, within 15 Business Days after receipt of the account for the month (submitted in accordance with paragraph 5, pay the Independent Certifier any portion of the Contract Fee attributable to the Services performed during the month which is not disputed.
- (c) If TfNSW disagrees with an amount included in an account submitted by the Independent Certifier then, within 10 Business Days of receipt of the Independent Certifier's account, TfNSW must notify the Independent Certifier in writing of the reasons for any amount which is disputed.
- (d) If the parties do not resolve the matter within 10 Business Days after the issue of TfNSW's written notice, TfNSW's Representative (acting reasonably and independently) must determine the dispute. Any determination by TfNSW's Representative in respect of the amount payable must be given effect to by the parties unless and until it is reversed or overturned in any subsequent court proceedings.

6 GST

All lump sums, rates and amounts in this Payment Schedule exclude GST.

7 Subcontractor's statement and supporting statement



SUBCONTRACTOR'S STATEMENT REGARDING WORKER'S COMPENSATION, PAYROLL TAX AND REMUNERATION (Note 1 – see back of form)

For the purposes of this Statement a "subcontractor" is a person (or other legal entity) that has entered into a contract with a "principal contractor" to carry out work.

This Statement must be signed by a "subcontractor" (or by a person who is authorised, or held out as being authorised, to sign the statement by the subcontractor) referred to in any of s175B Workers Compensation Act 1987, Schedule 2 Part 5 Payroll Tax Act 2007, and s127 Industrial Relations Act 1996 where the "subcontractor" has employed or engaged workers or subcontractors during the period of the contract to which the form applies under the relevant Act(s). The signed Statement is to be submitted to the relevant principal contractor.

SUBCONTRACTOR'S STATEMENT (Refer to the back of this form for Notes, period of Statement retention, and Offences under various Acts.)

Subcontractor: _____ ABN: _____

of _____

has entered into a contract with _____ ABN: _____
(Business name of principal contractor) (Note 2)

Contract number/identifier _____ (Note 3)

This Statement applies for work between ____/____/____ and ____/____/____ inclusive; (Note 4)

subject of the payment claim dated: ____/____/____ (Note 5)

I, _____ a Director or a person authorised by the Subcontractor on whose behalf this declaration is made, hereby declare that I am in a position to know the truth of the matters which are contained in this Subcontractor's Statement and declare the following to the best of my knowledge and belief:

- (a) The abovementioned Subcontractor has either employed or engaged workers or subcontractors during the above period of this contract. Tick if true and comply with (b) to (g) below, as applicable. If it is not the case that workers or subcontractors are involved or you are an exempt employer for workers compensation purposes tick and only complete (f) and (g) below. You must tick one box. (Note 6)
- (b) All workers compensation insurance premiums payable by the Subcontractor in respect of the work done under the contract have been paid. The Certificate of Currency for that insurance is attached and is dated ____/____/____ (Note 7)
- (c) All remuneration payable to relevant employees for work under the contract for the above period has been paid. (Note 8)
- (d) Where the Subcontractor is required to be registered as an employer under the Payroll Tax Act 2007, the Subcontractor has paid all payroll tax due in respect of employees who performed work under the contract, as required at the date of this Subcontractor's Statement. (Note 9)
- (e) Where the Subcontractor is also a principal contractor in connection with the work, the Subcontractor has in its capacity of principal contractor been given a written Subcontractor's Statement by its subcontractor(s) in connection with that work for the period stated above. (Note 10)

(f) Signature: _____ Full name: _____

(g) Position/Title: _____ Date: ____/____/____

NOTE: Where required above, this Statement must be accompanied by the relevant Certificate of Currency to comply with section 175B of the Workers Compensation Act 1987.

Version 2

Notes

1. This form is prepared for the purpose of section 1758 of the *Workers Compensation Act 1987*, Schedule 2 Part 5 *Payroll Tax Act 2007* and section 127 of the *Industrial Relations Act 1996*. If this form is completed in accordance with these provisions, a principal contractor is relieved of liability for workers compensation premiums, payroll tax and remuneration payable by the subcontractor.

A principal contractor can be generally defined to include any person who has entered into a contract for the carrying out of work by another person (or other legal entity called *the subcontractor*) and where employees of the subcontractor are engaged in carrying out the work which is in connection with the principal contractor's business.

2. For the purpose of this Subcontractor's Statement, a principal contractor is a person (or other legal entity), who has entered into a contract with another person (or other legal entity) referred to as the subcontractor, and employees/workers of that subcontractor will perform the work under contract. The work must be connected to the business undertaking of the principal contractor.
3. Provide the unique contract number, title, or other information that identifies the contract.
4. In order to meet the requirements of s127 *Industrial Relations Act 1996*, a statement in relation to remuneration must state the period to which the statement relates. For sequential Statements ensure that the dates provide continuous coverage.

Section 127(6) of the *Industrial Relations Act 1996* defines remuneration as remuneration or other amounts payable to relevant employees by legislation, or under an industrial instrument, in connection with work done by the employees.

Section 127(11) of the *Industrial Relations Act 1996* states: To avoid doubt, this section extends to a principal contractor who is the owner or occupier of a building for the carrying out of work in connection with the building so long as the building is owned or occupied by the principal contractor in connection with a business undertaking of the principal contractor.

5. Provide the date of the most recent payment claim.
6. For Workers Compensation purposes an exempt employer is an employer who pays less than \$7500 annually, who does not employ an apprentice or trainee and is not a member of a group.
7. In completing the Subcontractor's Statement, a subcontractor declares that workers compensation insurance premiums payable up to and including the date(s) on the Statement have been paid, and all premiums owing during the term of the contract will be paid.
8. In completing the Subcontractor's Statement, a subcontractor declares that all remuneration payable to relevant employees for work under the contract has been paid.
9. In completing the Subcontractor's Statement, a subcontractor declares that all payroll tax payable relating to the work undertaken has been paid.
10. It is important to note that a business could be both a subcontractor and a principal contractor, if a business 'in turn' engages subcontractors to carry out the work. If your business engages a subcontractor you are to also obtain Subcontractor's Statements from your subcontractors.

Statement Retention

The principal contractor receiving a Subcontractor's Statement must keep a copy of the Statement for the periods stated in the respective legislation. This is currently up to seven years.

Offences in respect of a false Statement

In terms of s127(10) of the *Industrial Relations Act 1996*, a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence if:

- (a) the person is the subcontractor;
- (b) the person is authorised by the subcontractor to give the statement on behalf of the subcontractor; or
- (c) the person holds out or represents that the person is authorised by the subcontractor to give the statement on behalf of the subcontractor.

In terms of s1758 of the *Workers Compensation Act* and clause 13 of Schedule 2 of the *Payroll Tax Act 2007*, a person who gives the principal contractor a written statement knowing it to be false is guilty of an offence.

Further Information

For more information, visit the WorkCover website www.workcover.nsw.gov.au, Office of State Revenue website www.osr.nsw.gov.au, or Office of Industrial Relations, Department of Commerce website www.commerce.nsw.gov.au. Copies of the *Workers Compensation Act 1987*, the *Payroll Tax Act 2007* and the *Industrial Relations Act 1996* can be found at www.legislation.nsw.gov.au.

Schedule 3 Insurance

1 Public liability

Coverage: The legal liabilities of the Independent Certifier, the Principal Parties and their employees and agents to third parties for bodily injury and property damage and resulting loss of use arising from the or in connection with the Services.

The policy must permit the making of claims both during and at any time after the expiration of the Insurance Term.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services.

Limit: A minimum of \$20 million for any one occurrence, (unlimited in any period of insurance) arising out of or in the course of or caused by the execution of the Services.

2 Professional indemnity

Coverage: The professional activities and duties of the Independent Certifier and its employees and agents in respect of the Services.

The policy must be on a project specific basis and insure the Independent Certifier in respect of claims that arise only out of the performance of the Services. The Independent Certifier must not be insured under the policy in respect of any other project or services.

The policy must permit the making of claims both during and at any time after the expiration of the Insurance Term.

Insurance Term: From the date of the Umbrella IC Deed until the seventh anniversary of the last Project Contract to achieve final completion (as set out in that Contract)

Limit: A minimum of \$50 million for any one occurrence and in the aggregate subject to an automatic reinstatement.

3 Workers' compensation insurance

Coverage: A suitable policy against any liability, loss, claim, demand, suit or proceeding. Costs and expenses arising at common law or under any statute (including the Workers Compensation Act 1987 (NSW)) or other legislative provision relating to workers compensation, as a result of personal injury or death of any person employed or taken to be employed by the Independent Certifier.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services.

4 Other insurances

Such other insurances as may be reasonably required by the Principal Parties from time to time which are obtainable with a reasonable premium (having regard to the nature of the risk to be insured against) including, without limitation, motor vehicle insurance covering third party property damage for all vehicles for a minimum of \$20 million for any one occurrence.

Insurance Term: From the date of this Deed until the Independent Certifier ceases to perform the Services.

Independent Certifier Contract Deed for [#] Contract

Schedule 4 Certification and Monitoring Plan

Schedule 5 Umbrella IC Deed



Independent Certifier Contract Deed for [#] Contract

Schedule 6 Subcontracts



Independent Certifier Contract Deed for [#] Contract

Schedule 7 Minimum Resources, Key
Personnel and Surveillance Levels

○

○

Independent Certifier Contract Deed for [#] Contract Signing page

Executed as a Deed.

DATED: _____

EXECUTED by **TRANSPORT FOR
NSW (ABN 16 804 239 602)** by its
authorised delegate in the presence of:

.....
Signature of witness

.....
Name of witness (block letters)

.....
Signature of secretary/other director

EXECUTED by [*Insert company name of Independent Certifier*] Pty Ltd (ABN XXX) by its authorised delegate in the presence of:

.....
Signature of witness

.....
Name of witness (block letters)

.....
Signature of secretary/other director

EXECUTED by **[[Insert company name of Other Party]]** Pty Ltd (ABN XXX) by its authorised delegate in the presence of:

.....
Signature of witness

.....
Name of witness (block letters)

.....
Signature of secretary/other director

Schedule 30 Not used

Schedule 31 Site Access Schedule

(Clause 3.1(a))

Site and Site Requirements

In addition to the requirements of the Contract, the Contractor must comply with the specific conditions of access and use for the Site which are set out below and identified as being applicable in the relevant column of Table 1, with the designated code for the condition as follows:

- (a) "C1": Access is subject to conditions as specified in RMS Collaboration Agreement and obligations in accordance with Schedule 4 of the Contract.
- (b) "C2": Access is subject to the requirements of Third Party Agreement between TfNSW and City of Parramatta Council.

Table 1. Site, access dates and conditions

Permanent Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
S-01	Church St and Barney St Intersection	15 days after the Date of Contract award	C1
S-02	Church St between Barney St and Dunlop St	15 days after the Date of Contract award	C1
S-03	Part of Lot 1/DP128124	26 November 2018	The Contractor shall carry out the demolition of the structures existing on the Site as per the conditions specified in the Contract.
S-04	Part of Lots 1/DP127963, 2/DP221501	26 November 2018	The Contractor shall carry out the demolition of the structures existing on the Site as per the conditions specified in the Contract.

Permanent Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
S-04	Part of Lot 3/DP221501	31 January 2019	The Contractor shall carry out the demolition of the structures existing on the Site as per the conditions specified in the Contract.
S-06	O'Connell St from Board St including Barney St Intersection	15 days after the Date of Contract award	C1
S-07	Church St between Dunlop St and Factory St	15 days after the Date of Contract award	C1
S-08	O'Connell St and Dunlop St Intersection	15 days after the Date of Contract award	C1
S-09	O'Connell St between Dunlop St and Factory St	15 days after the Date of Contract award	C1
S-10	O'Connell St and Factory St Intersection	15 days after the Date of Contract award	C1
S-11	Part of Lot SP7300	26 November 2018	The Contractor must maintain pedestrian and vehicle access to the existing property at all times. The Contractor must ensure secure fencing is maintained on the boundary to the existing property at all times.
S-12	Part of Lot SP15971	26 November 2018	The Contractor must maintain pedestrian and vehicle access to the existing property at all times. The Contractor must ensure secure fencing is maintained on the boundary to the existing property at all times.

Permanent Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
S-13	Part of Lot SP72261	26 November 2018	The Contractor must maintain pedestrian and vehicle access to the existing property at all times. The Contractor must ensure secure fencing is maintained on the boundary to the existing property at all times.
S-14	Part of Lot SP30815	26 November 2018	The Contractor must maintain pedestrian and vehicle access to the existing property at all times. The Contractor must ensure secure fencing is maintained on the boundary to the existing property at all times.
S-15	O'Connell St between Factory St and Albert St	15 days after the Date of Contract award	C1
S-16	O'Connell and Albert St Intersection	15 days after the Date of Contract award	C1
S-17	O'Connell St between Harold St and Victoria Road	15 days after the Date of Contract award	C1
S-18	Part of Lot 5/DP1182647	26 November 2018	The Contractor must maintain pedestrian and vehicle access to the existing property at all times. The Contractor must ensure secure fencing is maintained on the boundary to the existing property at all times.
S-19	George St and O'Connell St Intersection	15 days after the Date of Contract award	C1
S-20	George St between O'Connell St and Church St	15 days after the Date of Contract award	C1
S-21	George St and Church St Intersection	15 days after the Date of Contract award	C1

Permanent Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
S-22	George St and Horwood Place Intersection	15 days after the Date of Contract award	C1
S-23	George St and Smith St Intersection	15 days after the Date of Contract award	C1
S-24	George St between Smith St and Charles St	15 days after the Date of Contract award	C1
S-25	George St and Charles St Intersection	15 days after the Date of Contract award	C1
S-26	George St from Charles St to Harris St	15 days after the Date of Contract award	C1
S-27	Part of Lot B/DP433896	15 days after the Date of Contract award	C2
S-28	Part of Lot 1/DP69432	15 days after the Date of Contract award	C2
S-29	Part of Lot 34/DP1107897	15 days after the Date of Contract award	C2
S-30	Part of Lot 56/DP1107686	15 days after the Date of Contract award	C2
S-31	Part of Lot 1/DP1151643	15 days after the Date of Contract award	C2
S-32	Part of Lot 2/DP1151643	15 days after the Date of Contract award	C2
Temporary Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
TL-01	Part of Lot 1/DP128124	26 November 2018	The Contractor shall carry out the demolition of the structures existing on the Site as per the Works Brief

Permanent Land			
Ref #	Lot No/Description	Access Dates	Conditions of Access and Use
TL-02	Part of Lots 1/DP127963, 2/DP221501	26 November 2018	The Contractor shall carry out the demolition of the structures existing on the Site as per the Works Brief
TL-02	Part of Lot 3/DP221501	31 January 2019	The Contractor shall carry out the demolition of the structures existing on the Site as per the Works Brief
TL-03	Lot 34 / DP1107897	1 September 2018	The Contractor shall access, use and reinstate this Temporary Land in accordance with the conditions in the Licence of Occupation.

Attachment A – Licence of Occupation for 34 O'Connell Street



THIS LICENCE DEED is made on

BETWEEN: **PROPERTY NSW** (ABN 91 840 597 406) of Level 3, 4-6 Bligh Street, Bligh House, Sydney NSW 2000 (the "**Licensor**"); and

AND: **TRANSPORT for NSW** ABN 18 804 239 602 a NSW Government agency constituted under the Transport Administration Act 1988 (NSW) of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067.

RECITALS

- A. The Licensor is the lessee owner of the premises known as Lot 34 in DP1206876 O'Connell Street Parramatta (Licensed Premises).
- B. The Licensee has requested permission to occupy and use the Licensed Premises for the Permitted Purpose for a term ending 31 October 2021.
- C. The Licensor has agreed to allow the Licensee to occupy and use the Licensed Premises for the Permitted Purpose on the terms of this Licence.

OPERATIVE PARTS

1 DEFINITIONS

1.1 Unless the context otherwise requires:

Commencement Date	means 1 August 2018.
Invitee	means any person who is on the Licensed Premises in connection with the Permitted Use and includes without limitation any agent, contractor, officer or employee of the Licensee.
Licence Fee	means the amount set out in Schedule 1 (inclusive of GST).
Permitted Purpose	means the purposes permitted under this Licence as set out in Schedule 1.
Services	means fire services, water, electricity, gas, communications and any other utility service whether being supplied by a private body or government instrumentality.
Term	means from the Commencement Date until Termination Date or as determined in accordance with this licence.
Termination Date	means 31 October 2021 unless extended in accordance with this licence.

2 GRANT OF LICENCE

- 2.1 The Licensor grants the Licensee a licence to use and occupy the Licensed Premises for the Term for the Permitted Purpose only (the 'Licence') on the terms of this Deed.
- 2.2 The Licence is non-exclusive other than for the rights of the Licensor under this Licence.
- 2.3 The Licensee must not use the Licensed Premises for any purpose other than the Permitted Purpose.
- 2.4 The Licensee agrees:
- (a) it is not its intention to create a relationship of landlord and tenant with the Licensor;
 - (b) the legal possession and control of the Licensed Premises at all times remains vested in the Licensor and it does not acquire any estate or interest in the Licensed Premises except as provided in this Deed; and
 - (c) this Licence does not in any way confer or impose any of the rights or obligations of a landlord or tenant or any other rights or obligations except only those expressed or implied by law or in this Deed.

3 TERM

- 3.1 The Licence commences on the Commencement Date and ends on the Termination Date unless otherwise extended by agreement of the parties or terminated earlier in accordance with clause 7.

4 LICENCE FEE

- 4.1 The Licensee must pay the Licensor the Licence Fee in pro rata quarterly instalments within a reasonable period of the Licensor issuing a Tax Invoice.
- 4.2 The Licensor must provide the Licensee with a Tax Invoice which complies with the GST Act prior to payment of the Licence Fee or any other payment due under the Licence and the additional amounts representing GST being paid.
- 4.4 GST means the goods and services tax as provided for by the New Tax System (Goods and Services Tax) Act 1999 and associated acts and regulations (the "GST Act") and the terms used in this clause have the meanings as defined in that Act.
- 4.5 The Licensee must pay all statutory fees and charges which are at any time during the Term payable in respect of the Licensed Premises or on account of the use and occupation of the Licensed Premises by the Licensee.

5. LICENSEE'S OBLIGATIONS

- 5.1 The Licensee agrees that:
- (a) it has the capacity to enter into this Licence; and
 - (b) the persons executing this Licence on its behalf are authorised to do so; and
 - (c) it holds all necessary approvals and authorities to use the Licensed Premises for the Permitted Purpose;

- (d) it will comply with and will ensure that all its employees, officers, servants, agents, contractors and invitees comply with all authorities and laws at its own cost; and
- (e) it will comply with and will ensure that all its employees, officers, servants, agents, contractors and invitees comply with all policies or directions as notified to it in writing by the Licensor at its own cost; and
- (f) it will not use or access the Licensed Premises in a manner which creates a nuisance, or causes loss, damage, degradation or contamination; (and in the case of contamination, any exacerbation of contamination) and it will take all necessary precautions to protect the Licensed Premises from loss, damage, degradation or contamination (or the exacerbation of contamination); and
- (g) it will ensure that the Licensed Premises are maintained and kept in good, safe repair; and kept secure, and
- (h) it will immediately make good (to the reasonable satisfaction of the Licensor) any loss, damage or degradation to the Licensed Premises and remediate (to the absolute satisfaction of the Licensor) any damage or contamination caused by its use or occupation and immediately notify the Licensor of any such loss, damage, degradation or contamination; and
- (i) it will ensure that the Licensed Premises are kept clean, tidy and free of pollution, rubbish, refuse, rodents, pests, insects and vermin at all times; and
- (j) it will not interfere with or permit the interference of any services (if any) on the Licensed Premises; and
- (k) it will not make or permit the making of any alterations or improvements or any other works to the Licensed Premises provided that the Licensee may install temporary fencing and site buildings (including offices and storage) without consent (provided that these are not permanently affixed to the Licensed Premises).

5.2 The Licensee will access, occupy and use the Licensed Premises at its own risk and cost.

5.3 The Licensee is solely responsible for all its invitees whilst they are on the Licensed Premises and must ensure that such persons comply with the Licensee's obligations under the Licence.

6 LICENSEE'S ACKNOWLEDGEMENTS

6.1 The Licensee acknowledges that:

- (a) the Licensor has not made any warranty or representation as to the suitability, condition or repair of, or the extent of contamination with respect to, the Licensed Premises (if any);
- (b) it has:
 - (i) inspected the Licensed Premises;
 - (ii) made its own enquiries as to the Licensed Premises including as to their state, repair, condition and extent of contamination;
 - (iii) satisfied itself as to the Licensed Premises in all respects, including without limitation as to the presence in, on or under the Licensed Premises of any services; and
 - (iv) satisfied itself as to the condition and repair of the Licensed Premises in all respects, including without limitation as to the presence in, on or under the Licensed Premises of any contamination;
- (c) the Licensor has not made any warranty or representation as to the suitability, condition or repair of the Licensed Premises for the Permitted Purpose.

- 6.2 The Licensor confirms that it is liable for all costs relating to contamination with respect to the Licensed Premises existing as at the Commencement Date (save to the extent that the Licensee exacerbates the existing contamination) and releases the Licensee from any liability for any costs relating to contamination with respect to the Licensed Premises existing as at the Commencement Date (save to the extent that the Licensee exacerbates the existing contamination).

7 TERMINATION

7.1 On expiration or termination of this Licence the Licensee must at its own cost:

- (a) vacate the Licensed Premises; and
- (b) remove any of its fixtures, fittings or improvements which the Licensor directs be removed from the Licensed Premises, at its own cost, and
- (c) make good any loss, damage, degradation or contamination caused to the Licensed Premises directly or indirectly as a result of the Licensee's use of the Licensed Premises to the absolute satisfaction of the Licensor; and
- (d) if requested by the Licensor, return the Licensed Premises or any part of them to the condition they were in immediately before the Commencement Date.

7.2 If the Licensee fails to comply with clause 7.3 the Licensor may comply with it on behalf of the Licensee at the Licensee's cost and recover any costs or expenses as a debt due to the Licensor.

7.3 The Licensor will not be responsible for any loss or damage caused directly or indirectly to the Licensee's fixtures or fittings in complying with clause 7.3.

8 INSURANCE

8.1 The Licensee acknowledges that it is self insured by the Treasury Managed Fund.

9 RELEASE AND INDEMNITY

9.1 The Licensee releases the Licensor, and all of their officers, employees, servants, agents, contractors and invitees ("Those Indemnified") from all actions, claims, liabilities and costs the Licensee may incur for any damage, loss, negligence, injury or death arising out of:

- (a) the Licensee's use and occupation of the Licensed Premises;
- (b) anything done or omitted to be done on the Licensed Premises by the Licensee;
- (c) anything arising in connection with the obstruction or limitation of access to adjacent or nearby property; or
- (d) any other matter or activity contemplated by this Licence and undertaken by the Licensee or any breach of this Licence by the Licensee.

except to the extent that the same is caused or contributed to by any breach of this Licence or any act, default, conduct, neglect, negligence or omission of any kind, the negligence or wrongful act or omission of Those Indemnified or any third party.

9.2 The Licensee indemnifies Those Indemnified against any liability, loss, cost, damage or expense arising directly or indirectly from or connected with any:

- (a) breach of this Licence by the Licensee or its Invitees;
- (b) direct or indirect loss of or damage to property, loss of life or personal injury or other loss that may arise directly or indirectly in any way in respect of or in connection with the performance of this Licence;
- (c) intentional, unintentional or accidental act or omission by the Licensee or its Invitees;
- (d) negligent act or omission of the Licensee or any of its Invitees or any other person;
- (e) use or occupation of the Licensed Premises;

except to the extent caused or contributed to by any breach of this Licence or any act, default, conduct, neglect, negligence or omission of any kind, the negligence or wrongful act or omission of Those Indemnified or any third party.

10 NO DEALINGS WITH THIS LICENCE

10.1 The Licensor can, at its discretion, assign or otherwise deal with any or all of its rights or obligations under this Licence.

10.2 The Licensee cannot assign or otherwise deal with any or all of its rights or obligations under this Licence.

10.3 For the avoidance of doubt, the Licensee may allow its agents, officers, employees, contractors and sub-contractors to exercise its rights under this Licence.

11 NOTICES

11.1 The parties must serve any required notices on the other party in writing and by leaving or posting it at the address on the first page of this Licence.

12 VARIATION

12.1 This Licence can be varied by agreement of the parties in writing.

13 COSTS

14.1 Each party is to pay their own costs (including legal costs) with respect to the preparation, negotiation and completion of this Licence. The Licensee will pay for any costs incurred by the Licensor because of any breach by the Licensee of this Licence.

14.2 Anything the Licensee does do, may do or is required to do under this Licence is done at the sole cost of the Licensee.

14 Holding Over

If after the Termination Date, the Licensee continues to occupy the Licensed Premises:

- (a) the Licensee occupies the Licensed Premises on a rolling monthly license basis and the Licensee must pay the Licence Fee on a monthly basis;
- (b) this Licence otherwise continues on the terms and conditions of this Licence, modified so as to apply to a monthly licence; and
- (c) either the Licensor or the Licensee may terminate the monthly licence at any time by giving to the other at least 1 month's written notice expiring on any date.

15 Term Extension

If the Licensee gives the Licensor a notice stating that it wants an 18 month extension of the Term not less than 1 month and not more than 9 months before the Termination Date then the Licensor and the Licensee agree that the Termination Date is extended to 30 April 2023.

EXECUTED AS AN AGREEMENT

SIGNED by) **PROPERTY NSW**)
ABN 91 840 597 406 by its authorised)
delegate, without assuming)
any personal liability and I hereby certify)
that I have no notice of the revocation of)
such delegation and in the presence of:)

Signature of authorised
Property NSW delegate
Name printed:

.....
Witness
Name printed:

EXECUTED by **TRANSPORT FOR NSW**
ABN 18 804 239 602 by its authorised
delegate in the presence of:

_____ ←
Signature of witness

_____ ←
Signature of authorised delegate

Name

Name: James White, Director Group Property

SCHEDULE 1

Commencement Date	1 August 2018
Licence Fee	\$(insert) per month [market value licence fee to be agreed and inserted]
Licensed Premises	Lot 34 O'Connell Street Parramatta
Licensee	TRANSPORT for NSW ABN 18 804 239 602 a NSW Government agency constituted under the Transport Administration Act 1988 (NSW) of Level 5, Tower A, Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067. FAO: Executive Director Group Property
Licensor	PROPERTY NSW ABN 91 840 597 406 Asset Manager - details to be confirmed
Permitted Purpose	Use of site office accommodation and material storage, including vehicle access and parking.
Termination Date	31 October 2021 (subject to clause 15)

Exhibit A – TfNSW Standard requirements



Transport
for NSW

Exhibit A

TfNSW Standard Requirements

Parramatta Light Rail Stage-1 Enabling Works

5TP-FT-425/3.0

Infrastructure and Services

Integrated Management System

Status:	Approved
Version:	3.0
Section:	Commercial
Business unit:	Procurement
Date of issue:	25 June 2018
Review date:	25 June 2018
Asset classes:	<input type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input type="checkbox"/> Multi Sites; <input type="checkbox"/> Systems; <input type="checkbox"/> Fleets

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Document History

Version	Date of approval	Doc. control no.	Summary of change
		5899481_12	
		5899481_13	
		5899481_14	
		5899481_15 KWM Doc ID: 37104447_9	Lawyers reviewed for conformance with the General Conditions of Contract. Execution version

Note - this document includes hyperlinks to TfNSW-authored reference documents.

Where the TfNSW reference document is publicly available, the link will take the user to TfNSW's website, where the particular reference document can be located. Access to these documents is available to all users.

Where the TfNSW reference document is not publicly available, the link will take the user to TfNSW's intranet and the QMS system where the document is located. Access is limited to users with TfNSW intranet access. Contractors do not have access to QMS and must therefore be provided with these reference documents as part of this TSR. The list of these reference documents can be found in Annexure G of this TSR.

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1. Introduction

- (a) This TINSW Standard Requirement (TSR) describes TfNSW's requirements and processes for the management of the Contractor's Activities.
- (b) The Contractor must comply with the requirements detailed in this TSR, including its Annexures unless noted otherwise in Annexure A - Additional Project Requirements.
- (c) The Contractor must comply with the requirements of the Reference Documents listed in Annexure G of this TSR.
- (d) Wherever used in this TSR, capitalised words and phrases have their general meaning unless otherwise noted in the Contract or Annexure B of this TSR.

2. Project Administration

2.1. Contract Management Plan (CMP)

- (a) The Contractor must have in place, maintain and consistently apply until Final Completion, a Contract Management Plan (CMP) and with sections and sub plans describing how the Project will be delivered. The CMP must include the requirements of "RMS General Quality Specification- D&C O6 Quality Management System (Type 6)" and also include the content described in Annexure C.
- (b) The Contractor's Activities must be carried out in accordance with the CMP.
- (c) The timing and frequency for the initial and subsequent submissions of the CMP to the Principal's Representative for review in accordance with the Contract, is nominated in Annexure A of this TSR.

2.2. Contractor's Program

Without limiting the Contract, the Contractor's Program and all other programs must comply with the requirements of Annexure D.

2.3. Document Management

The Contractor must use the nominated electronic portal listed in Annexure A.

2.4. Monthly Reporting

Unless otherwise noted in Annexure A, the Contractor must prepare and submit a progress report on a monthly basis which complies with Annexure F, to the Principal's Representative for review in accordance with the Contract.

2.5. Audit

- (a) The Contractor must comply with the following requirements:
 - (i) should the Principal establish a Compliance Working Group (CWG), the Contractor must provide suitably competent attendees and resources until Final Completion;
 - (ii) the Contractor must attend the CWG meetings and participate efficiently to ensure the success of the CWG as well as ensuring that all audits are coordinated, lead and managed through the CWG; and
 - (iii) the Principal may also utilise independent auditors to assist with its inspections including audit and surveillance.
- (b) When any audit or inspection is to be undertaken by the Principal, the Contractor must:

- (i) make available, all records and Documents;
 - (ii) make suitable facilities available to accommodate the audit and audit team; and
 - (iii) provide all reasonable assistance during the audit including the participation of representatives from the Contractor and Subcontractors organisations.
- (c) The Contractor must ensure that all recommendations arising from any audit are actioned in accordance with appropriate corrective and preventive systems in a timely and agreed manner.
- (d) The Contractor must provide the Principal's Representative with a program of audits and the audit results when requested.

2.6. Interface Management

- (a) The Contractor must interface with the Interface Contractors and Other Contractors in accordance with the Contract and the Works Brief.
- (b) The Contractor must allow for relevant interfaces such as the Infrastructure Contractor's developments (both proposed and approved), and the Parramatta Stadium works through both the design and the construction phases.

2.7. Training, Competence and Reference Checks

The Contractor must ensure that all persons engaged in carrying out the Contractor's Activities:

- (a) are inducted, appropriately trained and made aware of the requirements of the Contract with particular focus on: incident management/reporting procedures; community enquiries or complaints; and media enquiries, prior to commencing work on Site;
- (b) maintain records of all training and inductions carried out;
- (c) attend any training provided by the Principal specified in Annexure A;
- (d) when directed by Principal's Representative, are subject to police criminal record checks. The Contractor must promptly notify the Principal's Representative if any offences have been recorded; and
- (e) hold certificates of competency for the operation of plant and are assessed and deemed competent to operate the plant for its intended use to the satisfaction of the Contractor.

2.8. Incident Management

- (a) The Contractor must provide verbal notification to the Principal's Representative of any Incident or Issue as soon as practical and within one hour.
- (b) The Contractor must report all Incidents using the [InControl Incident Management System \(INX\)](#) as soon as possible, and no later than 8 hours after the occurrence of the Incident or Issue. Should INX not be accessible, the Contractor must report in a manner that enables effective and subsequent recording into INX.
- (c) The Contractor must undertake a preliminary investigation of all minor incidents within 5 Business Days of the Incident, unless otherwise agreed by the Principal's Representative. Major investigations must be completed within 20 Business Days of the Incident. Terms of reference for major investigations will be issued by the Principal. If the Principal's Representative requires the appointment of an external independent investigator, the Contractor will bear the cost of that appointment.

- (d) The Principal may participate in any investigation being undertaken by the Contractor or initiate its own investigation. If the Principal instigates its own investigation the Contractor must provide the Principal with all assistance reasonably required for the purposes of the investigation, this includes the waiver of legal professional privilege over any investigation report prepared by, or on behalf of, the Contractor. The parties may agree that any investigation report that is subject to legal professional privilege may, between the Contractor and the Principal, be subject to a common interest privilege.
- (e) In the event of an Incident or Issue, the Contractor must not contact or provide information to any person (other than that which is required to directly manage the Incident or to comply with Law), including any stakeholder, the media or the public, without the prior approval of the Principal. The Contractor must make available senior personnel to respond to the community, the media and other stakeholders when required by the Principal.
- (f) All notifiable occurrences under WHS, Rail Safety National Law, or any other applicable Law must be reported immediately to the Principal's Representative and to the relevant Regulatory Authority. Where any type of notice, infringement or fine by a regulator has been issued to the Contractor in relation to undertaking the Works, the Contractor must immediately notify the Principal's Representative and provide a copy of the notice, infringement or fine within 24 hours of receipt from the relevant Regulatory Authority.
- (g) The Contractor must provide the Principal with all necessary communications materials that may need to be disseminated as a result of such Incidents, when required by the Principal.
- (h) If the Contractor fails to adequately rectify an Issue, the Principal reserves the right to suspend the Works until such time as the Issue has been rectified. The Principal will not approve any Variations from the Contractor in relation to this suspension and the Contractor will bear all costs in connection with the suspension.

3. Planning and Environmental Management

The Contractor is required to satisfy all legislation, policies, Authority Approvals, Codes and Standards with respect to the environmental management of the Works.

3.1. Planning and Approvals

- (a) The Contractor must comply with the Planning Approval and Planning Approval Matrix.
- (b) Where the Contractor is responsible for preparing a submission of Design Documentation to an Authority for an Authority Approval, or where an Authority requests a document submission, the Contractor must provide that submission to the Principal's Representative for review and response. The Contractor must satisfy the process outlined in Clause 9.8 of the Contract in relation to the submission of Design Documentation to the relevant Authority.
- (c) The Contractor is to address any comments provided by the Principal's Representative and provide a final submission to the Principal with a request to forward to the relevant Authority. The Principal may provide additional comments to the Contractor should the previous comments not be adequately addressed or additional information has been received by the Principal.
- (d) The Contractor must comply with the nominated environmental compliance monitoring system, where nominated in Annexure A.
- (e) In the event of pre-construction works, the Contractor must submit the details of the Pre-Construction Works to the Principal's Representative using the form "TINSW Pre-Construction Minor Works Approval – 9TP-FT-202" for review in accordance with the Contract.
- (f) Consistency checklists and environmental reviews are to be completed by the Contractor where stated in Annexure A and provided to the Principal's Representative for review in accordance with the requirements of the Contract.

- (g) Whilst TfNSW, in its role as the Proponent under the *Environmental Planning and Assessment Act 1979* (NSW) will endeavour to process the consistency assessment or modification within a reasonable time period, TfNSW (as the Principal), is not liable for any claim by the Contractor (due to impacts upon time, cost, requirements of additional / modified conditions of approval, refusal of any consistency assessment / modification, or other relevant factor) arising from the assessment and determination of the consistency assessment and/or modification.
- (h) The Contractor must obtain all Authority Approvals except for those Authority Approvals as specified in Schedule 7 of the Contract.

3.2. Environmental Management

- (a) The Contractor must provide sufficient competent environmental resources on and offsite to ensure effective implementation of the CEMP and the broader requirements of the Contract.
- (b) The Contractor's Activities, Works and Temporary Works must be provided, having regard to the Principal's [Environmental Guidelines, included in Annexure G](#).
- (c) The Contractor's environmental resources must be based at the location of the Contractor's Activities and the Environmental Manager must be present during all inspections undertaken by the Environment Representative (ER).
- (d) The Contractor's Environmental Management System (EMS) must comply with the requirements stated in Annexure A.
- (e) Where environmental non-compliance or incidents arise in the Contractor's Activities, they must be reported by the Contractor using the INX system and comply with the requirements of "[TfNSW Environmental Incident Classification and Reporting – 9TP-PR-105](#)" and the Planning Approval.
- (f) The Contractor must action any findings by the Environment Representative from Site inspections or document reviews within the time frames required by the Environment Representative.
- (g) The Contractor must develop, implement and maintain Environmental Control Maps (ECMs) in accordance with all Authority Approvals and comply with "[TfNSW Guide to Environmental Control Map – 3TP-SD-015](#)" as well as preparing each ECM as a map in both A0 and A3 sizes.
- (h) The Contractor must progressively review and update the ECMs (to incorporate Works progression and changing characteristics of the Site), amending environmental protection measures where those identified fail to achieve continuous compliance with the environmental obligations under the Contract.
- (i) The Contractor must submit all ECMs to the Principal's Representative for review in accordance with the Contract.
- (j) The ECMs must form part of the Site induction.
- (k) The Contractor must comply with section 7.5.2 Control of Records of "AS/NZS ISO 14001:2016" and retain all environmental records for a period of no less than 5 years from Completion.
- (l) The Contractor must provide the Principal with copies of the environmental records stated in Part 3 of Annexure E. Any records not required to be stored on-site must be forwarded to the Principal within 3 Business Days of a request by the Principal's Representative.

3.3. Noise and Vibration

The Contractor must ensure:

- (a) All construction of the Works complies with [Interim Construction Noise Guideline](#) (DEC, 2009).
- (b) All construction noise for the Project complies with the "TfNSW Construction Noise and Vibration Strategy" TTP-ST-157, included in Annexure G and, where applicable, the [NSW Road Noise Policy](#) (NSW EPA, 2011).
- (c) All vibration from the Contractor's Activities comply with [Assessing Vibration: Technical Guidelines](#) (DEC, 2006); and
- (d) Implement the TfNSW Construction Noise and Vibration Strategy (TTP-ST-157/4.0)

Should the Contractor propose out of hours work, they must submit an out of hours work application in accordance with the TfNSW Construction Noise and Vibration Strategy or application to the EPA (if the Works are being undertaken under an Environment Protection Licence). The out of hours works may not proceed without prior authorisation by TfNSW (and EPA, where relevant).

3.4. Environmental Coordination

The Contractor's environmental manager must:

- (a) attend fortnightly (or weekly as required) environmental management coordination meetings with the TfNSW Environmental Representative and the Interface Contractors; and
- (b) monthly environmental and sustainability reference group meetings with key stakeholders to discuss and resolve environmental issues, these include:
 - (i) City of Parramatta Council;
 - (ii) Department of Planning & Environment;
 - (iii) UrbanGrowth; and
 - (iv) NSW Health.

3.5. Environmental Design Review

The Design Documentation prepared for the 100% detailed design must include an Environmental Design Review Report prepared by a suitably qualified environmental specialist that:

- (a) describes the process of environmental review of the design;
- (b) provides evidence as to how environmental constraints have been considered and opportunities to avoid or reduce impacts realised;
- (c) where it has not been possible to avoid or further reduce the identified impacts, justification as to why this was not achievable;
- (d) documents the design's compliance with the relevant commitments in the Planning Approval; and
- (e) demonstrate that they have considered and identified feasible and reasonable opportunities for Aboriginal and non-Aboriginal heritage interpretation and for the promotion of significant environmental features / sites.

The Environmental Requirements must be communicated to all personnel involved in the detailed design process, in particular those involved in preparation of design documentation.

Any changes to the environmental aspects of the design arising during construction, subsequent to the 100% detailed design needs to be agreed with the Principal.

3.6. Management of Impacts on Trees

3.6.1. Personnel

The Contractor must engage:

- (a) an arborist to assess and advise on potential impacts on, and mitigation measures for, trees. The arborist must be suitably experienced and have a minimum AQF Level 5 qualification in arboriculture; and
- (b) a suitably qualified and experienced ecologist to assess and advise on potential impacts on and mitigation measures for patches of vegetation, and for assessment of potential offset sites.

3.6.2. Tree Register

The Contractor must maintain a Tree Register. The Contractor's Tree Register must be used to record:

- (a) the outcomes of the arborist's assessment of potential impacts on individual trees and patches of vegetation;
- (b) details as to whether the tree or patch of vegetation is to be retained, relocated, pruned or removed;
- (c) the decision as to whether the tree or patch of vegetation is to be retained, relocated, pruned or removed, and a cross reference to the relevant documentation (e.g. Environmental Design Review Report); and
- (d) all new trees.

The Tree Register must be maintained in GIS and must include as a minimum those attributes identified in PLR Tree Register included in Annexure G. The Tree Register must be submitted to the Principal and Independent Arborist.

The Tree Register must also be used to track any changes in impact on trees or patches of vegetation (where relevant) arising from the progression of the construction methodology / planning. The Contractor shall maintain an up to date Tree Register for the duration of the Contract.

3.6.3. Design Review for Impacts on Trees

The Environmental Design Review Report must include an up to date copy of the Tree Register. Where it is proposed to remove, prune or relocate a tree or patch of vegetation, the impact assessment hierarchy detailed in Section 2.1 of the Vegetation Offset Guide must be followed. The Environmental Design Review Report must document the application of the hierarchy, options assessment process, and preferred option and resultant tree impact. The options considered may include, for example:

- (a) Relocation of the design element away from the tree or patch of vegetation;
- (b) Modification of the design to reduce the impact on the tree or patch of vegetation (e.g. use of porous pavement, minimise need for excavation, etc.);
- (c) Reduction in the standard offsets to underground services; or
- (d) Adoption of tree sensitive construction techniques.

For trees proposed for pruning or relocation that will be subject to medium or high impacts, the Contractor's Arborist must demonstrate that the tree will continue to remain viable in the long term.

The Contractor is not permitted to remove any trees other than those identified for removal in the Concept Design in the Works Brief without the prior approval of the TINSW's Environmental Manager.

The Independent Arborist will review the design review for impacts on trees and endorse the proposed level of impact and mitigation measures prior to the impact occurring.

3.6.4. Tree Impacts

All tree management activities (e.g. protection, pruning, relocation or removal) will be undertaken by the Contractor.

Where a tree is subject to high impact, root investigation by non-destructive methods is required to determine the extent of the root system and to inform the assessment of the ongoing viability of the tree.

Consideration must be given to the location and distribution of the roots (including above or below ground restrictions affecting growth), tree species, condition, Site constraints and other factors.

Where a tree is subject to high impact, removal of existing hard surfaces should, where possible, be undertaken manually to avoid root damage.

3.6.5. Tree Protection

The Contractor must prepare a Tree Protection Plan for all trees to be retained (including those that are to be pruned for the project operational phase) that are located within 15 metres of the works footprint, to identify any tree-specific requirements as required. The Tree Protection Plan must meet the requirements of AS4970-2009 and be submitted to TfNSW for review and approval by the Independent Arborist prior to the commencement of the Works.

The endorsed Tree Protection Plan must be kept on-site for the full duration of the Works and construction personnel must be inducted in the tree protection requirements.

Monthly inspections of tree protection works must be undertaken by the Contractor's Arborist to assess compliance with the endorsed Tree Protection Plan and the health of the tree.

Any other construction activities within the TPZ of the subject trees must be assessed and endorsed by the Independent Arborist prior to commencement, and must comply with AS 4970-2009 "Protection of trees on development sites".

3.6.6. Pruning of Trees

Pruning of trees must be undertaken by an arborist in accordance with AS 4373-2007 "Pruning of amenity trees", and must be no greater than that required for the required construction clearances and / or the necessary clearance from the operational PLR.

Pruning should seek to remove multiple smaller branches, rather than large single branches / portions of the tree with a view to decreasing the impacts of pruning and the size of pruning wounds.

Minor pruning works must be undertaken by an arborist with a minimum AQF Level 3 qualification in arboriculture.

3.6.7. Reporting

Updates on the status of tree removals must be provided to TfNSW weekly, and upon request. As a minimum this must include the Tree Register.

A monthly progress report must be provided to TfNSW, to include:

- (a) Progress reporting on tree removals, relocations and pruning in the month to date;
- (b) Tree removals, relocations and pruning programmed for the next two months; and
- (c) Progress reporting on planting of trees identified in the detailed design.

3.6.8. Threatened Species and Ecological Communities

Trees or other vegetation that form part of a "Threatened Ecological Community" or are "Threatened Species" listed under the *Biodiversity Conservation Act 2016* (NSW), *Fisheries Management Act 1994* (NSW) or *Environment Protection and Biodiversity Conservation Act 1999* (Cth) are not to be removed unless otherwise authorised under the Planning Approval or by TfNSW's Environmental Representative under a Vegetation Removal Application.

3.6.9. Targets

Procure tree stock necessary to implement the tree plantings identified in the in the "Parramatta Light Rail Urban Design Requirements" (PLR-ARA-UD-0000-RPT-00001) and the landscape plans, commensurate with the requirements of AS 2303:2015 "Tree stock for landscape use". These plants shall be procured within three months of the Date of Commencement of the Contractor's Activities, and maintained and grown in a nursery until such time as the proposed offsite is ready for planting.

Progressive implementation of the landscape plantings must be undertaken as the Works are completed as relevant to construction staging.

Mortality of plantings shall not exceed 5% within 1 year following implementation of the offset. In the event of mortality greater than 5% the subject plantings shall be replaced.

3.6.10. Heritage

- (a) The Contractor must hold regular meetings with the Aboriginal Focus Group (AFG) established for the PLR Project in order to:
 - (i) Provide updates on the progress of the works and forthcoming activities; and
 - (ii) Provide updates on progress of the commitments made in the "Aboriginal Cultural Heritage Assessment Report" prepared for the Environmental Impact Statement (TINSW, 2017a).
- (b) The AFG meeting schedule must be agreed with TINSW, and must as a minimum be scheduled as required for key activities or project milestones.
- (c) The Contractor must include as part of their environmental training program training on Aboriginal cultural heritage sensitivity and awareness, and their responsibilities under the National Parks and Wildlife Act 1974 (NSW), the Planning Approval and the Environmental Impact Statement (TINSW, 2017a).
- (d) The Contractor must commit to interfacing effectively with the other Contractors for coordination of activities undertaken in compliance with these heritage requirements.

3.6.11. Tree Offset Package

TINSW is responsible for the Tree Offset Package. The Contractor must plant the trees identified in the Concept Design.

4. Sustainability

4.1. Management and Governance

- (a) The Contractor must:
 - (i) implement design and construction initiatives which contribute to the Contractor meeting the sustainability goals and targets included in: this document; the "Parramatta Light Rail Sustainability Strategy"; the "Project Sustainability Information Document"; the "TINSW Sustainable Design Guidelines v4.0"; Infrastructure Sustainability Council of Australia IS rating tool version 1.2; the environmental approval; and the "NSW Government Resource Efficiency Policy" (see Schedule 9 of the Contract);
 - (ii) be responsible for Project climate change risk assessment updates during final design stage;
 - (iii) be responsible for greenhouse gas footprint updates as required during final design stage using the TINSW CERT tool;
 - (iv) achieve these requirements in conjunction with all other parts of the Contract;
 - (v) use the ISCA IS Rating Scheme version 1.2 to achieve the minimum ratings specified;
 - (vi) The Contractor is responsible for registration, administration and fees associated with obtaining an ISCA Rating;

- (vii) develop, implement and maintain the Sustainability Management Plan, governance structures, processes and systems that ensure integration and implementation of all sustainability considerations, initiatives and reporting as per Annexure C;
 - (viii) ensure that sustainability is embedded into the delivery of the Contract;
 - (ix) obtain an Infrastructure Sustainability (IS) Rating using the credit weightings and ISCA Base Case Assumptions provided by TfNSW, or as otherwise agreed and approved with ISCA. A copy of the agreement with ISCA must be provided to TfNSW;
 - (x) work with TfNSW during the design phase to enable the interim design process to achieve the required As – Built ISCA IS rating;
 - (xi) achieve a minimum ISCA IS 'Excellent' rating with a minimum score of 55 for As-Built during Project delivery;
 - (xii) achieve the As-Built rating within two months of Completion of each Portion of the Works; and
 - (xiii) achieve, as a minimum, Level 1 for Man-4 "Inspection and Auditing" for its management activities using the IS Rating Scheme version 1.2 tool.
- (b) The sustainability objectives and requirements described in the Contract must be addressed in:
- (i) Site inductions and training for all persons involved in the Works; and
 - (ii) relevant Management Plans (including the CEMP) for the management, coordination, design and delivery of the Works.

4.2. Sustainability Reporting

- (a) The Contractor must submit to TfNSW a Monthly Sustainability Data Report (MSDR) along with the Contractor's Project Monthly Report. The MSDR must at a minimum detail the Contractor's performance against the targets identified in the TSR and the Sustainability Management Plan(s) (outlined in Annexure C), including:
- (i) carbon emissions throughout construction in accordance with the requirements of TfNSW's Carbon Estimate and Reporting Tool (CERT);
 - (ii) performance against the carbon emissions target identified in the energy and carbon management plan;
 - (iii) confirmation of renewable energy purchase offsets as required in the TSRs;
 - (iv) planned and implemented mitigation measures and other activities as required by the climate risk assessment documentation relating to the Project;
 - (v) volume and percentage of potable and non-potable water consumed for the Works and performance against targets;
 - (vi) waste volumes to verify percentage reduction targets as required by the Contract;
 - (vii) volume and final destination of useable spoil reused within the Site, beneficially reused offsite or disposed offsite;
 - (viii) quantities of steel and concrete which have been used for the Works; and

- (ix) volume weighted average of substitute cementitious content in concrete used for the Works, and the substitute materials specified and categorised.

- (b) The Contractor must participate in Sustainability Forums, hosted by the Principal which may include the Infrastructure Contractor and SOM Contractor on at least a quarterly basis and present progress updates, sustainability performance, including ISCA scorecard tracking, lessons learnt and other information as requested.

4.3. Procurement and Purchasing

- (a) The Contractor must develop, implement and maintain a sustainable procurement policy and processes aligned with the requirements of BS 8903:2010 "Principles and framework for procuring sustainably – Guide" or ISO20400:2017 "Sustainable Procurement – Guidance". This must be documented in the Contractor's Sustainability Management Plan.

- (b) The Contractor must:

- (i) achieve, as a minimum, the following for its procurement activities using the IS Rating Scheme version 1.2 tool:
 - (A) Level 2 for Pro-1 "Commitment to Sustainable Procurement";
 - (B) Level 2 for Pro-2 "Identification of Suppliers";
 - (C) Level 2 for Pro-3 "Supplier Evaluation and Contract Award";
 - (D) Level 1 for Pro-4 "Managing Supplier Performance";
- (ii) develop, implement and maintain processes and procedures for informing Subcontractors regarding sustainable procurement requirements for purchase of materials, goods and services through all phases of the Contract;
- (iii) demonstrate that sustainability training is being provided to "High Impact Suppliers", as defined in the ISCA rating tool as those suppliers with over 5% of materials/products of the Project by value, and may include concrete, asphalt, steel and waste management providers;
- (iv) register and undertake a self-assessment under the "Australian Supply Chain Sustainability School" and request that their Subcontractors and suppliers do the same; and
- (v) ensure that where materials, services and products are sourced from a developing country, the suppliers operations are in compliance with:
 - (A) all relevant laws and regulations local to that country;
 - (B) the International Labour Organisation's Fundamental Conventions; and
 - (C) the ten principles of the UN Global Compact.

4.4. Materials

- (a) The Contractor must:

- (i) achieve or exceed the following ISCA IS Rating Scheme:
 - (A) Level 2 for the Mat-2 "Environmentally labelled products and supply chains" credit demonstrating that 3-9% of materials/products by value (as defined by ISCA) have an ISCA approved environmental label.
- (ii) use recycled and recyclable materials where possible, including recycled steel for concrete reinforcing, without compromise to the

structural integrity, longevity and visual quality of materials and structures;

- (iii) use reusable formwork where practicable;
- (iv) source concrete from members of Cement Concrete and Aggregates Australia or a similar international association or organisation by agreement with the Principal;
- (v) use a concrete mix for all applications where specifications and supply do not limit, that shall have a minimum 25% substitution of fly ash or 50% blast furnace slag in accordance with AS5100.5; and
- (vi) source fabricated steel products that are produced in accordance with AS5131:2016 Structural Steelwork - Fabrication and erection and certified through the National Structural Steelwork Compliance Scheme.

4.5. Volatile Organic Compounds

(a) The Contractor must:

- (i) source polyvinyl chloride (PVC) which is compliant with the Green Building Council of Australia Best Practice Guidelines for PVC in the built environment; and
- (ii) ensure all surface coatings comply with the Australian Paint Approval Scheme (APAS) Volatile Organic Compounds Limits as per GREP requirements.

4.6. Climate change and adaptation

The Contractor must:

- (a) Assist the Principal in the update of the Project climate change risk assessment for any design changes during the final design phase and until the Completion of the Works. Design changes proposed by the Contractor should consider any future climate change risks in accordance with the guidance and requirements included in the "TfNSW Climate Risk Assessment Guidelines", the ISCA IS Rating tool Technical Manual v1.2 - Climate Change Adaptation chapter and the AS5334:2013 "Climate Change Adaptation for Settlements and Infrastructure Standard";
- (b) attend interface meetings between the Principal, the SOM Contractor and the Infrastructure Contractor regarding the climate change risk assessment on at least a quarterly basis or as required to identify, allocate and manage / mitigate as appropriate any climate risks that may be interrelated between the three works packages (Enabling Works, Infrastructure Works and SOM) and document these in the Enabling Works risk register;
- (c) demonstrate the closeout of allocated actions related to climate risk within designated timeframes; and
- (d) implement measures to mitigate all climate change risks classified as "Extreme" and "High" as defined by TfNSW in accordance with SDG V4 CR3.

4.7. Energy and Carbon management

The Contractor must:

- (a) update the "Energy and Carbon Inventory Report" initially prepared by the Principal. The Energy and Carbon Inventory Report is to be updated by the Contractor at the 100% design stage, in accordance with the requirements of the Principal's Carbon Estimate and Reporting Tool (CERT). It must include both the Works and Temporary Works and address the requirements of SDGv4 CR1;

- (b) review and update the "Energy and Carbon Inventory Report" where there are any changes to the scope of the Project at significant design milestones as appropriate and in agreement with the Principal post final design review;
- (c) demonstrate, using the CERT, that the Contractor has achieved at least a 10% reduction in greenhouse gas emissions based on Contractor Activities measured against the CERT base case generated in the tool. The 10% reduction must be met at Design Stage 3 and again prior to the Date of Final Completion and address the requirements SDGV4 CR1 level P2;
- (d) achieve or exceed the following ISCA IS rating scheme version 1.2 credit requirements:
 - (i) Level 2 for the ENE-1 "Energy and Carbon Monitoring and Reduction" credit demonstrating a greenhouse gas emissions reduction of 10% below a base case footprint;
- (e) provide evidence to TfNSW that a minimum of 25% of the total electricity used in construction is offset through either one or a combination of the following:
 - (i) purchase of Australian Carbon Offset Credits;
 - (ii) purchase of renewable energy from an Accredited Renewable Energy Supplier; or
 - (iii) generation of on-site renewable energy;
- (f) implement design, construction and operational initiatives that align with the nominated greenhouse gas emission reduction target;
- (g) provide all new equipment within any site facilities meets the minimum standards detailed in the NSW Government Resource Efficiency Policy 2014, requirement E3 "minimum standards for new electrical appliances and equipment" and SDG v4 compulsory requirement CR2A;
- (h) develop and implement Green Travel Plans (including public transport information) for the personnel engaged in the delivery of Contractor's Activities and incorporate into Site inductions;
- (i) ensure that all Construction Plant and vehicles are selected and operated for optimum energy efficiency; and
- (j) maximise the energy efficiency of lighting through the use of LED's for all light fittings.

4.8. Water

- (a) The Contractor must achieve or exceed the following ISCA IS Rating Scheme v 1.2 credit requirements:
 - (i) Level 2 for the Wat-1 "water use monitoring and reduction" credit demonstrating a reduction in water use of 10% compared to a base case footprint; and
 - (ii) Level 1 for the Wat-2 "Replace potable water" credit.
- (b) The Contractor must minimise water demand, including total water consumption and potable water consumption until Final Completion of the Works which may include:
 - (i) using water efficient controls, fixtures and fittings;
 - (ii) harvesting rainwater, classed as non-potable water source;
 - (iii) using recycled water where available; and
 - (iv) collecting, treating and reusing stormwater and wastewater.
- (c) The Contractor must:

- (i) provide meters or meter readings and accurate volume data for water supply from recycled water networks and potable sources for the Works;
 - (ii) use recycled water for dust suppression;
 - (iii) ensure that all construction equipment requiring water is selected taking into account the water efficiency of the equipment and associated construction methodology;
 - (iv) water efficient construction methods must be described in all construction method statements to be applied by the Contractor; and
 - (v) ensure all water-using appliances and equipment within any site facilities meets the minimum standards detailed in the NSW Government Resource Efficiency Policy 2014, requirement W3 "minimum standards for new water using appliances".
- (d) For water used in onsite and offsite concrete batching plants, the Contractor must:
- (i) ensure that offsite and onsite batching plant concrete production operation water is recycled, suitably treated and incorporated into concrete production where feasible;
 - (ii) not use potable water as a substitute for non-potable water where on-site or local sources of non-potable water suitable for the Works are available; and
 - (iii) pass requirements relating to concrete production operation water down through its supply chain.

4.9. Waste

The Contractor must achieve or exceed the following ISCA IS Rating Scheme v 1.2 credit requirements:

- (a) Level 2 for Was-1 "Waste Management" credit demonstrating the monitoring, auditing and disposal of waste; and
- (b) Level 2 for Was-2 "Diversion from Landfill" credit demonstrating:
 - (i) 90% of Construction and demolition waste (by weight) to be diverted from landfill in accordance with SDGV4 CR4;
 - (ii) 40% of office waste has been diverted from landfill; and
 - (iii) 100% of Usable spoil (by weight) to be beneficially reused in accordance with SDGV4 CR5.

4.10. Sustainability Manager

The Contractor must provide a Sustainability Manager who must:

- (a) possess a recognised qualification relevant to the position of the Works and have recent relevant experience in sustainability management on projects similar to the Works;
- (b) be available as the Principal's primary contact on sustainability matters;
- (c) be responsible for and have the authority to develop and implement the contract sustainability requirements, including the requirements of the Sustainability Management Plan, outlined in Section 4 and Annexure C; and
- (d) be engaged full-time during the execution of the Contractor's Activities and be on or around the Site until the Completion of the Works.

5. Workforce Development and Social Procurement

5.1. General Requirements

- (a) The Contractor must comply with:
- (i) all requirements as outlined in these Standard Requirements;
 - (ii) the NSW Government Aboriginal Participation in Construction Policy 2015;
 - (iii) the NSW Procurement Directive PBD-2017-05 "Construction Training and Skills Development";
 - (iv) NSW Government Procurement: Small and Medium Enterprises Policy Framework;
 - (v) TfNSW's Social Procurement Workforce Policy; and
 - (vi) any other relevant legislative requirements.
- (b) The Contractor is responsible for the achievement of these requirements both directly and through its supply chain.
- (c) The workforce these requirements apply to are those engaged by the Contractor and throughout its supply chain in Australia.
- (d) The Contractor must:
- (i) assess current and future workforce skill needs and provide to the Principal's Representative thirty (30) Business Days after the Contract date the following completed templates and information and Management Plan (s) for review in accordance with the Contract (see Annexure C for details to be included in each):
 - (A) Aboriginal Participation Plan; and
 - (B) Small and Medium Enterprise Participation Plan;
 - (ii) engage and deploy suitable part time resources to manage, coordinate and deliver the requirements of workforce development and social procurement in this Contract. These personnel must have relevant experience and qualifications to establish, monitor, and implement strategies relating to workforce development, social procurement, and industry participation.
 - (iii) ensure that employment conditions for the workforce, including Apprentices employed by the Contractor and throughout the Contractor's supply chain meet or exceed the obligations and expectations of the National Employment Standards (NES), which provides a safety net for minimum wages.

5.2. Priority Group targets

- (a) The Contractor must ensure that by the Date of Final Completion, the workforce engaged directly on the Project by the Contractor and throughout its supply chain has included a minimum of at least:
- (i) 1.5% of the total estimated value of the contract was spent supporting Aboriginal participation. Consistent with the application of the NSW Government Aboriginal Participation in Construction Policy 2015; the allocation of this spend must include:
 - (A) at least 50% to be allocated to employment and education activities directly related to the project's planning, design, or delivery.

- (B) up to 50% of the targeted project spend allocated to expenses that are indirectly related to the project, but that contribute to the education and employment goals outlined in the NSW Government's Plan for Aboriginal affairs: education, employment and accountability
http://www.aboriginalaffairs.nsw.gov.au/pdfs/OCHRE/AA_OCHRE_final.pdf
- (ii) 20% of all trades positions were apprentices.
- (b) The Contractor must outline their model of mentoring of apprentices in the appropriate Management Plan as described in Section 5.1 above.

5.3. Training

- (a) All workers responsible for the supervision of Aboriginal employees must attend relevant Cultural Awareness Training.
- (b) All workers must complete Induction Training prior to commencing work on Site.

5.4. Social procurement and industry participation

The Contractor must:

- (a) maximise opportunities for "Small to Medium Enterprises" (SMEs) in the supply chain with a specific focus on the required targets and the interface with businesses in Greater Western Sydney (GWS), to deliver works, services or supplies that are required for the Contractor's Activities and across the supply chain.

5.5. Data Collection and Reporting

- (a) The Contractor must:
 - (i) use an electronic access control software application to track and report labour hours performed by their direct and indirect workforce, including hours completed by the target workforce groups;
 - (ii) submit a monthly progress report demonstrating how the targets listed in Sections 5.2 to 5.4 are being progressively achieved throughout the period of the Contract;
 - (iii) meet with the Principal's Representative on a monthly basis to discuss progress and compliance with the requirements of this Contract, and upcoming Contractor's Activities in relation to the requirements of this Contract;
 - (iv) advise the Principal's Representative during the monthly contract management meeting about its strategies to obtain workforce development funding, subsidies and grants and report on any funding, subsidies and grants it receives in relation to the Works; and
 - (v) provide a Monthly Workforce Development and Social Procurement Report throughout the period of the Contract, to be presented during the monthly meeting, detailing how they and their sub-contractors are meeting all aspects of the requirements in this document.
- (b) The Contractor's monthly progress report must contain the following information, in each case showing the number in the current month, hours worked, and the cumulative totals in the agreed format:
 - (i) "Full Time Equivalent" (FTE) workforce numbers and hours completed under the headings listed in A to C below:
 - (A) total number of people engaged on the Project;
 - (B) Aboriginals; and

- (C) apprentices;
 - (ii) the number of SMEs participating in the supply chain, including those in Greater Western Sydney (GWS);
 - (iii) details of the workforce participating in Cultural Awareness Training; and
 - (iv) expenditure with Aboriginal-owned businesses;
- (c) Randomly selected data from the monthly progress report may be audited by the Principal. The Contractor must provide the Principal's Representative with evidence associated with the reported data as requested.

6. Communications, Stakeholder and Community Engagement

6.1. General Requirements

The Contractor must:

- (a) manage and coordinate stakeholder and community liaison, consultation and notification in relation to the Contractor's Activities, unless agreed to by the Principal;
- (b) work cooperatively with the Principal to provide a coordinated approach to stakeholder and community liaison management, that is consistent across the stakeholders and communities affected by the Contractor's Activities as well as any activities being carried out by any Interface Contractor, Other Contractor, operator, and existing operator in so far as it relates to the Contractor's Activities;
- (c) make efforts to protect the reputation of the NSW Government and the Principal in the delivery of the Contractor's obligations under the Contract;
- (d) appoint experienced personnel to fulfil the communications requirements of the Contract and consult the Principal's Representative prior to taking any action that may impact on stakeholders and the community;
- (e) ensure that the Principal's Representative, stakeholders and the community are provided with notification of planned construction activities and the key milestones for the Works;
- (f) make efforts to provide stakeholders and the community with information on the impact of the Contractor's Activities, and their objectives, benefits, potential impacts and expected outcomes;
- (g) ensure that the Principal's Representative is informed of all issues raised by an Authority in relation to the Contractor's Activities, and is invited whenever the Contractor meets directly with an Authority;
- (h) inform the Principal's Representative of all issues raised directly with the Contractor by stakeholders and the community and is given the opportunity to be involved in the planning and coordination of all meetings, presentations and Site visits attended by stakeholders and members of the community;
- (i) inform the Principal's Representative as soon as practical and within one hour in relation to planned or unplanned community protests that do or may arise during the performance of the Contractor's Activities;
- (j) ensure the timeframes for review and approval defined by the Principal and resources for Document development, consultation, approval and Notification are incorporated into the Contractor's Program;
- (k) provide the Principal's Representative with accurate and adequate information on the status of the Contractor's Activities and any associated impacts;

- (l) consult the Principal's Representative prior to taking any unilateral action that may impact on the stakeholders or the community;
- (m) make appropriate senior personnel and subject matter experts available to attend meetings with the community or other stakeholders, as required or requested by the Principal's Representative;
- (n) The Contractor is not to communicate directly with any Authority unless written consent is provided by TfNSW; and
- (o) provide all final communications documents in PDF format that comply with the Level AA accessibility requirements in the [Web Content Accessibility Guidelines \(WCAG 2.0\) V2.0](#), if required by TfNSW.

6.2. Communications and Engagement Personnel

6.2.1. Personnel

The Contractor's team must consist of the following stakeholder and communications role:

- (a) be appointed to support the development and maintenance of ongoing relationships with stakeholders and the community;
- (b) be a senior appointment, reporting directly to the Contractor's leadership or executive team;
- (c) have a minimum of five years' experience in similar stakeholder and community engagement manager roles carrying out community engagement activities;
- (d) have demonstrated achievement in leading and delivering community engagement on complex, high profile projects;
- (e) have industry experience in public affairs management;
- (f) possess tertiary qualification in media, communications, public relations or other relevant discipline, or equivalent experience; and
- (g) the role must be based with the Contractor's Project Team (i.e. if the Contractor's Project Team is located in Parramatta, this role must not be located interstate or in the Sydney CBD), or as agreed to with the Principal's Representative.

6.2.2. Availability

The Contractor must ensure that the stakeholder and communications role:

- (a) is a position that is filled at all times, and must not be filled as an 'acting' position for more than four weeks; and
- (b) be available at the commencement of the Works and remain until the Date of Completion of the final Portion to achieve Completion.

6.3. Communications Management Control Group (CMCG)

- (a) The Principal will establish a CMCG prior to the start of the Contractor's Activities to provide a forum to exchange information and coordinate communication and consultation activities with stakeholders and the community to deliver a consistent approach.
- (b) The CMCG will meet fortnightly throughout the duration of the Contractor's Activities or as otherwise required by the Principal's Representative.
- (c) The Contractor's lead representative described in section 0, and any additional Contractor's personnel requested by the Principal's Representative, must attend all CMCG meetings.

6.4. Community Information Sessions

- (a) The Contractor must provide appropriate personnel, including technical experts, to attend community information sessions as required and requested by the Principal's Representative.
- (b) The Contractor must provide materials or information in accordance with section 6.5, to support the community information sessions, as requested by the Principal's Representative.
- (c) The Contractor must provide suitably qualified and experienced team members to attend a Principal's community information session or mobile community information centre at least twice per week (including weekends and out of office hours), if required, to take part in or community or stakeholder engagement events, presentations or other meetings.

6.5. Communication Material for the Public

6.5.1. Principal's Communication Material

The Principal may produce and distribute its own communication material and the Contractor must provide information contributing to the production of that communication material when requested by the Principal's Representative. This may include information such as construction status and updates and information on the status of current and upcoming Contractor's Activities. The Contractor must also provide relevant and supporting material, images, video and graphics when requested by the Principal's Representative.

6.5.2. "Contractor's Public Communication Material" (PCM)

- (a) The Contractor must produce its own PCM. The Principal's Representative's approval of the Contractor's proposed PCM is a Hold Point.
- (b) The Contractor must provide a copy of all final PCM and other information requested by the Principal's Representative in a PDF format that complies with the Level AA accessibility requirements in the [Web Content Accessibility Guidelines \(WCAG 2.0\) V2.0](#) for uploading to the Principal's website and any other websites, on the day they are delivered or released to the public.

6.6. Community and Stakeholder Notifications

- (a) The community and stakeholders must be notified of any current and upcoming Contractor's Activities with the potential to impact them, prior to their occurrence, and with the exception of Emergency Works, in accordance with this section 6.6.
- (b) The Contractor must produce and distribute all community and stakeholder Notifications.
- (c) Written Notifications must be distributed to all properties within 500 metres of the Contractor's Activities, or as agreed with the Principal's Representative.
- (d) Where distribution is not carried out by the Contractor, the Contractor must use a distribution company from the Principal's panel of nominated Subcontractors (to be supplied by TfNSW);
- (e) The Contractor must issue Notifications for the following:
 - (i) construction commencement;
 - (ii) significant milestones;
 - (iii) changes to the scope of work;
 - (iv) night works;
 - (v) changes to traffic conditions requiring traffic alerts;
 - (vi) modifications to pedestrian routes, cycle ways and bus stops;
 - (vii) out of hours work;

- (viii) disruption of residential or business access;
 - (ix) changing or disrupting of Utility Services; and
 - (x) investigation activities.
- (f) The Contractor must ensure that all Notifications are completed as per the TfNSW template.
- (g) The Contractor must provide and erect (electronic and static) signage that identifies changes to traffic and access arrangements, five days before the changes take place, for the following events:
- (i) making changes to pedestrian routes;
 - (ii) making changes to platforms or concourses;
 - (iii) impacting on cycle ways;
 - (iv) changing traffic conditions; and
 - (v) disrupting access to bus stops.
- (h) The Contractor must provide Notification to relevant Authorities at least seven days before commencing any Utility Service works.
- (i) The Principal's Representative will manage the customer relations management database. To support this, the Contractor must provide the Principal's Representative in writing within 48 hours (or as agreed to by the Principal's Representative) records of all details of contact and correspondence with the community and stakeholders, and publication and distribution details relating to all PCM. Recording enquiries and complaints should meet the requirements of section 6.12.

6.7. Project Advertisements

The Contractor must advertise all significant traffic management changes, detours, traffic disruptions and work outside any working hours contained in the Planning Approval and Construction and Environmental Management Plan at least seven days before any detour, disruption, work or change occurs. These adverts must be placed in local newspapers that cover the geographical areas of the Contractor's Activities, as agreed with the Principal's Representative.

6.8. Social Media

The Contractor must not engage in social media activity regarding the Project. Any requirement to supply written or verbal information to support the Principal's social media activity will be completed in accordance with section 6.6, and as agreed with the Principal's Representative.

6.9. Contractor's Hoardings and Fences

- (a) The Contractor must arrange for the production and installation of any site hoarding and fencing banners, including mesh, shade cloth or other material on the external face of any hoarding or fence on establishment of the Site, and where appropriate or requested by the Principal water filled barriers and other barriers to be covered with a banner.
- (b) Site hoarding and fencing banners must be replaced every six months, or as requested by the Principal, to ensure they remain clean and appropriate for their intended use, and be regularly audited to ensure they are fit for purpose.
- (c) All banner artwork print proofs must be submitted to and approved by the Principal's Representative prior to being used by the Contractor in the production of banner artwork. The Principal's Representative must be given a minimum of 10 Business Days to review the banner artwork print proofs. The Contractor must address all the Principal's comments on the print proofs to the satisfaction of the Principal's Representative, prior to being approved.
- (d) The Principal's Representative's approval of banner artwork print proofs is a Hold Point.

- (e) Installation plans for all hoardings or fencing banners, including shade cloth or other material on the external face of any hoarding or fence, must be submitted to and approved by the Principal's Representative prior to being erected by the Contractor. The Principal's Representative must be given a minimum of 10 Business Days to review and comment on banner installation plans. The Contractor must address the Principal's comments on the submitted Documents to the satisfaction of the Principal's Representative, prior to them being approved.
- (f) The Principal's Representative's approval of banner installation plans is a Hold Point.
- (g) Where agreed by the Principal's Representative, hoardings, banners and mesh may be reduced to increase sight lines during periods of construction where no protection from noise or dust is required but that still require water filled barriers.
- (h) The Contractor must follow the "TfNSW Infrastructure Project Signage Style Guide", to be provided by the Principal's Representative.

6.10. Graffiti and Bill Posters

- (a) Hoardings, site sheds, fencing, acoustic walls around the perimeter of the Site and any other structures built as part of the Works and Temporary Works must be maintained free of graffiti and any advertising not authorised by the Principal.
- (b) The Contractor must carry out daily inspections for graffiti and unauthorised advertising and must remove or cover any such graffiti or unauthorised advertising identified within the following timeframes:
 - (i) offensive graffiti must be cleaned or covered within 24 hours;
 - (ii) highly visible yet non-offensive graffiti must be cleaned or covered within one week;
 - (iii) graffiti that is neither offensive nor highly visible must be cleaned or covered during normal operations within one month; and
 - (iv) any advertising material including bill posters must be removed or covered within 24 hours.

6.11. Branding and Logos

The Contractor must follow the "TfNSW Editorial Style Guide" for all branding and logos used on any items, including:

- (a) marketing and promotional material;
- (b) Site safety signage;
- (c) hoarding and site fencing;
- (d) cranes and their flags;
- (e) other structures;
- (f) vehicles;
- (g) Construction Plant; and
- (h) clothing, including personal protection equipment.

6.12. Enquiries and Complaints Management

6.12.1. General

- (a) The Contractor is responsible for responding to complaints and enquiries received regarding the Contractor's Activities and impacts associated with the Contractor's Activities.
- (b) The Principal has established a TfNSW Project 24 hour "Construction Response Phone Line", a Project enquiry line, postal address and email address to which enquiries and complaints will be received. The Contractor must respond to enquiries and manage complaints directed to the Contractor by the Principal, or received directly.

6.12.2. Enquiries

In responding to all enquiries the Contractor must:

- (a) provide at least a verbal response to telephone enquiries within four hours from the time of the enquiry being received if during standard construction hours, or the next Business Day during all other hours, unless the enquirer agrees otherwise;
- (b) provide a written response to emails within 24 hours of their receipt, as approved by or agreed to by the Principal's Representative;
- (c) provide a written response to letters within five Business Days of their receipt as approved by or agreed to by the Principal's Representative;
- (d) record details of all enquiries in the "Enquiries and Complaints Spreadsheet" (template to be provided by TfNSW) including all contact details of the enquirer; and
- (e) send an updated version of the spreadsheet to the Principal's Representative within 24 hours of an enquiry being received and/or a response is provided, or as requested or to a timeline as agreed by the Principal's Representative.

6.12.3. Complaints

- (a) In responding to complaints the Contractor must:
 - (i) for complaints received by phone at any time: immediately investigate and determine the source of the complaint and within two hours make an initial call to the complainant where a phone number was provided or is available from previous records, unless the complainant agrees otherwise;
 - (ii) for complaints received by email during standard construction hours: within two hours from receipt, provide a written response as approved by or agreed to by the Principal's Representative or provide a verbal response within two hours if a contact number is available;
 - (iii) for complaints received by email outside standard construction hours: provide an immediate automated email response confirming receipt and including The Principal's Project 24 hour "Construction Response Phone Line" explaining that a full response will follow, and then within the first four hours of the next Business Day from receipt, provide a written response as approved by or agreed to by the Principal's Representative;
 - (iv) for complaints received by letter received within standard construction hours: within 24 hours of receipt provide a written response (or a verbal response within two hours if a contact number is available) as approved by or agreed to by the Principal's Representative;
 - (v) immediately notify the Principal's Representative if it is considered that the complaint does not relate to the Contractor's Activities;

- (vi) provide feedback to requests for information from the Principal's Representative in relation to responses to complaints within two hours of the request;
 - (vii) record details of all complaints in the "Enquiries and Complaints Spreadsheet" (template to be provided by TfNSW) including all contact details of the complainant; and
 - (viii) send an updated version of the "Enquiries and Complaints Spreadsheet" to the Principal's Representative within 24 hours of a complaint being received and/or a response is provided, or as requested or to a timeline as agreed by the Principal's Representative.
- (b) The Contractor must:
- (i) take all actions and implement all practicable measures to prevent the reoccurrence of stakeholder and community complaints; and
 - (ii) comply with all directions from the Principal's Representative, in relation to the resolution of any escalated complaints.

6.13. Media and Government Relations

- (a) The Contractor will take a collaborative approach to working with TfNSW to review media responses.
- (b) The Contractor must advise the Principal's Representative of any contact by the media or government representative within two hours of the contact.
- (c) The Contractor must not provide any statement (verbal or written) or any photographs or illustrations to the media or elected government representatives regarding the Contractor's Activities or the Project, without the prior written approval of Principal's Representative.
- (d) The Contractor must not permit any media or elected government representative on any part of the Site without the prior written approval of Principal's Representative.
- (e) The Contractor must assist the Principal in the management of media and government relations 24 hours a day, seven days a week, as required and requested by the Principal's Representative.
- (f) The Contractor must provide the Principal's Representative with relevant information required to respond to media and government enquiries, including providing verbal or written information to support a holding statement within 30 minutes and verbal or written information to support full responses within two hours of the enquiry or contact being made. During an ongoing event, including during an emergency, incident or crisis or as required and requested by the Principal's Representative, updates must be provided every hour.
- (g) Notwithstanding other requirements of the Contract, the Contractor must provide the Principal's Representative with at least eight weeks' notice prior to the commencement of the Contractor's Activities or other Site related activity and eight weeks' notice prior to the anticipated Date of Completion of any Portion. Updated notification must be provided at 10 Business Days, and again at five Business Days prior to the anticipated Date of Completion of any Portions.
- (h) The Contractor must provide at least 20 Business Days' notice to the Principal's Representative of any significant milestones, to be agreed with the Principal's Representative, to enable the Principal to organise official media events and/or announcements.
- (i) The Contractor will provide one or more spokesperson(s), if required, as agreed by the Principal's Representative, who will if required by the Principal's Representative receive media training to assist with engaging directly with media.

- (j) The Contractor will ensure that spokesperson(s) are accompanied by a media advisor at all media events or interviews.
- (k) The Contractor must immediately inform the Principal's Representative of any issues raised by or including stakeholders which could escalate to media (or media contact is known or threatened).
- (l) The Contractor must ensure all Site managers have the TfNSW media phone number (to be provided by the Principal's Representative) to provide to any media that arrive on Site without prior planning.
- (m) The Contractor must ensure that all of its personnel and all of the Subcontractors' personnel engaged in the Contractor's Activities are aware of and abide by the requirements of this section 6.13.

6.13.1 Site Inductions and Training

- (a) The Contractor must ensure its personnel and Subcontractors' personnel are adequately inducted and trained in incident management, incident reporting procedures, community enquiries or complaints, and media and government enquiries, prior to commencing any Contractor's Activities.
- (b) Site inductions and training material must be regularly updated to address any actions taken in response to stakeholder and community complaints and any changes to the "TfNSW Parramatta Light Rail Communications and Engagement Strategy".
- (c) The Contractor must carry out further inductions and training of any personnel previously inducted and trained to ensure stakeholder and community liaison requirements procedures and protocols remain understood and current.
- (d) All material produced for the purpose of Site inductions by the Contractor must be submitted to and approved by the Principal's Representative prior to it being released for its intended purpose. The Principal's Representative must be given a minimum of 10 Business Days to review and make comment upon the Site induction submitted Documents. The Contractor must address all the Principal's comments on the Site induction Documents to the satisfaction of the Principal's Representative. The approval by the Principal's Representative of Site induction Documents is a Hold Point.

7. Property

7.1. General

- (a) The Contractor must appoint a Site-based person to be the Contractor's property representative. This representative must be present during all inspections undertaken by the Principal's Representative or delegate.
- (b) Any findings by the Principal's Representative from inspections must be actioned within the timeframes reasonably required by the Principals Representative. The Contractor must provide written notification to the Principal that the findings of the Principal's Representative have been closed out within the timeframes specified.
- (c) The Contractor must provide the property records described in Part 2 of Annexure E.

7.2. Pre Commencement Property Risk Assessment

- (a) Prior to the commencement of any Site-based activity, the Contractor must undertake a comprehensive property risk assessment in consultation with the Principal's Representative unless otherwise specified in Annexure A. A staged risk assessment may be utilised, upon agreement with the Principal's Representative.

- (b) This risk assessment must identify the potential property impacts of the Contractor's Activities on property, and the control measures that are required to be implemented in order to provide property protection in accordance with the requirements of the Contract and the Planning Approval.
- (c) With respect to the Site (and where the Site is at more than one location, for each part of the Site), this risk assessment must include:
 - (i) permanent and temporary worksite access requirements and timing;
 - (ii) access to or across adjoining properties and timing;
 - (iii) crane slew radius, air rights and impacts on neighbouring properties;
 - (iv) any future subdivision, easements, other title interests or divestment requirements;
 - (v) any future commercial impacts of resultant works;
 - (vi) Site investigation and contamination; and
 - (vii) any other requirements of Third Parties.

7.3. Access

7.3.1. Ownership and Rights of Access

- (a) The Contractor must ensure it has the necessary legal rights to access the appropriate property prior to commencing the Contractor's Activities. To assist the Contractor, the Principal has developed a non-exhaustive list of applicable legislation, described in "[TfNSW Property Compliance Register – 2TP-ST-175](#)".
- (b) Prior to commencing the Contractor's Activities, the Contractor must conduct property ownership searches (if lands are not supplied by the Principal).
- (c) RMS will be the relevant "Roads Authority" for the "Road" (as defined in the *Roads Act 1993 (NSW)*). The Principal is negotiating Third Party Agreements with RMS (being the RMS Project Collaboration Agreement and the Roads Act Approval), which the Contractor will be required to comply with. These Documents are attached as Exhibit I. The Contractor must submit any agreements to the Principal's Representative for review in accordance with the Contract, before they are formally released to any external party (e.g. RMS and City of Parramatta Council) for negotiation and execution.

7.3.2. Neighbouring Property

- (a) The Contractor must be responsible for managing the Site and minimising the impact of the Contractor's Activities on adjoining owners until Final Completion.
- (b) At least 2 weeks prior to commencement of the Works and activity on Site, the Contractor must identify all neighbouring land owners, tenants, businesses, occupants, who may be impacted by the Contractor's Activities and provide the Principal's Representative with a consolidated list that includes:
 - (i) addresses;
 - (ii) land use (retail, residential, garage, etc.);
 - (iii) primary contact name, phone number and email address;
 - (iv) likely impact that the Contractor's Activities will have on neighbouring property; and
 - (v) any past correspondence.
- (c) Where access to neighbouring property is required, the Contractor must have the necessary legal rights and must comply with the *Access to Neighbouring Land Act 2000 (NSW)* and the

Contract. In such cases, the Contractor must prepare an application for access and submit it to the Principal's Representative for review in accordance with the Contract, prior to submitting the application to the local court.

7.4. Surveys

7.4.1. Pre-Construction Land Surveys

The Contractor must verify survey control for the Contractors' Activities, and must:

- (a) prior to commencing any activity which could affect existing infrastructure (including roads, railways, Utility Services and buildings), undertake above ground and underground property boundary survey, recording the location of the relevant Site boundaries in relation to existing infrastructure on every land parcel and provide them to the Principal's Representative;
- (b) avoid, where reasonably possible, disturbance of existing survey marks and must re-establish any such marks disturbed or affected by the Contractor's Activities; and
- (c) carry out all boundary and engineering surveys in accordance with
 - (i) The requirements of [RMS General Quality Specification- DC G71 Construction surveys](#);
 - (ii) The Surveying and Spatial Information Act 2002 (NSW); and
 - (iii) The Surveying and Spatial Information Regulation 2012 (NSW).

7.4.2. Post Construction Land Surveys

- (a) The Contractor must verify survey control for the Works, and must comply with the requirements of the Contract in relation to land surveys.
- (b) If any part of the Works or Temporary Works is proposed to be, or have been built outside the relevant boundaries of the Site stipulated in Schedule 31, and no formal agreement has been reached with the adjoining property owner, the Contractor must cease work in this area and immediately notify the Principal.

7.5. Property Damage

- (a) In carrying out the condition surveys, the Contractor must minimise disruption to property owners and occupiers.
- (b) The Principal's Representative may direct the Contractor to include additional condition surveys if it considers they have the potential to be damaged as part of the Contractor's Activities and a person, nominated by the Principal, may attend the undertaking of any condition surveys.
- (c) In addition to the requirements set out in the Contract and the TSR, the Contractor must comply with all requirements for condition surveys and ongoing monitoring and set out in any Third Party Agreements and the Planning Approval.

7.6. Pre and Post Construction Condition Surveys

- (a) At least 2 weeks prior to the commencement of any work on the Site, the Contractor must carry out pre-construction condition surveys to record the existing condition of adjoining land and property prior to construction, and to assess the susceptibility of critical services, structures, infrastructure or buildings, to damage or unacceptable changes or alterations as a result of the Contractor's Activities.

- (b) The Contractor must then perform a post-construction condition survey on each property previously subject to a pre-construction condition survey unless otherwise specified in Annexure A.
- (c) Post-construction condition survey reports must include a determination of the cause of any monitored change or any damage identified since pre-construction or previous construction surveys and the Contractor's proposed remedial works or activities. If damage is found to have been caused by the Contractor's Activities, the Contractor must:
 - (i) provide the Principal with a proposal setting-out the remedial action required;
 - (ii) obtain the property owner's acceptance, in a form agreed to by the Principal, of the compensation, repair or reinstatement work, and release from future claims and actions; and
 - (iii) if no damage is found to have been caused by the Contractor's Activities, the Contractor must write to the property owner and Principal's Representative providing them both a copy of both reports.

7.6.1. Condition Survey Requirements

- (a) The Contractor must engage an independent third party to ensure compliance against the minimum standard of condition surveys.
- (b) The Contractor must ensure that the same surveyor performs the post construction survey that carried out the pre-construction condition survey, in each case.
- (c) The Contractor must submit all condition survey reports to the Principal's Representative for review in accordance with the Contract.
- (d) Each survey must include a report which must contain a certificate from the surveyor who performed the survey certifying that the survey has been completed and is an accurate assessment of the condition of the property or asset.
- (e) The Contractor must ensure that the processes and procedures for performing all condition surveys are based on industry best practices. Examples of acceptable standards for condition surveys of buildings include:
 - (i) sections 4 and 5 of the "Royal Institute of Chartered Surveyors (RICS)
 - (ii) Guidance Note 63/2010 "Building surveys and technical due diligence", and
 - (iii) "AS 4349 Inspection of Buildings – General Requirements", and with specific regard to the heritage elements within the Site.
- (f) The Contractor's reports on condition surveys of buildings must as a minimum record the following features:
 - (i) major features of the buildings and developments including location, type, construction, age and present condition, including any defects or damage;
 - (ii) type of foundations including columns, walls and retaining structures;
 - (iii) an assessment of the susceptibility of the building to further movement or stress;
 - (iv) an assessment of the effectiveness of water-proofing systems in basements to the anticipated movements caused by the Contractor's Activities;

- (v) an assessment of the susceptibility of the building to changes in water levels resulting from the Contractor's Activities; and
- (vi) any additional features as required under the Planning Approval;

7.6.2. Property Monitoring up to Completion

- (a) The Contractor must implement a monitoring and inspection regime for properties with the potential to be detrimentally or negatively affected by the Contractor's Activities.
- (b) The monitoring and inspection regime must address the requirements of the Contract, the Planning Approvals and Third Party Agreements and agreements made with any Authority.

7.7. Pre-Commencement Property Compliance Checklist

Prior to commencement of the Works or Site occupation, the Contractor must submit the "Property Compliance Checklist" in Part 1 of Annexure E to the Principal's Representative for review in accordance with the Contract, to demonstrate that all property obligations have been met.

7.8. Property Adjustment Works Management

Should Property Adjustments Works be required:

- (a) The Contractor must carry out all Property Adjustment Works including:
 - (i) all works necessary as a consequence of the Contractor's Activities including:
 - (A) work which is necessary to satisfy TfNSW's obligations arising from the Planning Approval;
 - (B) required as a consequence of requirements arising from:
 - (aa) land acquisition; and
 - (ab) the stakeholder and community liaison process.
- (b) The Contractor must complete all Property Adjustment Works within 12 weeks of first occupying the Site.
- (c) The Property Adjustment Works will provide new for old of all site improvements impacted by the project including services relocations/reinstatements.
- (d) The Contractor must finalise the detailed design and scope of the Property Adjustment Works shown in the individual Property Adjustment Plan with the landowner.
- (e) The Contractor must carry out all Property Adjustment Works required to reinstate infrastructure, services and structures on the Property Adjustment Works Site and to provide people and vehicles access to and egress from existing buildings and properties which are affected by the Contractor's Activities.
- (f) The Contractor must carry out all Property Adjustment Works necessary to ensure the amenity or the functionality of any property (including any building or structure) which is affected by the Contractor's Activities is maintained to at least the standard prior to the Contractor's Activities.
- (g) In respect of all Property Adjustment Works, the consent of the owner and any occupier of each property affected by the Property Works must be obtained prior to any work commencing on the site. The Property Adjustment Works must be fit for their intended purpose.
- (h) The Contractor must include in any drawings identifying property boundaries relative to all components of the Works.

- (i) Access to properties affected by the Property Adjustment Works must be provided by the Contractor to TfNSW's Representative at all times while the Contractor has access to the relevant property.
- (j) Where the Contractor's Activities require work within or directly adjacent to the Site or Property Adjustment Works Site, the Contractor must consult with the owner of that property and gain their consent, as far as is reasonably possible, to the planned methodology to prevent damage to their adjacent property.
- (k) The Contractor must handover the completed adjustments to the owner and provide TfNSW with confirmation of acceptance by the owner.

8. Technical Management

This section describes the technical management requirements and processes with which the Contractor and any Subcontractors must comply. This section must be read in conjunction with the Contract.

Unless noted otherwise in Annexure A - Additional Project Requirements, all requirements specified in this section apply to the Contract.

8.1. Engineering Management

The Contractor must have in place, maintain, and consistently apply until Final Completion engineering management methodologies, which must, as a minimum:

- (a) provide systems and procedures sufficient to ensure compliance with the Contractor's risk management obligations under Law and under the Contract;
- (b) provide for the comprehensive and systematic assessment of any identified risks;
- (c) specify the controls (including audits, expertise, resources, and staff) that are to be used by the Contractor to manage identified risks; and
- (d) include procedures for monitoring, reviewing and revising the adequacy of those controls.

8.2. Design Process

The Design process to be followed is outlined in the "RMS Roads Act Agreement", included in Contract Exhibit 1.

The Principal will supply the following design information to the Contractor:

- (a) Drawings in PDF and AutoCAD format to Design Stage 2;
- (b) Design Report in PDF format to Design Stage 2; and
- (c) Design model data in GENIO (and 12d) format.

The Contractor will supply the following information with each design submission;

- (a) Drawings in PDF format;
- (b) Design Report in PDF format including design checks; and
- (c) Design model data in GENIO format.

8.3. Operational Readiness

The Contractor must have in place systems, plans and processes to ensure that the programming, coordinating and executing of all operational readiness activities required to be carried out for the Works, including activities which may be carried out by Third Parties. All activities are to be managed in accordance with the requirements of the Contract to enable the effective asset handover and operation of the Works to RMS or third party operators/maintainers.

9. Digital Engineering

9.1. General

- (a) The Contractor must assign a competent and experienced person to be accountable for managing and assuring the quality of the project and asset information.
- (b) The Contractor must generate and manage all project and asset information in accordance with RMS requirements (Refer to RMS CADD Manual).
- (c) The Contractor must develop and maintain spatially accurate 3D engineering models throughout the project lifecycle for all Works.
- (d) The Contractor must supply 3D models with each design package and Works as executed submission.
- (e) The Contractor must submit all Enabling Works project design and other information to the Principal at the Date for Completion.

9.2. Information Formatting

- (a) The Principal will supply the civil design model data in GENIO (and 12d) format.
- (b) The road design model data is to be delivered to the Principal in accordance with the [RMS CADD manual Section 3.5 – Road Design](#) unless otherwise approved by the Principal.
- (c) All drawings produced as part of a drawing set are to be delivered in PDF format.
- (d) Drawing sets are to be delivered as multi sheet PDFs. Drawing sets may be delivered as several separate multi sheet PDF packages.
- (e) All CAD drawing files and other associated files used to produce the drawing set PDFs are to be delivered. CAD drawing files are to be either Microstation .DGN or AutoCAD .DWG format.

Annexure A Additional Project Requirements

A1 Contract Management Plan clause 2.1

Requirement	Is one Required?	Initial Submission Timing	Frequency of Update
Contract Management Plan	Yes	T2	6 Monthly

Legend

- T1 15 Business Days after the Contract Date.
- T2 30 Business Days after the Contract Date.
- T3 10 Business Days prior to the commencement of investigations.
- T4 15 Business Days prior to the commencement of design activities.
- T5 30 Business Days prior to the commencement of Site mobilisation.
- T6 10 Business Days prior to the commencement of construction.

A2 Contractors Program clause 2.2

Clause	Item	Requirement	Add Insertion
2.2	Contractor's Program	Date first program is required	As per Annexure D
		Monthly updates required?	As per Annexure D
		Update submission timeframe	As per Annexure D
		Required status date for program update	As per Annexure D

A3 Principal's Document Management Tool clause 2.3

Clause	Requirement
2.3	The Principal will administer the Contract document deliverables using "Teambinder".

A4 Monthly Reporting clause 2.4

Clause	Requirement
2.4	A report is due monthly on the first business day following the reporting month.

A5 Principal Provided Training

1. Online training in the use of "Teambinder".

A6 Compliance Monitoring clause 3.1(b)

Requirement	Applies?
Provide environmental compliance reports demonstrating compliance with the Authority Approvals (including the Environment Protection Licence if required) at	Yes

intervals as requested by the Principal, using the TfNSW INX system (as a minimum at intervals as specified in the Authority Approvals).	
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A7 Consistency Checklists clause 3.1 (d)

Requirement	Applies?
<p>Consistency checklists and environmental reviews, in the format provided by the Principal (unless otherwise agreed), are to be completed by the Contractor and provided to the Principal's Representative for review in circumstances where Works are likely to deviate from the approved Project. Where inconsistency with the approved Project exists or is likely to exist, the Contractor may request the Principal seek a Project modification. Under such circumstances, it is the Contractor's responsibility to provide the necessary reports, studies and final submission to the Principal's Representative to justify the modification. Any modification must detail property, environmental, community and all other related impacts.</p> <p>Whilst TfNSW, in its role as the Proponent under the <i>Environmental Planning and Assessment Act 1979</i> (NSW) will endeavour to process the consistency assessment or modification within a reasonable time period, TfNSW (as the Principal), is not liable for any claim by the Contractor (due to impacts upon time, cost, requirements of additional / modified conditions of approval, refusal of any consistency assessment / modification, or other relevant factor) arising from the assessment and determination of the consistency assessment and/or modification.</p>	Yes

A8 Contractor's Environmental Management System clause 3.2 (c)

Requirement	Applies?
Is a Contractor's Environmental Management System accredited under ISO 14001:2015 required?	Yes

A9 Safety Management clause 6.1

Requirement
The Pegasus/Onsite Track Easy Access card system is not required

A10 Pre-Commencement Property Risk Assessment clause 8.2

Requirement
A pre-commencement property risk assessment is required

A11 Post-construction Property Condition Surveys clause 8.6

Requirement
Pre-construction conditions surveys are required (Incl. roads and Utility Services impacted by the Works)
Post-construction conditions surveys are required (Incl. roads and Utility Services impacted by the Works)

A12 Content of Contract Management Plan and Project Quality Plan Annexure C

Content	Must the CMP include this Content?
Contract Management	Yes

Content		Must the CMP include this Content?
Construction and Site Management		Yes
Design & Engineering Management		Yes
Commuter and Passenger Management		No
Traffic Management		Yes
Traffic Control Signal Commissioning		Yes
Defect Management		Yes
Compliance and Audit Management		Yes
Project Safety Management Plan		Yes
Risk Management		Yes
Commissioning & Operational Readiness Management		Yes
Services Management		Yes
Interface Management		Yes
Sampling and Validation Plan		Yes
Communication and Engagement Plan (CEP)		Yes
Incident and Crisis Communications Plan		Yes
Aboriginal Participation Plan		Yes
Small and Medium Enterprise Participation Plan		Yes
Sustainability Management Plan		Yes
Property Management Plan		Yes
Workplace Relations Management Plan		Yes
Construction Environmental Management Plan (CEMP), to include:	Construction Noise and Vibration Management Sub Plan	Yes
	Other Sub plans as required by Planning Approval	

A13 Traffic Control Plan Annexure C clause 2.9 Traffic Management

Requirement	Applies?
<p>Are "Traffic Control Plans" (TCP) required?</p> <p>Where noted as being required in this table A13, the Contractor must prepare detailed TCPs for the Site generally in accordance with the Roads and Maritime Manual: "Traffic Control at Work Sites 4th Ed (June 2010)". The TCPs must be submitted to and approved by the relevant Authority and submitted to the Principal's Representative for review prior to the commencement of any activity or work on the Site. Thereafter, the Contractor must ensure that the approved TCPs are available for inspection by the Principal's Representative or any officer of WorkCover NSW, NSW Police, the RMS or any other Authority.</p>	<p>As per the requirements of RMS General Quality Specification- D&C G10 Traffic Management and the Planning Approval.</p>

A14 Defect Management Software – Annexure C clause 2.7

Requirement
The Principal's preferred Defects management system software application is: Not Applicable

A15 Construction Environmental Management Plan Annexure C

Requirement	Applies?
The Contractor must comply with the relevant requirements of the "NSW Government Environmental Management System Guidelines".	Yes

A16 Reporting Requirements Annexure E

Clause	Requirement	Applies?
(a)	Pre Commencement Property Compliance Checklist required?	Yes
(b)	Property Records required?	Yes
(c)	Environmental Records required?	Yes

A17 Not Used
A18 Project Specific Amendments to Standard Requirements

Annexure B Definitions

The following definitions apply:

Term	Definition
Aboriginal Focus Group	means the Aboriginal focus group established under section 3.6.10 of the TSR.
Annexure	means an annexure to this TSR.
Asset Handover	means the point in time at which the control of certain specified assets is transferred to an Operator/Maintainer and/or Asset Owner for their ongoing operation and maintenance.
Asset Owner	means the Organisation who will ultimately own the assets subject to the Asset Handover. In some cases this may also be the Operator/Maintainer.
Australian Supply Chain Sustainability School	an online learning forum designed to help the construction sector assess and improve their knowledge of sustainability issues facing the industry. http://www.supplychainschool.org.au/
Codes and Standards	as defined in the Contract.
Commissioning	means the systematic process of ensuring that all infrastructure, equipment and systems installed in a project perform interactively in accordance with the design intent and the Operator/Maintainer's functional and operational needs.
Communication Materials	means all written, verbal or photographic/illustration information to be seen and made available to others such as; media responses, all forms of social media, press releases, marketing and promotional materials, Notifications, material placed on construction hoardings, shade cloth and fences and the like.
Compliance Working Group	a group established by the Contractor as per section 2.5 of the TSR to manage the audit process.
Contract Management Plan (CMP)	the Management Plan to be developed by the Contractor in accordance with the requirements of this TSR which acts as a framework for bringing together all the management requirements for the Contractor's Activities into a coordinated and integrated plan.
Contractor's Arborist	means an arborist appointed and managed by the Contractor.
Cultural Awareness Training	means the training administered under section 5.3 of the TSR.
Design Documentation	as defined in the Contract.
Design Management Plan	means the design management plan in Annexure C.
Document	as defined in the Contract.

Earned Value	means the method of measuring and reporting project cost performance based on integrated time, cost and scope elements in accordance with "TfNSW Earned Value Management using Primavera P6 4TP-WI-005".
Emergency Works	means unplanned work which must be undertaken immediately in order to avoid damage to property or injury to people.
Environmental Control Map (ECM)	means a document prepared to assist in the planning and delivery of construction works, specific to a work area and/or activity that identifies the physical location of physical protection measures, work method controls and monitoring requirements to minimise the impact of construction activities on the environment and community.
Environmental Impact Statement	the environmental impact statement under the <i>Environmental Planning and Assessment Act 1979 (NSW)</i> .
Environmental Design Review Report	the environmental design review report described in section 3.5 of the TSR.
Environmental Manager	the relevant person of the Contractor's Personnel designated as such.
Environmental Management System (EMS)	a tool for managing the impacts of an organisation's activities on the environment and provides a structured approach to planning and implementing environment protection measures.
Environmental Requirements	the Environmental Requirements include those identified in the: <ul style="list-style-type: none"> • Planning Approval, and any other permits, licenses or approvals obtained for the Contractor's Activities; • Environmental Impact Statement; • Response to submissions report, including the preferred infrastructure report; • Interface schedule; and • Contract.
Extension of Time	as described in clause 10.10 of the Contract.
Final Completion	as defined in the Contract.
GIS	the Geographic Information System.
Green Travel Plans	a management plan for a project or work location which identifies and promotes more sustainable travel choices to workplaces and worksites. The main outcome being to reduce single car usage and local road use and parking congestion around work sites for the local community and the project and local workforce.
GREP	NSW Government Resource Efficiency Policy.
Hierarchy of Control Measures	Hierarchy of Control Measures as defined in the "Work Health and Safety Regulations 2011 Part 3.1 Managing Risks to Health and Safety".
Heavy Vehicle	under the Heavy Vehicle National Law (NSW) a heavy vehicle is a vehicle that has a Gross Vehicle Mass (GVM) or Aggregate Trailer Mass (ATM) of more than 4.5 tonnes and a combination that includes a vehicle with a GVM or ATM of more than 4.5 tonnes.

Hold Point	the verification point identified in the Works Brief beyond which the relevant part of the Contractor's Activities may not proceed without the verification and subsequent written authorisation of the Principal's Representative or the relevant person nominated in the TSR.
Independent Arborist	the Arborist engaged by the Contractor.
Induction Training	the training administered under section 5.3 of the TSR.
Interface Contractor/s	as defined in the Contract.
Issue	any issue associated with the Contractor's Activities that may have an impact on the community or may attract the attention of the media, such as an event which impacts on the normal operation of transport services, a timetable delay or access blockage etc.
Management Plans	any of the Management Plans or Sub plans to be developed by the Contractor in accordance with the requirements of this TSR and Contract which describe how the Contractor will manage related matters and Issues that arise during the term of the Project.
Monthly Sustainability Data Report (MSDR)	the Monthly Sustainability Data Report described in section 4.2 of the TSR.
NABERS	the National Australian Built Environment Rating System.
National Counter Terrorism Alert Levels	Levels described in the Australian Government's National Terrorism Public Alert System and referenced on the Australian National Security website.
National Employment Standards	the National Employment Standards (NES) are 10 minimum employment entitlements that have to be provided to all employees in the national workplace relations system.
Other Contractor	as defined in the Contract.
Other Contractor Work	as defined in the Contract.
Operator/Maintainer	the organisation that, post Asset Handover, will operate and maintain the assets. In some cases, this may also be the Asset Owner.
Operational Readiness	a process used to ensure that the Works are safely integrated into the road network, with all necessary plans, Documents, Approvals, staff training and any other related activity completed, so as to ensure a safe and smooth transition into operation.
Parramatta Stadium	The sports stadium in Parramatta currently under construction at the intersection of Victoria Road and O'Connell Street.
PIR	means the Preferred Infrastructure Report.
Planning Approval	As defined in the Contract.
Property Adjustment Works	means the works required by property owners so that the Works are not impacting on their property.

Property Adjustment Plan	the concept plan agreed between TfNSW and property owners.
Proponent	has the meaning given to that term in the <i>Environmental Planning and Assessment Act 1979 (NSW)</i> .
Rail Safety National Law	means the Rail Safety National Law (NSW), as defined in the <i>Rail Safety (Adoption of National Law) Act 2012 (NSW)</i> , and any associated regulations.
Reference Documents	the list of documents which are referenced in this TSR, but not publicly available.
Regulatory Authority	includes any governmental or semi-governmental or local government authority, administrative or judicial body or tribunal, department, commission, public authority, agency, Minister, statutory corporation or instrumentality and any private electricity, telecommunications, gas or other utility company having statutory rights in relation to the Works or the Contractor's Activities.
RMS	Roads and Maritime Services, a corporation constituted by section 46(1) of the <i>Transport Administration Act 1988 (NSW)</i> .
SafeWork NSW	Work Health & Safety regulatory authority in New South Wales.
Safe Work Method Statements (SWMS)	Documents so titled prepared in accordance with this TSR and that give specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment etc.
Sub plan	a standalone Management Plan which is included in either the overall Contract Management Plan or in the CEMP.
Sustainability Assurance Framework	the methodology by which sustainability initiatives, activities, goals, objectives and targets are verified as being achieved or completed using both internal and external audit and verification processes.
Sustainability Forums	the sustainability forums described in section 4.2 of the TSR.
Sustainability Management Plan	the sustainability management plan contained in Annexure C.
TPZ	the tree protection zone.
Tree Offset Package	the tree offset package described in Section 3.6.11 of the TSR.
Tree Protection Plan	the tree protection plan described in Section 3.6.5 of the TSR.
Tree Register	the tree register described in 3.6.2 of the TSR.
Witness Point	the point identified in the TSR or Works Brief where the Principal's Representative, or the relevant person nominated in the TSR, may review, witness, inspect, or undertake tests on any component, method, or process of the Contractor's Activities.
Work Breakdown Structure (WBS)	the framework of discrete work elements (or tasks) used to organise and define the total project work scope, cost, and schedule control elements.

Annexure C Management Plans

1.0 General

The Contract Management Plan (CMP) is the project-specific overarching Management Plan that includes all other Management Plans as Sub plans that must be developed under the Contract. The CMP must describe the complete management activities, systems and processes which the Contractor will employ during the Contractor's Activities. The requirements of "RMS Quality Specification Q6" should be incorporated into the CMP.

The Contractor's Activities must be carried out in compliance with all Management Plans developed by the Contractor.

2.0 CMP Sections

Unless otherwise noted in Annexure A, the CMP must at least include the following sections.

2.1 Contract Management

The Contract Management section must:

- (a) explain in a systematic, coordinated and integrated structure, the managerial structure for performing the Contractor's Activities in the delivery of the Works;
- (b) define responsibilities, resources and processes for planning and performing the Contractor's Activities and verifying that the Works meet the requirements of the Contract;
- (c) describe the key roles and responsibilities and provide an organisation chart covering the key roles and Subcontract interfaces;
- (d) define the interface and associated responsibilities of the Contractor, Subcontractors, Interface Contractors, Other Contractors and other relevant Third Parties as well as the Principal;
- (e) describe how the Contractor will comply with all relevant Laws, Codes and Standards and requirements, applicable to the Contractor's Activities;
- (f) list all Documents required to be developed by the Contractor, under the Contract;
- (g) list all Documents required to be submitted to the Principal under the Contract;
- (h) List all approvals to be sought from the Principal and others;
- (i) define the reporting mechanisms in the case of Incidents and protocols for communicating with Authorities; and
- (j) identify the responsible person for developing and updating the CMP and its sections.

2.2 Construction and Site Management (C&SM)

The C&SM section must:

- (a) detail how the Contractor will comply with its obligations under the Contract in relation to the control, establishment, security, use and rehabilitation of the Site including the arrangements to provide access to, within and through the Site for the Principal, Other Contractors and any other person nominated by the Principal;

- (b) describe the Contractor's security management, developed on the basis of security risk assessments and include the following:
- i. vandalism, including security of physical assets for the Site and those of any other party which has an interface with the Site;
 - ii. violence against staff and visitors to the Site, especially those attending the Site outside of weekday daylight hours;
 - iii. data and information systems, including the Principal's commercial and confidential information and personnel details;
 - iv. security with interfaces to other rail operations, roads, assets and premises;
 - v. arrangements for consultation with employees and communication security arrangements to all affected;
 - vi. arrangements for security incident management including reporting, response and investigation;
 - vii. arrangements for the review and updating of security arrangements; and
 - viii. roles and responsibilities for security management.
- (c) describe how security management will reflect the National Counter Terrorism Alert Levels and develop procedures to communicate and respond to changes in the National Counter Terrorism Alert Levels.
- (d) document how notification of a terrorism incident will be made to the Principal's Representative and Law enforcement authorities, and the roles and responsibilities of the Contractor's employees and Subcontractors in such an event.
- (e) describe procedures for the preparation and implementation of Management Plans before the start of the related Works;
- (f) describe procedures for the management of Subcontractors;
- (g) describe procedures for the Contractor's mobilisation and demobilisation to carry out the Contractor's Activities, including mobilisation and demobilisation of personnel, Construction Plant and equipment; and
- (h) address the Site related management of interfaces with any Authority, stakeholders and Other Contractors.

2.3 Design & Engineering Management

The Contractor must have in place, maintain and consistently apply until Final Completion a Design Management Plan which must be updated and submitted to the Principal's Representative for review in accordance with the requirements of the Contract.

The Contractor must provide an initial submission of the Design Management Plan to the Principal's Representative for review, in accordance with the requirements of the Contract. This initial Design Management Plan should reflect the current status of the design to date and provide a look ahead of expected milestones as well as outline the change management procedures when latent conditions are encountered.

The Contractor must progressively review, monitor, amend and update the Design Management Plan, and submit for review up to the Date of Completion of the Works in accordance with the Contract. The Design Management Plan must be based on the Contractor's management systems and processes and must include the measures, including audit, that the Contractor must utilise to ensure that, as a minimum:

- (a) all design tasks are appropriately resourced by competent personnel;
- (b) all design personnel are aware of the requirements of the Contract and any obligations of designers under the WHS Legislation;
- (c) all designs are prepared in accordance with requirements of the Contract;

- (d) the development of the design is effectively coordinated and the interrelationships identified and managed across all:
 - i. design interfaces, including with existing systems, operational systems, and maintenance systems;
 - ii. design stages;
 - iii. design packages, where the design work has been portioned into design packages; and
 - iv. design disciplines (e.g. electrical, civil, traffic signalling and utilities);
- (e) the Contractor is familiar with the Site and understands the constraints, including those relating to the Works in a brownfield environment;
- (f) all design assumptions are documented and verified;
- (g) all designs are checked, reviewed and verified by competent personnel and that verification or independent certification is conducted by the Independent Certifier in accordance with the requirements of the Contract;
- (h) all construction methodologies, sequencing, staging, temporary or enabling works are taken into account and the associated risks are managed in the design;
- (i) an asset maintenance strategy and an asset operations strategy are delivered with the design in accordance with requirements of the Contract;
- (j) all hazards identified in the preliminary hazard analysis and systems hazard analysis are designed out or carried over into the project hazard log; and
- (k) all designs comply with relevant Codes and Standards.

2.4 Commuter and Passenger Management (C&PM)

Not used.

2.5 Traffic Management

The Traffic Management section of the CMP must comply with the requirements of the Works Brief, the Planning Approval and 'RMS General Quality Specification- D&C G10 Traffic Management', attached to the Works Brief.

2.6 Traffic Control Signal (TCS) Commissioning Management

The TCS Commissioning Management section of the CMP must include the following information:

- (a) a summary of the Contractor's Activities;
- (b) a staging plan;
- (c) scheduled inspection and test plans;
- (d) a schedule of commissioning events that identifies individual commissioning events for each part of the Contractor's Activities, including:
 - i. a description of the infrastructure and systems to be commissioned and provided to the Principal;
 - ii. the planned date of commissioning and commencement of operation as a result of that part of the Contractor's Activities; and
 - iii. the maintenance changes as a result of that part of the Contractor's Activities.

2.7 Defect Management

The defects management section of the CMP must:

- (a) address all contractual requirements for managing Defects;
- (b) provide assurance that the inspection, testing and review of the Works will allow for identification of Defects;

- (c) clearly identify inspections and tests where the attendance of the Principal or his delegate or any Third Parties is required with suitable notification periods;
- (d) clearly identify Hold Points to be released by the Principal or his delegate or any Third Parties;
- (e) demonstrate that these processes, activities and measures are sufficient to identify and allow for rectification of defects within the Defects Rectification Period;
- (f) clearly specify the strategy for managing any Defects raised by the Contractor, the Principal, the Operator/Maintainer or Asset Owner;
- (g) clearly specify the process in relation to joint inspection of review of the Works, and notifications to be provided prior to Completion of any Portion or the whole of the Works; and
- (h) include a procedure for the management of Defects which must include a register and sign-off requirements and the use of the Principal's preferred software system where specified in Annexure A.

2.8 Compliance & Audit Management

The Compliance and Audit Management section must outline the methodology, process and procedures adopted by the Contractor to assure itself that the requirements of the Contract are being met, including:

- (a) preparation of risk based audit schedules for the Works and any Subcontractor's activities that also take account of previous audit outcomes;
- (b) supply of competent and experienced resources to carry out audit management and implement the audit schedule;
- (c) reporting, analysing and determining trends based on those audits;
- (d) implementation of corrective and preventative actions as an outcome from those audits;
- (e) measures to assess the effectiveness of the corrective and preventative actions; and
- (f) carry out adjustments to the audit schedule as per "General Quality Specification- D&C Q6 Quality management system (Type 6)" Section 8.2.2.2.

2.9 Project Safety Management Plan (PSMP)

The Safety Management section of the CMP must comply with the "PLR Enabling Works Contract Safety Management".

2.10 Risk Management

The Risk Management section must address the management of risks applicable to the undertaking of the Contractor's Activities in delivery of the Works and:

- (a) provide an outline of the framework and approach for developing, utilising, and maintaining a risk register capable of supporting effective risk management and reporting risk information;
- (b) describe the management of risks applicable to the undertaking all of the Contractor's Activities;
- (c) provide details of the Contractor's approach to risk management in accordance with "ISO 31000 - Risk Management Guidelines and Principles", and its risk framework, processes and internal controls;
- (d) include processes and procedures for the systematic identification, assessment, treatment and management of hazards and risks;
- (e) provide details on the timing and scope of the Contractor's internal and external risk review processes, compliance, and audit related activities, including methods used to ensure that risk control measures and tasks are on schedule and effective;
- (f) describe how the risks identified are integrated and managed with the other sections in the CMP and its sections and sub plans;
- (g) describe specific control measures, including safe work methods to be implemented to eliminate or mitigate risks;
- (h) include methods to be used to monitor effectiveness of safe work methods and control measures;

- (i) nominate the persons responsible for monitoring implementation of the control measures;
- (j) include consultative processes employed by the Contractor in relation to risk management and the persons involved;
- (k) demonstrate the application of the Hierarchy of Control Measures undertaken to lessen the risks so far as is reasonably practicable; and
- (l) include and maintain a register of risks which includes:
 - i. a description of the risk/hazard and likely impacts;
 - ii. the risk level assessed for each hazard; and
 - iii. the residual risks/hazards.

2.11. Commissioning & Operational Readiness Management (CORM)

The CORM section must:

- (a) document systems and processes to ensure that the programming and coordinating of all Commissioning activities, including activities which may be carried out by or interface with Third Parties are defined;
- (b) describe the Contractor's Activities in relation to the requirements in the Works Brief relating to Commissioning, Asset Handover and Operational Readiness;
- (c) define the Operational Readiness tasks and responsibilities of each organisation involved in transitioning the Project into operation;
- (d) define the maintenance readiness tasks and responsibilities of each organisation involved in transitioning the Project into the operations and maintenance phase; and
- (e) define the document submission requirements relating to the Asset Handover and Completion.

2.12. Communication and Engagement Plan (CEP)

- (a) The Contractor must provide accurate information to the Principal's Representative regarding current and upcoming Contractor's Activities and all associated community impacts and potential announcements by developing, implementing and maintaining a CEP that includes the following:
 - i. details of the relevant resources, including personnel who may be on call 24/7 and contact details, to be employed by the Contractor whilst carrying out the Contractor's Activities;
 - ii. a comprehensive, Project-specific analysis of issues to be managed prior to and during construction, including proposed strategies to manage these issues;
 - iii. a comprehensive stakeholder list, highlighting issues/interests and strategies for dealing with each audience;
 - iv. policies and procedures for handling community complaints and enquiries, and for handling of media enquiries;
 - v. policies and procedures for incident management and reporting;
 - vi. an indicative program for the implementation of community liaison activities, including key dates for the commencement and conclusion of construction activities, associated impacts to the community and the Contractor's proposed strategy for minimising impacts and informing the community;
 - vii. policies and procedures for ensuring Subcontractors comply with the communications requirements of the Contract;
 - viii. details of activities which will be undertaken to monitor and evaluate the effectiveness of the community liaison program;
- (b) The Contractor must submit an updated CEP to the Principal's Representative for review in accordance with the Contract, monthly including a detailed two week and four week "Look Ahead Program", or as agreed with the Principal's Representative.

- (c) The CEP must be updated and submitted 48 hours (or as agreed with the Principal's Representative) before any Communications Management Control Group (CMCG) meeting (see clause 7.4. Communications Management Control Group), for discussion at those meetings
- (d) The Contractor must also meet separately with the Principal's Representative as required and requested by the Principal's Representative to discuss the contents of the CEP including discussions around media announcement opportunities.

2.13 Incident and Crisis Communications Plan

- (a) The Contractor must develop an Incident and Crisis Communications Plan, to be agreed by the Principal's Representative.
- (b) The Incident and Crisis Communications Plan must comply with the requirements of the "PLR Enabling Works Contract Safety Management Requirements".
- (c) The Contractor must immediately notify the Principal's Representative of any incident that may have an impact on the community, environment, personnel or Subcontractors, which may attract the attention of the media, the Minister for Transport, a local Member of Parliament, local council or the broader community.
- (d) The Contractor must not contact or provide information to any person, other than that which is required to directly manage the incident or to comply with law, without obtaining the prior approval of the Principal's Representative.
- (e) The Contractor must provide suitably qualified and experienced personnel, to support the Principal in responding to stakeholders, the media or the public as required and requested by the Principal. The Contractor must also provide senior and experienced personnel to attend meetings with stakeholders, the media or the public as requested by the Principal's Representative.
- (f) The Contractor must provide the Principal's Representative with all necessary communications materials or information that may need to be disseminated as a result of an Incident.
- (g) The Contractor must, in the case of an Incident that has attracted or can reasonably be expected to attract the attention of the media, the Minister for Transport, a local Member of Parliament, or the broader community, notify the Principal's Representative within 10 minutes of the Incident occurring and for any other Incidents within one hour of the Incident occurring.
- (h) The Contractor must send real-time text messages to agreed recipients within the Project and TfNSW to immediately alert of any Incidents and Issues when they occur, and ongoing updates during their management.

2.14 Skill and Employment Delivery Plan

The Skill and Employment Delivery Plan is to be as per the template included in Annexure G.

2.15 Aboriginal Participation Plan

The Aboriginal Participation Plan is to be carried out using the template located at <https://www.procurepoint.nsw.gov.au/documents/aboriginal-participation-construction-participation-plan-template.docx>.

2.16 Small and Medium Enterprise Participation Plan

The Small and Medium Enterprise Participation Plan is to be carried out using the template located at <https://www.procurepoint.nsw.gov.au/documents/sme-participation-plan.docx>.

2.17 Sustainability Management Plan

The Sustainability Management Plan must demonstrate a sound understanding the requirements of the Contract, the interface with TfNSW and ISCA and an understanding of the GREP requirements for Project delivery and include the following sections as a minimum:

- (a) Resources and the organization chart identifying roles and responsibilities for the delivery of the sustainability requirements of the Project;
- (b) How the Project will deliver on the requirements of the GREP, the SDG's V4 and the ISCA IS rating tool version 1.2 including the minimum individual credits and levels stated in this TSR;

- (c) Training and inductions provided to employees, contractors and sub-contractors in relation to Project sustainability;
- (d) How specific sustainability targets will be met during the Project, including a proposed project ISCA scorecard self-assessment;
- (e) Climate risk assessment and mitigation management plan;
- (f) Energy and carbon management plan;
- (g) Material choice and sustainable procurement including overseas material procurement;
- (h) Reporting, meetings, forums and communication with TfNSW and the SOM and Infrastructure Contractor as appropriate; and
- (i) Sustainability Assurance Framework to track and self-assess compliance with the sustainability requirements defined in the Contract. This Sustainability Assurance Framework must be implemented and maintained over the program of Works.

The Contractor must submit the Sustainability Management Plan to TfNSW for review prior to the commencement of construction. The Management Plan must be implemented and maintained and reviewed where necessary over the program of Works.

2.18 Construction Environmental Management Plan (CEMP)

The TfNSW CEMP Template, as contained in – Reference Documents, is to be used for the purposes of developing the Contractor's Construction and Environmental Management Plan (CEMP).

The CEMP must include:

- (a) A hazard identification and risk assessment process, and a corresponding hazard and risk register, to identify all environmental hazards and risks associated with the Temporary Works and the Works;
- (b) Details and descriptions of the environmental controls, measures, monitoring, testing, auditing and reporting processes and activities to be implemented by the Contractor to appropriately control and mitigate the hazards and risks identified, and demonstrate that the Contractor is suitably and diligently discharging its responsibility to ensure the safety of Site workers, the public and the environment;
- (c) A detailed process for the regular reporting of environmental data and compliance with the Contract and Environmental Requirements, including Approvals, to the Principal; and
- (d) A process for auditing environmental compliance and the management and reporting of non-compliances to the Principal, including clear criteria or triggers for evaluating and assessing the adequacy of environmental controls, work practices, and monitoring and mitigation measures.

The CEMP must identify how the Contractor will comply with the environmental management requirements of the Contract.

The CEMP must comply with the:

- (a) relevant requirements of the "NSW Government Environmental Management System Guidelines"; and
- (b) Planning Approval and any other approvals, permits or licenses required to deliver the Contractor's Activities.

The CEMP must include the following:

- (a) details of the EMS to be applied;
- (b) the environmental performance requirements / targets, environmental protection measures, and inspection and monitoring regime to be employed;
- (c) the procedures to be implemented to verify that the Contractor's Activities relating to environmental management matters are compliant with the requirements of the Contract, including all Authority Approvals as well as details of the system to track Planning Approval;
- (d) procedures for the management of incidents, non-conformances, non-compliances, Defects, complaints and reporting, reflecting the fact that the Contractor must not communicate (phone, mail, email etc.) directly with any Authority unless allowed to do so under Law or (unless

permitted under Law) unless written consent is provided by the Principal and a communications protocol has been established;

- (e) management of sustainability matters; and
- (f) record keeping.

The CEMP must form part of the Contractor's EMS, which must comply with the documentation requirements of AS/NZS 14001:2016 Environmental Management Systems.

The CEMP must identify procedures that will be implemented to manage:

- (a) changes to the Environment or generally accepted environmental management practices, new risks to the Environment, any pollution, Contamination or Change in Law;
- (b) any non-compliances or incidents arising from the Contractor's Activities; and
- (c) requests or requirements of the NSW Department of Planning and Environment, NSW Environment Protection Authority or any other Authority.

The CEMP must address and detail:

- (a) management strategies for environmental compliance and review of the performance of environmental controls;
- (b) processes and methodologies for surveillance and monitoring;
- (c) processes for incident and emergency response;
- (d) a schedule of the environmental Issues for each part of the Construction Site;
- (e) processes for the development of ECMs;
- (f) processes and methodologies for monitoring, auditing, corrective action and reporting on environmental performance including environmental compliance tracking;
- (g) processes for identifying the need for, and undertaking consistency assessments against Environmental Requirements, including the role of the Principal;
- (h) mechanisms, timing and processes for obtaining and managing any other permits, licenses and approvals (if required);
- (i) interfaces with other Project plans; and
- (j) how the Contractor will interface and coordinate with Other Contractors for environmental alignment, in accordance with the Interface Management Plan.

The CEMP must describe the roles, responsibilities and delegations of personnel responsible for managing and undertaking Contractor's Activities.

The CEMP must address and detail:

- (a) the names, responsibilities and authorities of the site management personnel for implementing the CEMP, monitoring its effectiveness, rectifying any environmental deficiencies and keeping environmental records;
- (b) nominate a member of the Site management team who is the authorised contact person for the Principal's Representative for all environment-related Issues;
- (c) identify the Contractor's Environmental Manager who reports to the Contractor senior management, and is suitably qualified and experienced, and has defined authority and responsibility to ensure that the requirements of the CEMP are implemented and maintained;
- (d) detail the working relationship between the Environmental Manager and other persons involved with the implementation of the CEMP including commercial, quality, program/planning, design, safety, community, construction etc;
- (e) the CEMP must include the environmental competency framework that will be applied for all personnel involved with Contractor's Activities. The competency framework must address and detail:

- i. specific discretionary and mandatory training programs for achieving and maintaining environmental competency for the Contractor's workforce until Final Completion of the Works;
 - ii. Environment leadership and awareness programs; and
 - iii. the metrics that will be reported, program review, and methods to maintain a high of environmental awareness across the Contractor's and Subcontractor workforce.
- (f) frequency of surveillance and periodic and planned inspections (both physical and desk-top type reviews) to verify the adequacy of controls for all environmental aspects of the Contractor's Activities and document these via inspection records;
- (g) planned internal reviews of the Environmental Requirements that make up the EMS, including Management Plans, procedures and forms;
- (h) planned reviews of Subcontractor systems and works, including off-site inspections as appropriate;
- (i) document inspection and test plans for all inspections and testing required for Contractor's Activities; and
- (j) audit schedule for internal and external (independent) environmental audits.

The CEMP must document a procedure to verify that the Contractor's Activities are compliant with the requirements of the Contract and Environmental Requirements at all times.

The Contractor must document the system and procedures for managing non-conformance and corrective actions for environmental management of Contractor's Activities.

The CEMP must include:

- (a) procedures for identifying non-conformance, non-compliance with law and / or Environment Documents, corrective action and preventative action that meet the requirements of AS/NZS ISO 9001;
- (b) detailed procedures and protocols for classification and reporting of non-conformances and non-compliances; and
- (c) an environmental inspection and audit schedule of internal and external (third party) audits must be provided.

The CEMP must detail a robust Incident management system that meets the requirements of the Planning Approval and includes the following:

- (a) definitions and classifications for describing an Incident;
- (b) protocols and clear communication strategy in the case of an emergency;
- (c) notification requirements to relevant public authorities, a list of emergency response personnel with contact details and a 24 hour contact number;
- (d) a list of resources (addressing both physical and human resources) with a description of their function and their contact details (or location in relation to physical resources) that will be made available immediately in the event of an environmental incident;
- (e) the location of emergency response equipment and material safety data sheets;
- (f) details of emergency services including specialist environmental response organisations that may be required (e.g. emergency containment and clean up);
- (g) details of immediate containment measures to be implemented in the event of an emergency situation;
- (h) a program of environmental Incident simulation drills, including annual drills; and
- (i) identification of other plans or interface documents that are relevant for Incident management during Contractor's Activities.

The CEMP must include as separate sub plans all other plans identified in the Environmental Impact Statement, PIR, Planning Approval or the Contract.

The CEMP and associated sub plans must be provided to the Environmental Representative for their review and endorsement prior to adoption

2.19 Construction Noise and Vibration Management

The Contractor must prepare a Construction Noise and Vibration Management Plan (CNVMP) Sub plan to the CEMP. It must detail the framework and mechanisms for noise and vibration management and mitigation of all potential noise and vibration impacts from the Contractor's Activities.

The CNVMP must:

- (a) demonstrate how the noise and vibration management is linked with scheduling of works, including how management and mitigation measures align with, and manage cumulative impacts of, the Contractor's Activities under the Contract and those being undertaken by the Contractor;
- (b) detail the decision-making framework that the Contractor will apply for prioritising high-noise generating works to minimise community impact;
- (c) include the identified locations and specification of location-specific CNVMPs to be developed in the detailed design phase when more information is available on the schedule for the Works and the equipment to be used;
- (d) identify opportunities for community involvement in developing the CNVMPs including options for community agreement / negotiation when planning out of hours works; and
- (e) identify innovative technologies that the Contractor will employ to manage and minimise noise impacts and include processes for the examination of all reasonable and feasible measures including any suggested by the Principal's Representative.

2.20 Property Management Plan

The Property Management Plan must address the Contractor's approach to the management of property and must describe:

- (a) the property resources to be engaged in the Project including Subcontractors and consultants;
- (b) processes for identification, mitigation and treatment of property related risk;
- (c) processes for carrying out Property Adjustment Works, including any Property Adjustment Plans. A sample Property Adjustment Plan is included in Annexure G.
- (d) definition of the Site including the use of any additional lands as well as access, control and security measures;
- (e) management of relations with all adjoining owners, stakeholders, Other Contractors, Interface Contractors and the Principal;
- (f) how the Contractor will minimise disruption to property owners and procedures for the complaint resolution process;
- (g) processes for management of property survey and Site set out;
- (h) processes for ensuring all design and construction occurs within the allowable boundaries;
- (i) processes to avoid and monitor for unwanted damage to property on the Site and neighbouring properties;
- (j) a list of the properties and assets which will be subject to a condition survey by the Contractor;
- (k) processes for managing condition surveys and identification of actual damage, how it occurred and how that damage will be rectified;
- (l) processes for dispute management in relation to damage and how each dispute will be processed, managed and resolved including a property damage claim process flowchart;
- (m) noise, vibration and settlement limits consistent with any requirements of the Planning Approval and the CEMP that will prevent the damage of existing property and items by the Contractor's Activities and the need to transfer these criteria into method statements and inspection and test plans to ensure that any Contractor's Activities are within the above limits and minimise damage risks;

- (n) sample letters for permission to conduct a property condition survey, letter of introduction for property condition survey staff, and sample property condition reports.

2.21 Workplace Relations Management Plan (WRMP)

The WRMP must:

- (a) be in accordance with the Implementation Guidelines to the New South Wales Code of Practice for Procurement: Building and Construction.
http://www.industrialrelations.nsw.gov.au/About_NSW_IR/New_Guidelines_Construction_Work_page
- (b) reflect any industrial relations plan submitted with the Contractor's tender submission.

2.22 Other Plans

The CMP must include as a Sub plan, any other Management Plan required under the Contract, including as required by planning approval, the RMS Collaboration Agreement and Roads Act Approval.

Annexure D Contractor's Program

1.0 General

(a) The Contractor must:

- i. submit the Contractor's Program to the Principal's Representative in accordance with the Contract, within 20 Business Days of the date of the Contract, unless noted otherwise in Annexure A or the Contract;
- ii. develop the Contractor's Program using "Principles Primavera P6 .XER WBS" template supplied, unless agreed otherwise
- iii. update the Contractor's Program on a monthly basis and submit to the Principal's Representative for review in accordance with the Contract by the first Business Day of the month (with a status date of the last calendar day of the previous month) unless otherwise specified in Annexure A and at any other times required by the Contract;
- iv. perform and submit for approval a time impact analysis within 15 days of notifying the Principal of any event that can cause an extension of time.
- v. comply with "TfNSW [Scheduling Standard – 4TP-ST-123](#)" and provide the Contractor's Program in the latest P6 version (XER format), as a single P6 project, not broken into multiple parts;
- vi. develop, status and maintain the Contractor's Program in Primavera P6 on the Principal's planning environment. The Contractor will be given access to the Principal's planning environment via Citrix at no extra cost to the Contractor;
- vii. ensure that each update to the Contractor's Program is archived within the Principal's planning environment, and will be able to export the program file (no more than once per week) via a request to the Principal's Representative. The file will be emailed to the Contractor; and
- viii. not import any programs into the Principal's Primavera database. The Principal will import the Contractor's Program into the Principal's P6 planning environment database, maintain the database security and control the access to the database, but will not make changes to the Contractor's Program without the approval of the Contractor.

(b) As a minimum, the Contractor's Program must:

- i. define approved Variation activities and/or additional working days in a separate Work Breakdown Structure (WBS) and cost breakdown structure item, so that cost and time of the Variation activities can be clearly distinguished from the original scope;
- ii. have a separate WBS structure outlining each step of the design review process for each individual design package where relevant;
- iii. group the Works and milestones in a WBS that is aligned to the payment schedule or other form of cost breakdown structure included in the Contract; and
- iv. show Earned Value in accordance with "AS 4817-2006 Project Performance Measurement using Earned Value" and "TfNSW [Earned Value Management using Primavera P6 - 4TP-WI-005](#)";
- v. include budgeted cost, actual and actual cost input into the relevant WBS items each month; and
- vi. show the Principal's review periods in accordance with the requirements set out in the Contract.

2.0 Program Setup and Maintenance

(a) The Contractor's Program must:

- i. include all key activities and deliverables detailed in this TSR and the Contract and any other activities and deliverables directed by the Principal's Representative;
- ii. include requirements for the submission, review and approval of all documents and other deliverables including the Management Plans and Design Documentation;
- iii. include the required submission and approval timeframes and resources for community notification and consultation;
- iv. outline the dates when the Contractor will require information, documents, materials or instructions from the Principal and the dates when the Contractor will provide information or Documents to the Principal. These dates must be consistent with dates that the Principal could reasonably have anticipated at the date of the Contract;
- v. provide start and finish dates for all elements of the Contractor's Activities (including design, procurement and construction activities), milestones, external dependencies, Principal deliverables, and any other significant events and contractual dates for Completion;
- vi. show the lead times for the supply of information, selection of Subcontractors and suppliers, approvals, and the supply of equipment by the Principal, its agents or persons for whom the Contractor is not responsible. Each period must be represented in a separate activity from the Contractor's activity for the relevant items;
- vii. clearly identify the access requirements and activities and any outages;
- viii. show activities for Site mobilisation, establishment and demobilisation;
- ix. clearly identify the critical path activities and milestones;
- x. add and maintain codes, resources and expense activities as directed by the Principal's Representative;
- xi. show quantities and rates as requested by the Principal's Representative;
- xii. identify time leads and lags and other constraints;
- xiii. show calendars identifying the working and non-working days for the Works. Project calendars are to be up-to-date and reflect changes to the available working periods. No other allowances for wet weather or other such contingencies are to be made in the calendars;
- xiv. document the time scheduled, remaining duration and actual physical progress of the Works, and be consistent with all constraints on access, performance and coordination;
- xv. show allowance for weather and other event contingencies in a single activity at the end of the critical path and prior to Completion; and

- xvi show Commissioning and Asset Handover activities, including the time allowed for testing and Commissioning of major items.

3.0 Program Quality

- (a) The Contractor must maintain the quality of the Contractor's Program and satisfy the criteria in table 3.1 Program Quality Thresholds by remaining below the stated acceptable thresholds.
- (b) Further assessment criteria and thresholds may be added or modified by the Principal's Representative. Deviations from the stated thresholds must be approved by the Principal's Representative prior to being accepted.
- (c) The quality of the Contractor's Program will be assessed upon each submission.

Table 3.1 Program Quality Thresholds

Criteria	Description	Remarks	Acceptable Threshold
Missing Predecessors	Total number of activities that are missing predecessors.	Activities that have missing predecessors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a program during the planning phase.	Less than 1%
Missing Successors	Total number of normal activities that are missing successors.	Activities that have missing successors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a program during the planning phase.	Less than 1%
Merge Hotspot	The total number of activities with a high number of predecessor links.	Also known as merge bias, merge hotspot is an indication as to how complex the start of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question will be delayed due to the cumulative effect of all links having to complete on time in order for the activity to start on time.	Less than 2.5%
Diverge Hotspot	The total number of activities with a high number of successor links.	A diverge hotspot is an indication as to how complex the end of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question may delay a large number of successors.	Less than 2.5%

Criteria	Description	Remarks	Acceptable Threshold
Hard Constraints (finish on, start on, mandatory finish, mandatory start)	Number of activities with hard or two-way constraints.	<p>Hard or two-way constraints such as "start on" or "finish on" should be avoided. Consider using soft constraints if absolutely necessary.</p> <p>Includes normal activities and milestones that are planned, in-progress, or complete.</p>	Zero
Soft Constraints (start on or after, finish on or after)	Number of activities with soft or one-way constraints.	<p>Soft or one-way constraints such as start no earlier than or finish no later than, constrain an activity in a single direction. While not as impactful as hard constraints, soft constraints do impact critical path method calculations in a program and should be reviewed carefully.</p>	Zero
Negative Float	Total number of activities with total finish float less than 0 working days.	<p>Negative float is a result of an artificially accelerated or constrained program. Negative float indicates that a program is not possible, based on the current Completion dates.</p> <p>Compare this metric to constraint metrics to determine which activities (with negative float) are being impacted by constraints. Ideally, there should not be any negative float in the program. Includes normal activities and milestones that are planned or in-progress.</p>	Zero
High Duration	Total number of activities that have a duration longer than 20 days	Total number of activities that have a duration longer than 20 days	Less than 2%
Zero Duration	Normal activities having a Zero duration	Normal activities having a Zero duration	Zero
Wrong Status	Activities started or completed in the future	All activities with status in the future must be corrected in order to maintain an accurate execution plan. Includes only normal activities and milestones that are in progress or complete	Zero
SF Predecessors	Total number of activities with Start to Finish (SF) logic links	<p>Start-to-finish links are deliberately used very rarely because they have the unusual effect that the successor happens before the predecessor.</p> <p>Generally a poor practice when planning. Includes only normal activities and milestones that are planned, in-progress, or complete.</p>	Zero

Criteria	Description	Remarks	Acceptable Threshold
Leads and Lags	Lags in excess of 10 days	A lag is a duration applied to a logic link often used to represent non-working time between activities such as concrete curing. Lags tend to hide detail in programs and cannot be "stated" like normal activities. Lags should typically be replaced with activities. Includes normal activities and milestones that are planned, in-progress, or complete.	Zero
Logic on summaries		A summary is not a true activity. Logic should be tied to activities within the schedule	Zero
Reverse logic		As a result of a negative lag (a lead), the successor activity starts before their predecessor.	Zero

Annexure E Records

These requirements apply as indicated in Annexure A

Part 1 Pre Commencement Property Compliance Checklist

(for use pre Site occupation or pre construction)

Compiled by: ____ On behalf of: ____ Contract #: ____ Date: ____

#	Issue	Circle relevant answer and add comment	Attachment
1	Has the Contractor been liaising with the Principal's Representative?	Y N Comment: [insert text here]	
2	Have all properties affected by the Project been identified?	Y N Comment: [insert text here]	
3	Has a list of all affected properties been issued to the Principal's Representative? (where lands have not been supplied already by the Principal)	Y N Comment: [insert text here]	
4	Is access required to properties owned by other parties?	Y N provide details. Comment: [insert text here]	
5	Are all agreements in place with other landowners to permit the Contractor to undertake the Works?	Y N Comment: [insert text here]	
7	Have all surveys been conducted?	Y N Comment: [insert text here]	
8	Have all surveys been cross-checked with the designs?	Y N Comment: [insert text here]	
9	Do any of the proposed Works or Contractor's Activities fall outside the property / Site boundaries?	Y N Comment: [insert text here]	
10	If so, has the Contractor got agreements to build on the adjoining land?	Y N Comment: [insert text here]	
11	Are new easements, stratum's, MOU's or WAD's with stakeholders required for the Project?	Y N Comment: [insert text here]	
12	Have any new easement, stratum's, MOU's or WAD's been drafted and issued to the Principal's Representative for review?	Y N Comment: [insert text here]	
13	Have all property pre-construction condition surveys been conducted and submitted?	Y N Comment: [insert text here]	

#	Issue	Circle relevant answer and add comment	Attachment
14	Has asset management been considered in design?	Y N Comment: [insert text here]	
15	Are there any other property risks?	Y N Comment: [insert text here]	

RECEIVED by TINSW

Signed: _____

Received by: _____

Date: _____

REVIEWED by Principal's Representative

Signed: _____

Name: _____

Date: _____

Acceptable? (Conforms to Contract requirements): Y/N provide reasons:

Comments provided: Y/N (attach comments)

No Comments or no further Comments: Y/N

Part 2 Property Records

Required Record or Reference
Index of all property records noting issues / versions and where they are held
Qualifications/skills and competency records of Contractor's personnel (including Subcontractors)
Induction and training records for Contractor's personnel and Subcontractors
Property control and constraints maps (worksite maps)
List of all adjoining property owners and details of all interaction / communications and complaints
Evidence of property inputs / outputs within the design development process including any sustainability initiatives
Surveillance, audit of Subcontractors property performance and controls
Non-conformance and non-compliance property reports and register

Part 3 Environmental Records

Required Record or Reference
Copies of all completed forms, templates required under the Codes and Standards, and applicable guidelines
Contractor's non-compliance, incident, near miss, non-conformance reports and register
Preventive and corrective action reports and register
Environmental audit reports
Environmental Control Maps
Index of all environmental records (prior to Completion)
Induction and training records
Records / checklists of inspection and testing
Records of environmental management reviews for the Project
Tree Register, Offsets Register, Tree Offset Package and Tree Protection Plan, as required under the Contract
Register of equipment, calibration frequency and certificates
Surveillance, audit of Subcontractors environmental performance and controls

NSW Government Resource Efficiency Policy (GREP)

Where nominated in Annexure A, the Contractor must:

- (a) make available documents and evidence to assure the Principal that the Works and Contractor's Activities are compliant with the requirements of the GREP policy.
- (b) comply with the following requirements, to the extent they apply to the Works or Contractors Activities:
 - i. E3. Minimum standards for new electrical appliances and equipment;
 - ii. E4. Minimum standards for new buildings; such that all new office buildings and fit-outs will be designed and built to a predicted performance of at least 4.5 stars for NABERS energy rating. For building types other than office buildings and fit outs, and where the facilities have projected development costs over \$10 million, the buildings must be designed and built so that energy consumption is predicted to 10% lower than if built to minimum compliance with National Construction Code requirements;
 - iii. W3. Minimum standards for new water using appliances; and
 - iv. A2. Low volatile organic compound surface coatings.
- (c) prepare the following reporting tools in the form provided by the Principal, and submit to the Principal's Representative for review in accordance with the Contract:
 - i. an inventory of non-road diesel vehicles to be used in the Contractor's Activities, within 1 month of the date of the Contract, and subsequently, annually (where the duration of the Contract is of more than 1 year) – using "TfNSW [Air Emission Data Collection Workbook – 9TP-FT-439](#)"; and
 - ii. a "TfNSW [Waste Data Collection Worksheet 9TP-FT-436](#)" to be submitted annually, by no later than the last Friday of the second week in August.

Annexure F Contractor's Monthly Report

The Contractor must provide a monthly report, which must be submitted to the Principal's Representative on the last day of each month, which includes the following information for the previous 31 days.

Item	Description
A	A summary of the status of progress as compared to the current Contractor's Program and the Contractor's other programs including photographs
B	An A3 size PDF copy of the Contractor's Program
C	Planned Works and Contractor's Activities over the forthcoming 3 month period
D	A list and timing of Hold Points and Witness Points planned for the forthcoming 3 month period
E	The status of any Document, Design Documentation, other deliverables, major procurement orders, Subcontracts, manufacture and the overall delivery of the Works
F	Dates for the anticipated submission of design packages at key stages of the design as defined in the Works Brief;
G	The actual number and categories of personnel and equipment currently engaged by the Contractor to carry out the Contractor's Activities (including apprentices and those engaged in off-site functions such as engineering and specialist Subcontractors). This data must also be compared with the planned resources
H	A summary of the financial status of the Contract, including detailed final cost forecasts, and separate lists for the cost of approved Variations, claims and outstanding claims for Variations
I	<p>The environmental management section of the monthly report must, as a minimum, address and detail:</p> <ul style="list-style-type: none"> (i) the Contractor's performance against the environmental management requirements of the CEMP; (ii) the status of the CEMP including all Sub plans and environmental construction method statements; (iii) the outcomes of any consistency reviews undertaken in the reporting period under the <i>Environmental Planning and Approval Act 1979</i> (NSW); (iv) the status of environmental obligations including those identified in the Contractor's compliance tracking program; (v) the status of and performance against environmental licences held for the Works and Temporary Works; (vi) graphical representation of the monthly frequency of environmental issues and incidents each month for the previous 12 months, including an analysis of trends and what actions are being taken to improve performance; (vii) details of environmental non-compliances, incidents or emergencies; (viii) data and performance in accordance with the Construction Environmental Management Plan with reference to each of the Sub plans; (ix) data and status of tree impact assessment including an up to date Tree Register;

Item	Description
	(x) environmental inspection reports; (xi) the results, findings and any environmentally relevant actions of any internal or external audits carried out; and (xii) environmental training and the type of training they received.
J	Safety statistics in a format agreed with the Principal's Representative
K	Details of any reportable Incidents
L	A consolidated SWMS register showing active, planned and completed SWMS
M	Activities of the compliance working group including: <ol style="list-style-type: none"> 1) audits and actions; 2) any non-compliances or non-conformances of the Works, Temporary Works and Contractor's Activities in relation to the Contract, Authority Approvals and other obligations in Law; and 3) steps taken by the Contractor to address those non-compliances or non-conformances.
N	Records of all corrective and preventative actions taken by the Contractor and audits of such actions in a table
O	Cooperation, coordination, industrial relations and interface matters with Other Contractors
P	Summary updates relating to community issues and potential community issues
Q	Details of all community contacts (detailing issues, frequency, outcomes, dates etc.) from CMS
R	A written summary covering the completed Works and upcoming activities including any associated community impacts, in a form suitable for inclusion on the Principal's website
S	Details of complaints and enquiries received by the Contractor in relation to the Contractor's Activities
T	Sustainability reporting requirements as indicated in section 4 Workforce Development Reporting requirements as indicated in section 5
U	Details of the status, implementation, operation and effectiveness of risk identification and mitigation measures including: <ol style="list-style-type: none"> i. a report on the risks deemed 'extreme' or 'high' within the risk register; ii. an overview of the full risk register (e.g. number of risks by category and rating, number of new risks identified and risks closed out during the previous month); iii. the status of associated controls and tasks; and iv. any results of risk audits
V	Where the Works include signalling system works, the progress report must also include a one page summary of the status of signalling design packages and provide the status of signalling inspection and test documentation such as permit to work

Item	Description
	applications, inspection and test plans, installation works packages, Commissioning test plans and Commissioning works packages
W	Details of any property related matters including property claims:
X	Any other information the Principal's Representative reasonably requires

Annexure G TSR Reference Documents

The following TfNSW-authored documents, referenced in this TSR are not publicly available, and are provided here:

- PLR Enabling Works Contract Safety Management Requirements
- TfNSW Environmental Incident/Non-Compliance Report 9TP-FT-101
- TfNSW Pre-Construction Minor Works Approval 9TP-FT-202
- TfNSW Generic Work Health and Safety Operational Risk Register 30-SD-101
- TfNSW WCAG 2.0 Quick reference guide
- TfNSW Editorial Style Guide
- TfNSW Property Compliance Register 2TP-ST-175
- TfNSW Earned Value Management using Primavera P6 4TP-WI-005
- TfNSW Scheduling Standard 4TP-ST-123
- TfNSW Work Activity Advice Form 4TP-FT-105
- TfNSW Waste Data Collection Worksheet 9TP-FT-436
- TfNSW Fatigue Management Standard ST-011
- TfNSW Working Near Utilities 4TP-PR-159
- TfNSW Significant Incident Management Procedure – 1TP-PR-008
- TfNSW Environmental Incident Classification and Reporting – 9TP-PR-105
- TfNSW Parramatta Light Rail Sustainability Strategy
- PLR Tree Register
- PLR Project Wide Climate Change Risk Assessment
- PLR Stage 1 Definition Design - Energy and Carbon, Water & Materials Estimates Report
- Infrastructure Sustainability - Base Case Assumptions
- Infrastructure Sustainability - Weightings Assessments
- TfNSW Skill and Employment Delivery Plan Template
- TfNSW Environmental Management System Framework
- TfNSW Vegetation Offset Guide 9TP-SD-087/1.0
- TfNSW Vegetation Offset Calculator 9TP-SD-067

- TfNSW Construction Noise and Vibration Strategy 7TP-ST-157
- TfNSW Checklist for Environmental Consistency Assessment 9TP-FT-112
- TfNSW Guide to Environmental Control Map 3TP-SD-015
- Transport for NSW Parramatta Light Rail Communication and Engagement Strategy (CES) (includes Parramatta Light Rail Construction Complaints Procedure)
- Parramatta Light Rail Incident and Crisis Communications Procedure template
- Parramatta Light Rail Community Engagement Report
- PLR EIS Engagement Summary
- Transport for NSW Infrastructure Project Signage Style Guide
- Transport for NSW Use of Social Media Policy
- TfNSW CEMP Template
- Community and Stakeholder Notifications
- Enquiries and Complaints Spreadsheet



Parramatta Light Rail

Site investigations

[INSERT DATE RANGE]

[Insert month & year of notification] - COMMUNITY NOTIFICATION

Parramatta Light Rail will connect the community with great places and help both locals and visitors move around and explore what the region has to offer. Please visit our website www.parramattalightrail.nsw.gov.au for more information about the project. *example text – to be updated by the Principal Representative as required*

Site investigation work

Transport for NSW is continuing planning and design work for Stage 1 of the project, with construction to start in 2018. As part of this, contractors have been engaged to undertake site investigation work to test ground conditions and identify existing underground utility services, such as water, telecommunications, gas and electricity. *example text – to be updated by the Principal Representative as required*

Work will involve **[cutting holes in the road and/or footpath, taking soil samples, inspecting and measuring inside pits and tracing utility services using electromagnetic induction and ground penetrating radar. Temporary spray paint will be used to mark utility locations during the investigations].**

We will do the work during normal work hours, **7am to 6pm Monday to Friday**. From time to time, we may need to work on **Saturdays, between 8am and 1pm**, but we won't be working on Sundays. The work in your area will be undertaken in **[insert timeframe]** however, we may need longer depending on weather conditions and what we find during the investigations.

There may be temporary changes to local traffic and we will use traffic controllers to guide drivers and pedestrians around our work areas and ensure access to driveways is maintained.

Once we have finished the work in your area paint markings on the roads and/or footpaths will either wash off in the rain or we will remove them in high traffic areas to reduce the visual impact.

More information

For more information about these works please call 1800 684 490 or visit our website www.parramattalightrail.nsw.gov.au. Thank you for your understanding during this work. We will keep you updated as we progress.



Translating and Interpreting Service

If you need an interpreter, please call the Translating and Interpreting Service (TIS National) on **131 450** and ask them to telephone Parramatta Light Rail on 1800 684 490.

Arabic

إذا كنت بحاجة إلى مترجم، الرجاء الاتصال بخدمة الترجمة الخلفية والشبوية (TIS National) على الرقم **131 450**، والطلب منهم الاتصال بـ 1800 684 490 على الرقم Parramatta Light Rail.

Cantonese

如您需要口譯員，請致電 **131 450** 聯絡翻譯和口譯服務署 (TIS National)。請求他們致電 1800 684 490 聯絡 Parramatta Light Rail。

Mandarin

如果您需要口譯員，請致電 **131 450** 聯絡翻譯和口譯服務署 (TIS National)。請求他們致電 1800 684 490 聯絡 Parramatta Light Rail。

Korean

동어사가 필요하시면 번역통역서비스 (TIS National)에 **131 450** 으로 연락하여 이들에게 1800 684 490 번호로 Parramatta Light Rail에 전화하도록 요청하십시오.

Hindi

अगर आपको हिंदी में बोलने की आवश्यकता है तो हमें 131 450 पर (TIS National) से संपर्क करें और उन्हें 1800 684 490 पर Parramatta Light Rail से संपर्क करने के लिए कहें।



Parramatta Light Rail

Site investigations
[INSERT DATE RANGE]

[Insert month & year of notification] - COMMUNITY NOTIFICATION

Parramatta Light Rail will connect the community with great places and help both locals and visitors move around and explore what the region has to offer. Please visit our website www.parramattalightrail.nsw.gov.au for more information about the project. **example text – to be updated by the Principal Representative as required**

Site investigation work at night

Transport for NSW is continuing planning and design work for Stage 1 of the project, with construction to start in 2018. As part of this, contractors have been engaged to undertake site investigation work to test ground conditions and identify existing underground utility services, such as water, telecommunications, gas and electricity. **example text – to be updated by the Principal Representative as required**

Work will involve [cutting holes in the road and/or footpath, taking soil samples, inspecting and measuring inside pits and tracing utility services using electromagnetic induction and ground penetrating radar. Temporary spray paint will be used to mark utility locations during the investigations].

We will undertake the work at night, between **7pm and 5am** to minimise the impact on traffic and pedestrian movement. The work in your area will be undertaken in [insert month] however, we may need longer depending on weather conditions and what we find during the investigations.

There may be temporary changes to local traffic and we will use traffic controllers to guide drivers and pedestrians around our work areas and ensure access to driveways is maintained.

Once we have finished the work in your area paint markings on the roads and/or footpaths will either wash off in the rain or we will remove them in high traffic areas to reduce the visual impact.

More information

For more information about these works please call 1800 684 490 or visit our website www.parramattalightrail.nsw.gov.au. Thank you for your understanding during this work. We will keep you updated as we progress.



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If you need an interpreter, please call the Translating and Interpreting Service (TIS National) on **131 450** and ask them to telephone Parramatta Light Rail on 1800 684 490.

Arabic

إذا كنت بحاجة إلى مترجم، يرجى الاتصال بخدمات الترجمة والتفسير الوطنية (TIS National) على الرقم **131 450**، والطلب منهم الاتصال بـ 1800 684 490 على الرقم Parramatta Light Rail.

Cantonese

如您需要口譯員，請致電 **131 450** 查詢翻譯和口譯服務 (TIS National)。請聯絡 Parramatta Light Rail 1800 684 490 聯絡 Parramatta Light Rail。

Mandarin

如您需要口譯員，請致電 **131 450** 查詢翻譯和口譯服務 (TIS National)。請聯絡 Parramatta Light Rail 1800 684 490 聯絡 Parramatta Light Rail。

Korean

통역사가 필요하시면 번역통역서비스 (TIS National)에 **131 450** 으로 전화하여 다음에게 1800 684 490 번으로 Parramatta Light Rail에 전화하도록 요청하십시오.

Hindi

आपको अनुवादक की आवश्यकता है तो **131 450** पर टोलफ्री पर कॉल करें और 1800 684 490 पर Parramatta Light Rail को कॉल करने के लिए अनुरोध करें।

team

Base Case Framework

Introduction

This framework has been prepared to support the development of a Base Case proposal under the Infrastructure Sustainability (IS) rating scheme. This is relevant to Parramatta Light Rail planning phase – Stage 1.

The IS rating scheme is facilitated by ISCA and is a third party verified performance rating system for infrastructure. There is a 4-step process which underpins the scheme and includes a requirement for registered projects/assets to prepare a base case. To prepare a base case a proposal must be prepared and submitted to ISCA for approval and corresponding base case footprints need to be prepared which model the impact of the base case across energy, water and material use.

An important part of the base case process is to ensure that the modelled impacts align with business as usual approaches and technologies. This allows the rating teams (project/asset teams) to compare their actual performance and demonstrate a reduced impact based on a business as usual equivalent.

The base case requirement applies to the following credits:

- Ene-1
- Wat-1
- Mat-1

Purpose

This framework outlines key requirements and assumptions that need to be incorporated as part of any base case proposal for any project or package. Using this framework a Base Case was created for Materials, Energy and Carbon and Water use on the Parramatta Light Rail project, Phase 1. A comparison between the Base Case and a Design Case for these usage categories is required to comply with several requirements from the IS Rating Scheme and the Sustainable Design Guidelines, both of which the Parramatta Light Rail project is pursuing for certification as one of the project's Sustainability Goals and Objectives.

Suitable design

The base case has been developed using information available during the concept design of Parramatta Light Rail Stage 1. The program is scoped into 3 packages:

- Enabling
- Infrastructure
- Supply, Operate and Maintenance (SOM)

This base case framework applies to all of the packages and has been developed through consultation with a multi-disciplinary team of designers and construction manager working on the development of the concept design and other tender materials. Final assumptions were agreed in a workshop format with the relevant design and construction managers.

Resource use boundary and framework

All impacts need to be considered across the whole life of the asset.

Resource Use	Project Components
Energy use <ul style="list-style-type: none">• Stationary & off-road fuel (plant & equipment) (Scope 1)• Transport fuel from company owned vehicles	<ul style="list-style-type: none">• Rail decommissioning• LR Corridor• Interchange infrastructure

(Scope 1) <ul style="list-style-type: none"> • Electricity (grid & renewables) (Scope 2) • Transport fuel (for delivery of products, water, etc.) to site (note this is Scope 3 - and only required for Ene-1 Level 3) • Transport fuel (for delivery of materials) to site (note this is also Scope 3, but required for Mat-1) 	<ul style="list-style-type: none"> • Stops • Road corridor • Barriers • Streetlighting • Line marking and road finish • Formation • Medians • Drainage • Signage and signals • Structures • Car Parks • Communication and surveillance systems • Power supplies • Street furniture • Landscape, vegetation and public art • Active transport, bike paths and foot paths • Utilities • Light rail operations • Stabling infrastructure and rail systems • O&M facilities
Water use <ul style="list-style-type: none"> • Potable water • Non-potable water 	
Materials use <ul style="list-style-type: none"> • Concrete • Steel • Asphalt • Glazing • Timber • PVC • Other metals 	
Land & Vegetation Clearing	
Waste Generated <ul style="list-style-type: none"> • Construction & Demolition Waste • Office Waste • Other General solid waste • Uncontaminated Spoil 	
Contaminated soil/waste	

Key exclusions

Materials used in the manufacture of the LRV

Key assumptions

The project design life is considered to be 100 years. However, the operations contract will be for 12 years

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
ENERGY USE				
Stationary & off-road fuel				
1	Use of generators during construction	<ul style="list-style-type: none"> Fixed sites during construction will use diesel generators 10 hours a day for 6 days a week Generators providing electricity to site offices are operated at full load using 100% mineral diesel unless easy access to mains power Fuel consumption rate for generators is assumed to be 100L diesel/day Also refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations 	<ul style="list-style-type: none"> Timeframe for generator use provided by Constructability team Rate of fuel consumption for generators provided by Constructability team Energy density from National Greenhouse Accounts Factors and Methods Workbook 	<ul style="list-style-type: none"> Total fuel use (kL) No. and capacity of generators Timeframe for generator operation
2	Other stationary plant such as cranes etc	<ul style="list-style-type: none"> Consider plant specifications in the calculations Consider calculating Diesel use based on hours of plant use Assumption that plant uses 100% mineral diesel and E10 where not limited by plant warranties. 	<ul style="list-style-type: none"> Time frames for plant use to be based on construction program Rate of fuel consumption for plant provided by Constructability team. Should be based on plant specs where available or equivalent 	<ul style="list-style-type: none"> Total fuel use (kL) No. and type of plant Timeframe for plant operation
Transport fuel				
3	Use of non-project owned vehicles for transportation of construction materials and waste	<ul style="list-style-type: none"> Mass/volume of construction and demolition waste transported off site Mass/volume of construction materials, including concrete, steel and demolition waste, transported Average distances for transportation of construction wastes and materials 	<ul style="list-style-type: none"> Calculations to change metrics given by Constructability to metrics useable within CERT tool were carried out using the following online resources: Slurry: http://www.aqua-calc.com/calculate/volume-to-weight) Concrete: http://www.traditionaloven.com/conversions_of_measures/concrete-weight.html Mixed demolition waste: http://www.sustainabilityexchange.ac.uk/conversion_factors_for_calculation_of_weight_to_vol Sleepers: assumption that sleepers are Australian jarrah http://www.railwaysleepers.com/railway- 	<ul style="list-style-type: none"> Amount of construction waste by type (concrete, slurry, mixed, sleepers, rail) Likely waste disposal/recycling/reuse scenario of each type of waste

			<p>sleepers/railway-sleeper-sizes</p> <ul style="list-style-type: none"> Information about quantity of spoil and excavated material going to landfill is not yet available Amount of construction waste estimated by Constructability team 	
4	Use of project owned vehicles	<ul style="list-style-type: none"> The number of project related vehicles that will be used to transport equipment and materials to and from the project site will be estimate by contractors. Early, high-level estimate of transport for project to be provided by constructability Fuel use for vehicles will be E10 unleaded or 100% mineral diesel Also refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations 	<ul style="list-style-type: none"> Estimate types of vehicles used to transport each types of material based on previous experience with equivalent projects CERT tool assigns transport emissions factors to different types of transport: Rigid truck, Articulated truck, Rail and Shipping. All transportation types provided in estimated from Constructability were categorised into these four categories for the purposes of calculation. 	<ul style="list-style-type: none"> Types of vehicles used for transporting each type of material Estimates of distance travelled for each type of vehicle based on proximity of material source to project Consideration of considered Transport Authorities Greenhouse Group (TAGG) workbook where appropriate
Electricity				
5	Use of grid electricity for construction	<ul style="list-style-type: none"> Some fixed sites during construction will use only grid energy. Consumption for these sites will be similar to that of a small basic office (NABERS 3 star) Emissions factor for all purchased electricity from National Greenhouse Accounts Factors, August 2016 for the NSW grid. 6% Green Power is considered BAU on TfNSW projects due to Government Resource Efficiency Policy No carbon credits from electricity grids will be accounted for throughout the project. No on-site renewable energy 	<ul style="list-style-type: none"> Constructability provided estimates of fixed sites using grid-only energy, and comparison with small office energy use. Commercial Building Disclosure's 'Improving the Energy Efficiency Performance of Small Office Buildings Regulation Impact Statement' (March 2016) defines small offices as 'those with under 2000m2 of floor area'. Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, November 2012 (Council of Australian Governments National Strategy on Energy Efficiency) says that weighted average intensity of offices tenancies in NYS NSW was 488MJ/m2. Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016). Reviewing previous projects indicated that 	<ul style="list-style-type: none"> Estimate of electricity requirements for relevant construction activities.

			currently renewable energy sources (e.g. from the installation of solar panels) or the purchase of GreenPower are rarely adopted in industry due to high cost and the temporary nature of the site sheds.	
6	LRV Operation	<ul style="list-style-type: none"> Emissions factor for all purchased electricity for operation is sourced from National Greenhouse Accounts Factors, August 2016 for the NSW grid. 45m LRVs were assumed Electricity to run trams will be purchased from the local grid. 6% Green Power is considered BAU on TfNSW projects due to Government Resource Efficiency Policy 5% average energy recovery from regenerative braking considered BAU LEDs are considered BAU in lighting (without compromising standards/safety) 	<ul style="list-style-type: none"> Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016). SNC Lavalin has recommended the use of 45m LRVs because of service requirements for increasing customer levels in coming years. 45M LRVs have a greater rate of energy use than 32m LRVs. Renewable energy offsets are not required by TfNSW's SDGs On-site generation has not be used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating. 	<ul style="list-style-type: none"> Energy use in kWh/km travelled for 45m LRVs Total km travelled annually
7	Depot Operation	<ul style="list-style-type: none"> Emissions factor for all purchased electricity for operation is sourced from National Greenhouse Accounts Factors, August 2016 for the NSW grid. 6% Green Power is considered BAU on TfNSW projects due to Government Resource Efficiency Policy No carbon credits from electricity grids will be accounted for throughout the project. NABERS 3 star rating is considered business as usual for the office areas. No on-site renewable energy generation for BAU projects BAU for specialist equipment can be sourced from similar Australian projects 	<ul style="list-style-type: none"> Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016). Renewable energy offsets are not required by TfNSW's SDGs On-site generation has not be used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating. SNC Lavalin estimate of annual depot operational energy use based on information from similar TfNSW project 	<ul style="list-style-type: none"> Estimated kWh used annually at depot Operating parameters

8	Stop Operation	<ul style="list-style-type: none"> Emissions factor for all purchased electricity for operation of stations is sourced from National Greenhouse Accounts Factors, August 2016 for the NSW grid. 6% Green Power is considered BAU on TfNSW projects due to Government Resource Efficiency Policy No carbon credits from electricity grids will be accounted for in the Base Case. LEDs are considered BAU in lighting 	<ul style="list-style-type: none"> Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016). Renewable energy offsets are not required by TfNSW's SDGs On-site generation has not be used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating. Estimate of annual station operational energy use based on information from similar TfNSW project 	<ul style="list-style-type: none"> Number of stops Estimated kWh used annually per stops Operating parameters
WATER USE				
Potable and non-potable				
9	Potable and non-potable water use during construction	<ul style="list-style-type: none"> Potable water is used for construction works in office and compound ablutions, and as moisture control for fills and pavement layers. 90% potable water is used for dust suppression. Potable water is defined as 'high quality water suitable for drinking and cooking.' Non-potable water is defined as 'lower quality water suitable for other purposes such as toilet flushing or dust suppression'. 	<ul style="list-style-type: none"> Potable and non-potable water definition is from the ISCA IS Technical Manual Version 1.2, May 2016 	<ul style="list-style-type: none"> Estimate of water use (kL/day across all sites) for construction activities and site office use Type of water source e.g. Class A water, rainwater, manufacturing waste water, bore/ground water, river water, surface water (from post rain event water run-off from the work site), mains, tanker, recycled, etc.
10	Potable and non-potable water use during operation	<ul style="list-style-type: none"> Potable water is defined as 'high quality water suitable for drinking and cooking.' Non-potable water is defined as 'lower quality water suitable for other purposes such as toilet flushing or dust suppression'. Water use during operations includes for tram washdown 80% non-potable water use in operation for the Depot considered BAU 	<ul style="list-style-type: none"> Potable and non-potable water definition is from the ISCA IS Technical Manual Version 1.2, May 2016 	<ul style="list-style-type: none"> Potable and non-potable water used for wash-down
11	Potable and non-potable water use for	<ul style="list-style-type: none"> Potable water is used for landscaping/planting including irrigation 	<ul style="list-style-type: none"> Potable and non-potable water definition is from the ISCA IS Technical Manual Version 	<ul style="list-style-type: none"> Estimated number of plants for PLR or similar project

	landscaping/planting	<ul style="list-style-type: none"> • Potable water is defined as 'high quality water suitable for drinking and cooking.' Non-potable water is defined as 'lower quality water suitable for other purposes such as toilet flushing or dust suppression'. • Establishment periods for plantings of 12 weeks and rate of watering of 20L/week/planting, post-establishment period of 52 weeks and rate of watering of 5L/week/planting 	<p>1.2, May 2016</p> <ul style="list-style-type: none"> • Establishment periods and post-establishment periods for planting vary for plant types and locations, but these rule-of-thumb establishment timeframes were agreed after discussion with the project's landscape team and other landscape architecture professionals. 	<ul style="list-style-type: none"> • Non-potable water used for landscape irrigation
MATERIALS				
12	All materials listed below	<ul style="list-style-type: none"> • The current version (1.1) of the Transport for NSW Carbon Estimate and Reporting Tool (CERT) at the time of calculating the base will be used to estimate the carbon emissions from the use of materials for the project for relevant Sustainable Design Guidelines credits. • The current version (1.2) of the ISCA Materials Calculator at the time of calculating the base will be used to estimate the carbon emissions from the use of materials for the project for relevant ISCA credits. 	<ul style="list-style-type: none"> • The Transport for NSW Carbon Estimate and Reporting Tool (CERT) is developed for benchmarking. • Also refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations. • The ISCA Materials Calculator is developed for benchmarking. • Also refer to the 'LCI (2016)', 'Weighting factors', 'Materials densities' and 'Default concrete compositions' tabs of the ISCA Materials Calculator to see assumptions for carbon emissions calculations. • Also refer to assumptions for the transportation of materials to site (item #2). 	<ul style="list-style-type: none"> • As noted below.
13	Asphalt and RAP	<ul style="list-style-type: none"> • BAU is densely graded asphalt with a bitumen binder • Asphalt types DG20 and DG14 used for full depth pavement widening. 15% RAP is considered BAU for asphalt. • Assumed pavement is full depth at widenings, with layers consisting of: Asphalt wearing course (50mm), Asphalt base course (250mm), selected material zone (300mm), and lower upper zone of formation (300mm). Detailed pavement design not available, as traffic loading and pavement materials testing 	<ul style="list-style-type: none"> • Consultation with geotechnical and pavement design engineers indicated that no RAP is required as BAU for DG20 or DG14 type asphalts. • Consultation with geotechnical and pavement design engineers indicated that DG20 or DG14 type asphalts can use hot-mix or warm-mix. Hot mix assumed for this project. • Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for Asphalt 	<ul style="list-style-type: none"> • Estimated total amount (m3) and types of asphalt used for entire project

		data are not available.	<ul style="list-style-type: none"> Workshopped with project managers at planning stage 	
14	Aggregate	<ul style="list-style-type: none"> Coarse aggregate required for the subbase for project, including: selected material zone (300mm), and lower upper zone of formation (300mm). 10% recycled aggregate content for sub base where there are no compaction issues Reuse of clean aggregate from existing heavy rail line (Carlingford/Sandown) where feasible 	<ul style="list-style-type: none"> Consultation with geotechnical and pavement design engineers Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for aggregates 	<ul style="list-style-type: none"> Estimated total amount (m3) and types of aggregate used for entire project
15	Concrete	<ul style="list-style-type: none"> Where specifications do not limit, 20% substitute cementitious material (SCM) Should be considered as BAU based on previous projects of similar nature 	<ul style="list-style-type: none"> Concrete mix specification from Guide to Roads & Maritime Services QA Specification B80 Concrete Work for Bridges Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for concrete 	<ul style="list-style-type: none"> Estimated of total amount of concrete (m3)
16	Steel (including rails)	<ul style="list-style-type: none"> Estimate for 'structural steel' input in CERT tool includes the following components: Rebar- track, Stops / Structural, Bridges / Culverts / Utilities- rebar Estimate for 'galvanised steel' input in CERT includes the following components: OLE / Subs, Fencing, Retaining Walls Rail types Ri51 and S49 nearest base case equivalent within CERT Estimates for steel input in IS Materials Calculator include Steel rail lines, steel reinforcing bar, and steel galvanised pipe and tube. Steel galvanised pipe and tube acting as nearest proxy available in tool for OLE / Subs, Fencing, Retaining Walls 	<ul style="list-style-type: none"> Steel components from 'Material Quantities PLR Draft' provided by Claude Marais, TfNSW Enabling Works Manager, email 6/12/16 'Structural steel' assumes the inclusion of reinforcement steel. CERT tool requires a separate input for 'reinforcement steel', but this information was not provided separately by Claude Marais From CERT tool list of defined rail types do not include type expected to be used on project (Ri59). The nearest equivalent is Ri51, which weighs slightly more, but is a rail type specifically for tram rail, and therefore has the most similar production requirements. Rail type S49 appears in the calculator and would be used on a project of this type. Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon 	<ul style="list-style-type: none"> Estimated quantities of structural and galvanised steel (t) Estimated length (m) of Ri51 and S49 rail

			emissions calculations for rail	
17	Piping	<ul style="list-style-type: none"> PVC ducting used on project for utilities assumed to be heavy duty (1400kg/m³) for base case Ducts required for each supply station, each stop and along length of rail 	<ul style="list-style-type: none"> Constructability provided an assumption of 'heavy duty' 1400kg/m³ ducting, rather than a less dense form of ducting Assumptions about locations and length of ducting required provided by Constructability team Nominal pipe length from website of likely manufacturer (http://www.triunderground.com.au/products/conduit.html) 	<ul style="list-style-type: none"> Quantities of piping and use of CERT or the ISCA materials calculator
18	Electrical cables	<ul style="list-style-type: none"> Copper wire types include: OLE contact wire, Helper Cable, Helper to Contacting Bonding, Positive Feeder, Negative return, Cross-bonding, Substation cabling, Lighting LV and Miscellaneous, LV connection to council and signalling and radio. Also included are non-power ethernet cables. 	<ul style="list-style-type: none"> Assessment of cables based on designer's preliminary design and experience with previous light rail projects Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for electrical cables 	<ul style="list-style-type: none"> Quantities of electrical cable and use of CERT or the ISCA materials calculator
19	Existing Structures	<ul style="list-style-type: none"> BAU will be to decommission and replace all existing structures and bridges unless protected by heritage Cut fill balance with clean soil re-used on site considered BAU 	<ul style="list-style-type: none"> Workshop with project team and intent of concept design 	<ul style="list-style-type: none"> Bill of quantities for maintaining structures vs building new and use of CERT or the ISCA materials calculator
20	New Structures	<ul style="list-style-type: none"> Concept design for track slab width and depth to be considered as BAU New rail is considered as BAU across the project 	<ul style="list-style-type: none"> Workshop with project team and intent of concept design 	<ul style="list-style-type: none"> Concept design
WASTE MANAGEMENT				
21	Construction and Demolition Waste	<ul style="list-style-type: none"> Defined as per EPA's Waste Classification Guidelines, providing it is inert and non-hazardous. All construction and demolition waste from the project will be disposed of off site at the nearest waste facility and not reused on site or on another project. 	<ul style="list-style-type: none"> Consultation with industry indicates that landfill is BAU on construction sites due to space restrictions and effort required for adequate separation. 	<ul style="list-style-type: none"> Amount of waste generated (t) Distance transported off site
22	Office Waste	<ul style="list-style-type: none"> All office waste from the project will be disposed of off site at the nearest waste 	<ul style="list-style-type: none"> Observations by work packages indicate that waste recycling behaviours and 	<ul style="list-style-type: none"> Amount of waste generated (t)

		facility and not reused on site or on another project.	systems at site offices on construction projects are not as established, and BAU is to landfill 75% of office waste.	<ul style="list-style-type: none"> Distance transported off site
23	Other General solid waste	<ul style="list-style-type: none"> Defined as per EPA's Waste Classification Guidelines. Disposed of off site at the nearest waste facility and not reused on site or another project. 	<ul style="list-style-type: none"> Limited opportunities for reuse. 	<ul style="list-style-type: none"> Amount of waste generated (t) Distance transported off site
24	Uncontaminated Spoil	<ul style="list-style-type: none"> Uncontaminated spoil is spoil which has not been classified as contaminated (as per below) All uncontaminated excavated spoil from the project will be disposed of off site at the nearest waste facility and not reused on site, on another project, or sent to a stockpiling facility. 	<ul style="list-style-type: none"> Limited opportunities for the reuse of spoil onsite or nearby as project is already in an urbanised area, therefore landfill is BAU. 	<ul style="list-style-type: none"> Amount of waste generated (t) Distance transported off site
25	Contaminated Soil and waste	<ul style="list-style-type: none"> All waste and/or contaminated excavated spoil that has been classified as restricted or hazardous including Potential Acid Sulfate Soil (PASS) and Acid Sulfate Soil (ASS) from the project will be dealt with as per EPA Guidelines 	<ul style="list-style-type: none"> Contaminated waste/soil must be dealt with as required by NSW EPA Guidelines 	<ul style="list-style-type: none"> Amount of waste generated (t) Distance transported off site



Transport
for NSW



Parramatta Light Rail (Stage 1)
Westmead to Carlingford via Parramatta CBD and Camellia

Community Engagement



Engagement process

In December 2015, the NSW Premier announced the preferred network for Parramatta Light Rail. Although extensive stakeholder engagement started from this date, between December 2015 and August 2016, community engagement was limited largely to answering public enquiries.

Since August 2016, two phases of community engagement have been undertaken.

Phase 1 - August to November 2016

The purpose of this phase was to:

- inform communities about the project
- understand how people might use light rail
- identify issues that might influence the design of the project.

The Parramatta Light Rail project team developed collateral that explained the vision and objectives of the project, showed the preferred network and described the expected level of service.

A website was developed that also included this information, as well as providing opportunities for on-line feedback. During the engagement period, the website received almost 10,000 visits and 350 comments were provided to the online forum and survey.

The project team also undertook significant levels of face to face engagement with community members between 6 August and 2 November 2016:

- Attended 55 information sessions (details provided at Attachment A)
- Talked to 4300 stakeholders and members of the public
- Handed out 9200 brochures.

Finally, a postcard providing a high level summary of the project and directing people to the project website was delivered to 75,000 addresses across the corridor.

In November 2016, a qualitative and quantitative research program was undertaken on behalf of Parramatta Light Rail to investigate community attitudes within the entire corridor. A separate report has been produced for this research.

Phase 2 - February to May 2017

Following the announcement of the preferred route on 17 February 2017, Transport for NSW undertook another round of community engagement for the area covered by Stage 1 of Parramatta Light Rail (from Westmead to Carlingford via Camellia). The purpose of this exercise was to:

- inform communities about Stage 1.
- seek feedback on the alignment and proposed stop locations.
- inform development of the Environmental Impact Statement.

New collateral was developed with details of the route and level of service, and the project website was updated. Further face to face engagement was undertaken, with 27 information sessions (details provided at Attachment A) and doorknocking of businesses along the alignment. An information brochure was also delivered to 83,000 households along the Stage 1 alignment.

During February and March 2017, Transport for NSW commissioned Hill PDA to carry out a survey of over 100 businesses from across the Stage 1 corridor. This was undertaken with support from City of Parramatta. The results are being used to inform preparation of the Environmental Impact Statement, which will include a summary of issues raised.

Between 17 February 2017 and 28 April 2017, an online forum was available on the Parramatta Light Rail website. This was designed to identify issues that needed to be addressed in the Environmental Impact Statement and 170 responses were received.

Between February and May 2017 there were ongoing briefings and Q & A sessions with community groups, local government departments and their employees, pop-up sessions with large organisations/corporates in Parramatta CBD and ongoing engagement with local businesses, projects underway across the region.

As of 31 May, the PLR team has attended around 80 information sessions and pop up events, engaged with more than 10,000 stakeholders and members of the public at community events, attended over 450 meetings, presentations and briefings, handed out 23,000 brochures and delivered 245,000 letterbox drops and received more than 45,000 visits to the Parramatta Light Rail website.

These communications and engagement activities will continue to build the profile of the PLR, and shape the Project, including submissions received to the EIS (currently scheduled for public display in Aug-Sep 2017).

Other communication

As well as engaging community through information sessions, media, advertising and marketing have been used to inform public about the project. These include:

- Newspaper advertisements were placed in the Parramatta Advertiser (76,000 readership), Parramatta Holroyd Sun (25,000 readership), Inner West Courier (96,000 readership) and Northern District Times (55,000 readership) during March 2017 to promote the Project website and upcoming community information sessions.
- A two-page spread (advertising and editorial) was featured in the March 2017 edition of the Western Sydney Business Access (10,000 circulation).
- Project social media posts via Transport for NSW's Facebook accounts including NSW Public Transport and Transport for NSW were used for Project updates.
- The animation released in February 2017 for the preferred route announcement had almost 1,000 video views on social media, and featured on the peak nightly news bulletins of Channel 7, Channel 9, ABC and Channel 10 with a combined audience of up to three million viewers.
- Various stakeholders have also posted on social media about the Project including the City of Parramatta, Western Sydney University, and Western Sydney Health.
- The first edition of the quarterly Parramatta Light Rail newsletter was distributed in April to more than 65,000 letterboxes and 1,500 email addresses.

Summary of feedback

The feedback below summarises issues raised in both phases of engagement. It only covers issues raised that are relevant to stage 1 of Parramatta Light Rail.

General

Across the entire corridor, overall there was positive feedback and support for the concept of Parramatta Light Rail. People had a noticeable sense of civic pride that the community was seeing progress in Parramatta and surrounds, (with visible projects such as the Parramatta Square development and Western Sydney Stadium) and that the Parramatta Light Rail project would add vital infrastructure and connectivity between places, and it would help to 'catch up' with the fast-paced growth in and around the region.

The question asked most often by community members during engagement was when light rail would be built. Generally, there was a feeling that additional public transport options were required and that light rail needed to be operational as soon as possible – there was a level of disappointment that light rail would not be running until 2023. There was some scepticism about whether Parramatta Light Rail would be built at all, with people explaining that the region had been promised infrastructure in the past that had never been built.

There were many questions about what light rail actually is, and how it works. This resulted in many community engagement conversations being about educating people about the mode, and its comparisons to driverless underground Metro services, heavy rail, and buses.

Overall, there was significant support for the alignment announced in February 2017 and people felt that it would serve the major precincts and locations in the region. People understood the reasons for Stage 1 to be built as soon as possible, however there was disappointment by many who said they would have liked to have seen it going to Sydney Olympic Park. When asked why, many people said it was because they would go to sporting events or events such as concerts and the Royal Easter Show at the venue, and it would mean they could catch a direct public transport service there, instead of catching the train, bus or driving.

Another recurring theme raised across the entire corridor was that Parramatta Light Rail should extend to Epping. It was noted that Epping was becoming a key transport hub of equal importance to Strathfield and Parramatta itself. People considered that a light rail link from Parramatta to Epping would provide a vital connection to Sydney Metro and this could transform the way in which people living along the Carlingford Line would access Sydney CBD. It was also noted that a heavy rail link between Parramatta and Epping/ Macquarie Park had previously been proposed by the NSW Government but had not been delivered, and this was a missing link in Sydney's transport network. Cases were also made for Parramatta Light Rail to serve Castle Hill, Bankstown, Wentworth Point, Rhodes and Macquarie Park.

There were a number of queries about the potential cost of the project. Some people suggested that bus services running in dedicated lanes would be cheaper to deliver and operate. Some people also felt that there would not be enough demand for light rail services in the corridor and that consequently Parramatta Light Rail would operate at a loss.

Other general issues raised about the Parramatta Light Rail network included:

- Parramatta Light Rail should not duplicate existing public transport routes.
- Integration would be needed with other public transport services, particularly buses.
- The need for park and ride to be included along the route.

The table below summarises the general issues raised during the engagement that followed the announcement of the preferred route in February 2017.

Construction	<ul style="list-style-type: none"> → Concern about the duration of construction. → Concern regarding cumulative construction impacts across Greater Parramatta.
Impacts on businesses	<ul style="list-style-type: none"> → Concern about loss of business due to construction – hoardings, noise, vibration, parking
Operation	<ul style="list-style-type: none"> → Questions about the level of comfort to be provided by the services → Concern regarding perceived safety of late night services. → Concern regarding loss of existing heavy rail city services. → Questions about ticketing and proposed pricing. → Questions about journey times compared to existing bus services → Need for interchange between light rail and heavy rail to be as easy as possible
Consultation	<ul style="list-style-type: none"> → Comments about lack of consultation on route options and stop locations.
Alignment	<ul style="list-style-type: none"> → Requests for extensions to Epping and Olympic Park
Property and land use development	<ul style="list-style-type: none"> → Concern light rail will encourage additional high density development. → Concern about overall impacts to property, including land acquisition and land values. → Comment that the project will need to interact with proposed developments. → Concern regarding impacts on public land and green spaces.
Traffic and transport	<ul style="list-style-type: none"> → Concern about impacts on local traffic – mix of views that light rail will exacerbate or reduce road congestion. → Concern about the loss of road traffic lanes.
Parking	<ul style="list-style-type: none"> → Concern about loss of parking along the alignment. → Comment about the need to provide Park-and-Ride facilities.
Buses	<ul style="list-style-type: none"> → Requested the project to link with local bus services. → Concern that the project will affect the current level of bus services.
Bicycles and pedestrians	<ul style="list-style-type: none"> → Request that connections be provided between bike paths and the project. → Questions about provision of bicycle parking. → Confusion about the concept of Active Transport Corridors

Westmead

The majority of people that the Parramatta Light Rail team spoke to in Westmead during the engagement periods were staff at the hospitals in the precinct (including Westmead Private Hospital). In addition, the team met a number of Westmead residents at community events across Parramatta. Visitors to the hospital (family and friends of patients) also gave their view on the project, including their view on the issue of public transport and access to parking at Westmead.

Below is a summary of the main issues raised in consultation about Parramatta Light Rail in Westmead:

- There was strong support for Parramatta Light Rail linking Westmead train station, the hospitals, Parramatta CBD and Parramatta Station.
- Several staff at Westmead Hospital believed that train services from west of Westmead were going to become less frequent and they consequently supported Parramatta Light Rail linking Parramatta Station and Westmead Hospital and wanted this journey to be as quick as possible.
- Staff at both Westmead Hospital and the Children's Hospital said that they might use Parramatta Light Rail to go shopping or run errands in Parramatta during their breaks.
- Many people questioned whether Parramatta Light Rail could provide a faster connection between the hospitals and Parramatta CBD than existing bus services. If it would not, they felt that patronage for light rail might be lower than expected.
- Staff at the hospitals felt that the Parramatta Light Rail stops needed to be located as close as possible to the front entrances of the hospitals.
- Staff also suggested that walk between the light rail stop at Westmead Station and Westmead Hospital needed to be as short as possible, with priority given to pedestrians crossing roads. It was also felt that there needed to be a clear pedestrian link between light rail stops and T-Way bus stops, so that people could change modes easily.
- It was pointed out that medical staff often work shifts, so planning for Parramatta Light Rail needed to take into account personal safety and security.
- People in Telopea and Carlingford felt that they would be likely to use Parramatta Light Rail for outpatient appointments at Westmead Hospital (though it should be noted that few actual patients that the Parramatta Light Rail team talked to felt that they would be likely to use Parramatta Light Rail to attend appointments).
- A number of Parramatta-based workers felt that they would be likely to use light rail if they wanted to visit patients at the hospitals in Westmead, as parking during day time for visitors on the precinct was so limited.
- Westmead residents were generally supportive of a new public transport option. However, they expressed high levels of satisfaction with existing bus and train services.
- Residents were also concerned about potential loss of access to residential roads and increased congestion along Hawkesbury Road. Many staff at the hospitals who drove to work were also concerned about potential loss of road space for cars along Hawkesbury Road.

North Parramatta

Although Urban Growth is progressing the Parramatta North Urban Transformation Strategy, the residential population of North Parramatta is currently quite small, so the limited feedback provided about this precinct came mostly from staff at Cumberland Hospital and the health precinct. Staff and residents were mostly positive about a new public transport link from North Parramatta to Parramatta CBD and Parramatta Station.

Some residents and campaign groups expressed concern that the inclusion of North Parramatta in the Parramatta Light Rail network would encourage high density development in the area.

Other issues raised during engagement included:

- The design of the final route needed to allow for a possible future extension to Castle Hill.
- Staff stressed the importance of preserving existing bus routes that serve the area.
- There was concern that Parramatta Light Rail would result in a loss of trees, green spaces and adversely impact on heritage buildings in the precinct.
- Some workers on the precinct were concerned that light rail would create a barrier between the north and south of the precinct.
- There was also concern about the impact of light rail on traffic management.
- It was noted that during the day there are a large number of vulnerable patients using the precinct and they would need to be considered during both construction and operation of light rail.

Parramatta CBD

There was a noticeable sense of civic pride that Parramatta was going to get a light rail service, with an often-expressed belief that it would improve the city's standing. In general, Parramatta residents were broadly supportive of the high level of development across the city and they saw Parramatta Light Rail as an important enabler of this development. The need for additional public transport connections to Parramatta CBD was mentioned by people across the entire corridor. Destinations mentioned regularly included Western Sydney Stadium, Westfield, 'Eat Street', Riverside Theatre and the new Western Sydney University campus in Parramatta Square. All these locations were referenced when people discussed the proposed Parramatta Light Rail stops in the CBD. Residents of Parramatta were also keen for light rail to connect to Sydney Olympic Park as soon as possible.

It was widely understood that light rail would complement the heavy rail services to Parramatta. One of the issues raised most often was that the link between a light rail stop near Parramatta Square and Parramatta Station needed to be as short as possible, accessible and well-signposted.

Some members of the community were keen to understand whether City of Parramatta Council would continue to operate its CBD shuttle bus once Parramatta Light Rail was operational.

There was some concern about the impacts of Parramatta Light Rail construction on activity in the CBD. However, it was noted that the city had coped well during the last few years of heightened construction activity and had plans in place to manage disruption.

Despite strong support for Parramatta Light Rail serving the CBD, people expressed concern about some potential impacts:

- Loss of trees or green spaces.
- Impact on heritage buildings in the CBD.
- Need for property acquisition in the CBD to build light rail.
- Road congestion resulting from reduced road space for cars in the CBD.
- Loss of parking – a number of people suggested that park and ride for Parramatta Light Rail should be provided in the CBD.
- Loss of access to businesses.
- Increased noise in the CBD, during both construction and operation.
- Concerns that if roads closed in the CBD to traffic, they would become less busy after dark, resulting in more crime and antisocial behaviour.

Camellia

Commuters at Camellia Station felt that the existing train service did not adequately serve commuters going to Sydney. These commuters generally felt that Parramatta Light Rail would provide a better service by providing a regular and rapid link to Parramatta Station, where they could take express train services to the Sydney CBD.

Some commuters at Clyde and Rosehill stations were concerned about the potential closure of the Carlingford line and how they would be able to access Sydney CBD by train in the future.

At Rosehill, concern was expressed about how patrons would access Rosehill Gardens Racecourse once Rosehill Station was closed. It was felt that a high quality pedestrian link from the light rail stop at Camellia to the racecourse would be required. A number of people also pointed out that special bus services would need to be provided for major events if Rosehill Station were to close.

A small number of people asked how light rail would cross James Ruse Drive and how this would affect traffic flows.

Carlingford Line (including Rydalmere, Dundas, Telopea and Carlingford)

Staff and Students at Western Sydney University's Rydalmere campus were among the strongest supporters of Parramatta Light Rail, even though they recognised that many of them would not benefit from it personally as it would not be running until 2023. Currently, students access Parramatta CBD by a shuttle bus provided by the University. Large numbers of students also drive to the campus, though there is a shortage of car parking.

Staff felt that the additional public transport option between the campuses would significantly improve their productivity. Students strongly supported round-the-clock turn up and go

services that would not only connect them to Parramatta Station but also the Westmead and Parramatta Square campuses. However, some students felt that the proposed stop at Rydalmere was too far from the campus and said that they would not use it due to concerns about personal safety after dark. It should be noted that students were also keen to receive project updates via the internet and social media as opposed to paper collateral.

Telopea, Dundas and Carlingford residents welcomed the increase in peak hour public transport services that would be provided by Parramatta Light Rail. Residents here use the Carlingford line to travel to and from the CBD via Clyde during peak hours. Many also expressed interest in using Parramatta Light Rail to access Parramatta CBD for leisure activities. It was noted that people here were generally satisfied with existing bus services, and residents were keen to understand if light rail would be quicker than buses for particular journeys. People here were also interested in using light rail to access Carlingford (and ideally Epping and Olympic Park). A number of residents noted that they wanted to go to destinations other than Parramatta, and that light rail would need to integrate with the wider bus network.

Most commuters at stations along the Carlingford line supported Parramatta Light Rail as it would connect them to Parramatta Station where they could pick up express services to Sydney, rather than having to change at Clyde onto slower services. Some commuters were concerned that they would lose their single direct train service to Sydney in the morning. There was considerable interest in what transport services would be provided during construction, after heavy rail services ceased but before light rail was operational.

A number of residents felt that since Parramatta Light Rail would provide a significantly improved level of service compared to the existing heavy rail service, people from a much wider catchment area would want to use it. They were concerned that there would be limited parking at stops and that as a result there would be an increase in on-street parking. A number of people urged Transport for NSW to consider providing more car parking at stops.

Some residents felt that the proposed distances between light rail stops along the Carlingford Line were too long to encourage mode shift away from car use.

Residents along the Carlingford line welcomed that light rail would present less of a physical barrier than the current heavy rail line. They were particularly keen for Transport for NSW to investigate locations where road and pedestrian crossings could be safely provided along the corridor, improved landscaping of the light rail corridor and use of the corridor for active transport. Telopea residents in particular recognised the place-making opportunities presented by Parramatta Light Rail, if properly coordinated with Land and Housing Corporation's Telopea revitalisation project. There was some concern expressed about noise and vibration impacts during both construction and operation.

Residents were keen to understand the potential increases in property values that would result from the construction of Parramatta Light Rail, especially if rezoning were to lead to higher density in the area. There was some interest in how this would affect local shops and amenities.

Business Survey

During February and March 2017, a survey of over 100 businesses from across the Stage 1 corridor was carried out. This was undertaken with support from City of Parramatta. In order to identify potential impacts associated with the project, the snapshot survey of 131 businesses located along the proposed route was undertaken asking key questions about the business, how it operates, and concerns or questions about expected impacts during construction and operation of the Parramatta Light Rail project. (Full details provided at Attachment B)

The results below will inform preparation of the Environmental Impact Statement, which will include a summary of issues raised.

Key points to note, in summary, of the feedback from the business survey:

- 27% were classified as speciality food or hotel premises, 24% were general retail stores, and 17% commercial services.
- The businesses generated a total of 1,357 full time and part time jobs. Of this total employment generation, 838 jobs or 62% were full time jobs while 519 jobs or 38% were part time jobs.
- Around 35% of respondents stated that their main trading days were either Monday to Saturday or seven days a week respectively, with a further 22% saying that Monday to Friday were their main trading days.
- There was an even split (50/50) between businesses having or not having access to off street parking.
- Of the businesses with access to off street parking spaces 71% had ten or less parking spaces, 5% had 11 to 19 parking spaces while the remaining 17% had access up to 40 parking spaces. Around 10% were unsure how many spaces they had access to.
- For businesses with ten or less spaces available 76% stated they were for staff only, 13% were for staff and customers while 11% stated the spaces were for just for customers.
- 90% of businesses get deliveries, and most commonly receive them during Monday to Friday between 5:00am and 4:00pm.
- Around 40% stated less than 20% of their trade was derived from passing trade while 15% stated 20 to 40% of their trade was sourced from passing trade. A third of businesses stated that 50% and over of their trade was sourced from passing trade.

- **Perceived impacts during construction of PLR are summarised here:**

	Significantly Positive	Positive	Neutral	Negative	Significantly negative	Not sure
Business turnover	0%	18%	40%	29%	7%	6%
Business visibility	0%	12%	45%	28%	10%	5%
Passing trade	0%	15%	45%	31%	6%	3%
Customer access	0%	15%	40%	33%	6%	7%
Customer parking	0%	5%	51%	31%	7%	6%
Employee access	0%	10%	59%	24%	3%	5%
Employee parking	0%	6%	68%	17%	6%	4%
Disturbance or disruption - noise	0%	2%	23%	56%	14%	5%
Disturbance or disruption - vibration	0%	2%	28%	53%	11%	6%
Disturbance or disruption - dust	0%	2%	27%	53%	13%	5%
Vehicle access	0%	2%	48%	36%	8%	7%

- **Perceived impacts during operation of PLR are summarised here:**

	Significantly Positive	Positive	Neutral	Negative	Significantly negative	Not sure
Business turnover	4%	53%	32%	4%	1%	7%
Business visibility	2%	54%	31%	4%	2%	8%
Passing trade	4%	46%	35%	5%	2%	9%
Customer access	3%	45%	34%	5%	2%	11%
Customer parking	1%	25%	45%	12%	4%	13%
Employee access	1%	27%	59%	3%	1%	8%
Employee parking	1%	16%	66%	7%	3%	8%
Disturbance or disruption - noise	1%	21%	60%	9%	1%	8%
Disturbance or disruption - vibration	1%	20%	60%	10%	1%	8%
Disturbance or disruption - dust	1%	20%	58%	11%	2%	8%
Vehicle access	1%	14%	67%	7%	1%	11%

- Businesses surveyed were asked if there was anything that could be implemented to minimise any potential negative impacts and enhance any positives during the construction phase. Some of the responses were as follows:
 - Provide frequent updates and ensure clear and good communication with businesses;
 - Increase parking during and after construction;
 - Maintain employee and customer access;
 - Maintain access for delivers, freight and couriers;
 - Maintain access to emergency vehicles;
 - Conduct construction outside of business hours;
 - Minimise noise and dust; and
 - Provide clear and abundant signage.

- Businesses surveyed were asked if they had any further comments. They include:
 - “This is a positive thing for the area”;
 - “More public transport is good”;
 - “No change is wished for the area, maintain Dundas as it is”;
 - “The project is great for the area”;
 - “Going to be worth it”
 - “This could be really bad for business, looking at moving to Westfield (Parramatta)”;
 - “Maintain constant information updates to the business”; and
 - “Maintain communication during the construction phase”.

Business survey – June-July 2017:

Engagement with retailers and property owners along the Stage 1 preferred route continues. In June-July 2017 a survey will take place asking every business to participate (not just a sample) across the Parramatta region, along the PLR route. This survey will provide more detail to the PLR team on businesses within the region and expectations and requirements going forward. (see Sydney Coordination Office below).

Online survey

The survey was designed to inform and support the Parramatta Light Rail (PLR) project ahead of the Environmental Impact Statement (EIS) due for public consultation in August and September 2017.

Members of the community were provided the opportunity to have their say on the project through community pop-up stalls, phonecalls to the PLR project office, emails, letters, focus groups, and the online survey provided another avenue for feedback. The online survey ran from 8 February 2017 to 28 April 2017 and played a part in Phase 2 of the PLR community engagement. The survey was promoted through a media release, and on brochures, postcards and social media channels.

Questions asked members of the community to detail their preferences on how they would use PLR, ideas for impact minimisation and any further information they would require to better understand the project. (Full survey details provided at Attachment C).

Key points to note, in summary, of the feedback from the online survey:

- Respondents (174 in total - 66% male and 32% female)
- Range in age from 25 and 64 years, with 25-34s accounting for 31% and for the 25-34, 45-54 and 55-64 groups all 21% each.
- Almost all live within a 15-km radius from the Parramatta CBD. Respondents also work, study and visit from within a 15-km radius of the PLR alignment.
- Cited about what they liked about the area where they live/work/study or visit,:
 - accessibility and connectivity to other transport modes
 - the natural environment and other amenities
 - proximity to work or business
 - the benefits to be realised with the area’s development and revitalisation

- shops and shopping centres
- heritage (historical buildings and sites)
- quiet surrounds, relaxed environment, low crime rate
- schools, universities, hospitals and other medical services
- cultural diversity.
- Believe the PLR can make a difference in their area by:
 - Increasing access to community hubs and providing a complementary transport mode.
 - Providing more frequent services and faster travel times.
 - Providing a convenient service, eliminating the need to drive.
 - Traffic improvement
 - Social outcomes (linking communities/employment/education)
 - Safer, more reliable transport options
 - Park and ride options
- Negative feedback or concerns about PLR included congestion, noise, property displacement, heritage site impacts and bus rerouting.
- A range of uses identified for the PLR, including:
 - work
 - link to other transport modes, including active cycleways
 - social and recreational, including entertainment, sport and dining
 - shopping
 - university/school; and
 - health (including hospital and medical specialty services).
- Likely usage of PLR would be on: weekday peaks and weekend.
- To create attractive places around the Parramatta Light Rail alignment, respondents suggested:
 - More cafes, dining and retail areas
 - Landscaping and streetscaping (including trees and greenery)
 - Tidier surrounds at stops; shelter, bins and benches
 - Parks, play/picnic grounds
 - Security, better lighting and other safer by design principles
 - Multi-level carparks
 - Sporting and recreational facilities
 - Local Aboriginal or school art
 - Community services/amenities
 - Clear signage and area maps
 - Access to schools/buildings

- The impacts of construction should be reduced by PLR addressing the issues of construction work timeframe selection; traffic management and communication/consultation.
- The top operational aspects respondents would like to understand better are:
 - planning
 - locations of stops
 - Future expansion (eg to Epping, Sydney Olympic Park)
 - PLR operation (eg timetabling, comfort)

Other aspects named were:

- connectivity to other transport modes
- period of construction
- road layout and use in conjunction with PLR and traffic management
- why the Carlingford HR Line is being replaced by light rail
- facilities planning
- property acquisition
- if the selected route is a duplication or an alternative one
- heritage
- safety of pedestrians, commuters and residents during and after construction

Research (including Focus Groups)

Between September and November 2016, qualitative and quantitative research was completed on behalf Transport for NSW to gauge levels of community awareness and support for the Project, and gain suggestions for managing construction impacts. (Full details provided at Attachment D).

Focus group sessions were held with randomly selected residents, small business and workers in the GPOP priority growth area. Participants received a small stipend for their attendance, which is common practice for research activities. This was followed by an on-line and telephone survey of randomly selected, but demographically representative residents.

Note – this research was taken before the preferred route was announced, so only included the ‘Purple Haze’ alignment of PLR without a specific route.

Key points to note, in summary, of the feedback from the research were:

- Concern was expressed that infrastructure development will not keep pace with population growth.
- Improving public transport frequency and reliability, as well as reducing road congestion, were considered the transport priorities in the area.
- Most people considered public transport in the area to be good or fair.
- Nearly three-quarters of respondents had heard about the Project, but knowledge levels were low.
- Two-thirds of respondents were positive about the Project, but support was ‘soft’.
- Support was mainly based on how the Project will improve personal circumstances.

- The main reason for a negative opinion of the Project was that it will be a waste of money.
- Nearly two-thirds of respondents will definitely or probably use light rail.
- Of those who said they will use light rail, two-thirds said they will use it at least once per week.
- Light rail was considered most useful for leisure related travel, rather than going to school or work.

The Project team is now using the research findings to directly inform further community engagement, connect with community members on relevant issues and explain precinct-specific concerns.

Another round of similar research was to be undertaken before the Environmental Impact Statement process was underway in mid-2017, to collect the community's views and changes in attitude on the preferred route Stage 1 of the Project. However this follow up research will now take place after the EIS display period, to ensure attitudes and views on the project include the impact of the full detail of the EIS.

Next steps

Feedback received during both community engagement phases has informed Project design, as well as drafting of the Environmental Impact Statement.

Further community engagement continues to take place in 2017 and 2018, including the public exhibition of the Environmental Impact Statement expected in August – September 2017.

The lessons learned from the recently-completed engagement processes will help inform future consultation exercises. A better understanding of what issues are of most importance to local communities will also ensure that future engagement is meaningful and provides the feedback that is required by the community.

Sydney Coordination Office

The PLR and Sydney Coordination Office teams are now engaging regularly, (including with City of Parramatta) to begin planning for engagement with business owners in regards to communication, business activation and access before, during and after construction.

The PLR project will result in changes to some businesses located along the alignment, during construction and after commencement of operations, and the project team recognises the importance of supporting these businesses.

Small, medium and large scale businesses are located in close proximity to the route and will experience changes with potentially varying impacts.

The level of impact depends on the location of the business and scheduled construction activity as well as changes to arrangements during operation.

The PLR project will work with the Sydney Coordination Office to help support local businesses through its Light Rail Activation Program, working with retailers along the light rail route.

The Sydney Coordination Office is already working with the CBD and South East Light Rail and other major infrastructure projects across Sydney, and will work with the PLR project to assist with business activation, supporting business with targeted initiatives and other key tasks to manage impacts on businesses. This work will be focused specifically on the needs of the local region.

In early 2017, the PLR Communications and Engagement team allocated four Place Managers along the route, each being the key contact for residents and businesses to ensure clear and available lines of communication at all times between the community, stakeholders and the PLR project.

The Place Managers have since early 2017 been involved in one-on-one meetings with businesses along the route to provide detail on the Stage 1 Preferred Route announced in February 2017. The Place Managers were also involved in engaging with businesses in March (see information on the Business Survey above).

To minimise the impacts, the PLR team will provide support to businesses which will be identified through the development of a *Business Consultation and Activation Plan*.

This plan will be prepared in conjunction with stakeholders including the Sydney Coordination Office and the City of Parramatta Council and will be finalised in consultation with business representatives and impacted business owners.

The Business Consultation and Activation Plan may include initiatives such as:

- establishing business forums in conjunction with stakeholders including City of Parramatta Council and local Chamber of Commerce to provide a platform for businesses to receive information, provide feedback and resolve common issues;
- outlining provision of communication resources (in the form of newsletters, one-on-one meetings, business forums, website updates, social media) on construction activities for impacted businesses;
- working with the Sydney Coordination Office on campaigns such as the Travel Choices program to prepare businesses for construction impacts and changes to the road network;
- working with the Sydney Coordination Office on activation similar to Sydney CBD Christmas George Street activation program;
- maintaining access for activities such as deliveries;
- providing or assisting with appropriate hoarding and wayfinding signage to maintain pedestrian activity during construction;
- asking contractors to consider respite for businesses through quiet-work or no-work periods during lunch-time, for example;

Department of Primary Industries – Business Connect

PLR engagement has also started with the Department of Primary Industries, in order to start assisting businesses in the Parramatta region, before construction of the PLR with the Business Connect program. This will assist business make improvements to their business, before PLR construction begins.

The Business Connect program is funded by the NSW Government and provides business advisory services and business skills training.

This supports small businesses to startup, create jobs through growth, help established small to medium enterprises (SMEs) become sustainable and increase business confidence.

Business Connect achieves these aims by:

- Providing general and specialist business advice and government information to startups and SMEs
- Promoting business growth through innovation, improving resilience and boosting productivity and
- Supporting digital readiness and regional business development.

Business Connect services are provided by 10 independent service providers based across NSW, including specialist and multicultural service providers.

Business Connect supports startups and SMEs through:

- Supporting business creation through advice and information that assists start-ups to establish a new business and support new businesses to enhance their survival and long term viability.
- Supporting established small and medium enterprises (SMEs) by providing services that underpin profitability, business expansion and long term business growth, enhance their survival and long term viability, and support the orderly succession of ownership of existing businesses.
- Delivering Business Skills Workshops or Seminars (including Webinars or online group support) to startups and SMEs, when this is considered to be the most effective way of providing skills development and/or information.
- Responding to occasions of disasters or other emergencies to support businesses where they are affected within NSW.
- Referring start-ups and SMEs to relevant and appropriate additional services, to increase the value of support and to encourage continued skills development, strategic awareness and business planning.
- Promoting digital readiness and engagement in the digital economy to businesses, increase digital and online technology skill and knowledge, especially in regional areas with new or increased internet capabilities i.e. through satellite broadband or rollout of the National Broadband Network (NBN).

Attachment A: Community information sessions

Phase 1 – August to November 2016

DATE	ACTIVITY	LOCATION
6 August 2016	Pirtek Stadium Open Day	Parramatta
9 August 2016	Westmead Hospital Staff	Westmead
11 August 2016	Westmead Children's Hospital Staff	Westmead
14 August 2016	India Day	Parramatta
21 August 2016	Ferragosto Festival	Five Dock
22 August 2016	Strathfield Train Station	Strathfield
22 August 2016	Granville Train Station	Granville
24 August 2016	Carlingford Train Station	Carlingford
25 August 2016	Rosehill Train Station	Rosehill
25 August 2016	Social Housing Tenant BBQ	Telopea
26 August 2016	Telopea Train Station	Telopea
27 August 2016	Telopea School Fair	Telopea
28 August 2016	Western Sydney University Open Day	Rydalmere
29 August 2016	Westmead Train Station	Westmead
29 August 2016	Parramatta Eels v St George Dragons	Parramatta
30 August 2016	Member for Parramatta Geoff Lee	Parramatta
1 September 2016	Centenary Square	Parramatta
2 September 2016	Member for Parramatta Geoff Lee	Parramatta
3 September 2016	Eat Street Vibes	Parramatta
4 September 2016	Strathfield Spring Festival	Strathfield
5 September 2016	Parramatta Train Station	Parramatta
6 September 2016	Westmead Children's Hospital	Westmead
7 September 2016	Dundas Train Station	Dundas
7 September 2016	Western Sydney University Fair Day	Rydalmere
7 September 2016	Social Housing Tenant BBQ	Telopea
8 September 2016	Rydalmere Train Station	Rydalmere
8 September 2016	Westmead Private Hospital	Westmead
9 September 2016	Camellia Train Station	Camellia
10 September 2016	Centenary Square	Parramatta
12 September 2016	Clyde Train Station	Clyde
13 September 2016	Westmead Hospital	Westmead
14 September 2016	Harris Park Train Station	Harris Park

18 September 2016	Let's Go Greek Festival	Parramatta
23-24 September 2016	Westfield	Parramatta
25 September 2016	Wisteria Gardens Festival	Westmead
4 October 2016	North Strathfield Train Station	North Strathfield
7-9 October 2016	Kidtopia	Parramatta
10 October 2016	Westmead Children's Hospital	Westmead
11 October 2016	Strathfield Train Station	Strathfield
12 October 2016	Westmead Hospital	Westmead
13 October 2016	Western Sydney University	Rydalmere
14-15 October 2016	Newington Marketplace	Newington
20 October 2016	Centenary Square	Parramatta
23 October 2016	Deepavali Festival	Parramatta
28-29 October 2016	Carlingford Court	Carlingford
7 November 2016	Parramatta Day	Parramatta

Phase 2 – February to April 2017

Date	Activity	Location
24 February 2017	Parramatta's Farmers Markets	Parramatta
2 March 2017	Community Information Session	Parramatta
4 March 2017	Community Information Session	Telopea
7 March 2017	Pop-up Information Session	Westmead Train Station
7 March 2017	Community Information Session	Western Sydney University – Parramatta South Campus
7 March 2017	Community Information Session	Western Sydney University – Parramatta South Campus
8 March 2017	Pop-up Information Session	Parramatta Train Station
8 March 2017	Community Information Session	Westmead Hospital
8 March 2017	Community Information Session	Carlingford
9 March 2017	Community Information Session	Parramatta
10 – 12 March 2017	Parramasala Festival	Parramatta
13 March 2017	Pop-up Information Session	Carlingford Train Station
14 March 2017	Pop-up Information Session	Dundas Train Station
14 March 2017	Community Information Session	Children's Hospital at Westmead
14 March 2017	Community Information Session	Telopea

15 March 2017	Pop-up Information Session	Telopea Train Station
16 March 2017	Pop-up Information Session	Rydalmere Train Station
20 March 2017	Pop-up Information Session	Camellia Train Station
21 March 2017	Pop-up Information Session	Clyde Train Station
22 March 2017	Pop-up Information Session	Westmead Train Station
23 March 2017	Pop-up Information Session	Parramatta Train Station
24 - 25 March 2017	Pop-up Information Session	Carlingford
25 March 2017	Pop-up Information Session	Parramatta
29 March 2017	Pop-up Information Session	Clyde Train Station
6 – 19 April 2017	Sydney Royal Easter Show	Sydney Olympic Park



Parramatta Light Rail (Stage 1)

EIS Engagement Summary

August 23 – October 23 2017



PLR EIS Engagement Summary August 23rd – October 23rd 2017

This report summarises the stakeholder and community consultation activities that Transport for NSW has undertaken during the exhibition of the Environmental Impact Statement (EIS) for the Parramatta Light Rail project. These activities aim to increase awareness of, and accessibility to, these documents and provide community members and stakeholders with the opportunity to learn more about the project and have their say.

1. Approach and engagement objectives

The objectives of the EIS communication and engagement activities were to:

- proactively and regularly engage with stakeholders to ensure they are appropriately consulted throughout the EIS process;
- inform and advise the community of the current activity and the next steps in the EIS process;
- engage with the community to communicate the significant benefits of the proposed light rail and address any points of concern;
- encourage participation in the conversation and submission of comments through community consultation opportunities; and
- provide accessible and reliable information about the project.

2. Communication and Engagement EIS Strategy

An overarching *Communication and Engagement Strategy* [see Appendix 8] was prepared to support the proposed Parramatta Light Rail project, including the development and exhibition of the EIS and communication with the community and stakeholders about the project. There are three key target audiences for EIS communication and engagement:

- the community along the preferred Parramatta Light Rail route;
- stakeholders and businesses; and
- the broader GPOP community.

3. PLR consultation during public exhibition of the EIS

The Parramatta Light Rail EIS was exhibited between 23rd August and 23rd October 2017. This was supported by a program of community and stakeholder engagement activities designed to raise awareness, provide information and answer questions raised by both stakeholder and community members. During the exhibition period, government agencies, interest groups and organisations, community and stakeholders were invited to make written submissions on the EIS to the Department of Planning and Environment (DP&E). A summary of the engagement activities and tools that were undertaken during the public exhibition period is outlined below.

Parramatta Light Rail Stage 1 EIS Exhibition

This is what we did



Engaged with
89
stakeholders



Letterbox drop to
165,000
homes



Spoke to
1,010
people face-to-face



17,211
Visitors to
the website



2,885
Views on
EIS Navigator



252
Subscribers opted
in to receive
ongoing updates



Email blasts to
12,035
people



26
Advertisements in
English and foreign
language newspapers



Social media
posts reached
152,500
people



7
EIS Information
sessions



22
Pieces of
media coverage



4
Pop-up stalls at
community events

Table 1 Summary of EIS Community and Stakeholder Engagement

ACTIVITY	OUTCOME
Stakeholder briefings	
Discussions were held with a variety of stakeholders including government agencies, businesses, industry bodies, and tourism and community groups as well as elected officials.	29 key stakeholders and 60 members from a variety of groups including: disability representative groups, educational facilities, business organisations, community organisations, places of worship, clubs and major venues were contacted via telephone and email and offered EIS meetings.
EIS Community and Business Information Sessions	
A total of 7 EIS drop-in information sessions were held between August and October to exhibit the EIS. These were held in areas across the alignment including Parramatta CBD, Dundas, Westmead, Carlingford, Rosehill & Camellia and Parramatta North twice for both a community and a dedicated business EIS session.	Over 270 community members attended the information sessions including 35 businesses at the dedicated business EIS information session.
Community Pop-Up Events	
<p>4 community pop-up displays at large scale local events were carried out across 7 days;</p> <ul style="list-style-type: none"> - Kidtopia Festival - Deepavali Festival - Ride & Stride Westmead Children's Hospital - Ride & Stride Westmead Adult's Hospital 	<p>Over 740 community members engaged with staff at the pop-up displays for information. Kidtopia and Deepavali have a combined attendance of over 35,000 people.</p> <p>120 community members were engaged with at Westmead Health Ride & Stride activities.</p>
EIS Project Brochure	
A 4-page EIS project brochure was produced which was available at stakeholder locations, community events, online and distributed by letter box drop. This was also translated into the top 4 languages spoken in the project area.	<p>This was distributed to 165,000 households and businesses in the Greater Parramatta to Olympic Peninsula (GPOP) catchment via a letterbox drop.</p> <p>In addition, over 3000 of the brochures have been distributed to the community and stakeholders at EIS information sessions, pop-up events and static displays.</p> <p>200 of these were produced per language including: Korean, Arabic, Standard and Traditional Chinese.</p>
EIS Project Overview	
A 48-page EIS summary document was produced which was available at stakeholder locations,	Over 1500 copies of the EIS overview have been distributed to the community and stakeholders.

community events and online.

Factsheets

A number of fact sheets were produced and available at stakeholder locations, community events as well as online.

The fact sheets available were:

- FAQs
- Westmead Factsheet
- North Parramatta Factsheet
- Parramatta CBD Factsheet
- Camellia and Rosehill Factsheet
- Carlingford Factsheet

Quarterly Project Newsletter

One PLR Newsletter was released during the exhibition period (October 2017).

Each edition of the newsletter is distributed to 65,000 households along the preferred route for Stage 1.

Website (www.parramattalightrail.nsw.gov.au)

The project dedicated website continues to be a powerful ongoing source of information for the community and stakeholders and this was updated with the latest information on the EIS.

Over 57,870 page views on the website between 23rd August and 23rd October an increase of 227% on the previous two month period.

Of these, 4460 page views were to the “Library” tab where collateral can be downloaded.

EIS Navigator

A digital EIS tool was embedded onto the Parramatta Light Rail website which allows viewers to navigate the EIS by locations or topics they are interested in.

Over 2,885 page views to the EIS navigator tab of the project website between 23rd August and 23rd October.

Website email auto subscribe

A self-opt in service on the Parramatta Light Rail website for browsers to leave their email to be kept up to date with project information.

Subscriber list increased by almost 100% from 255 to 507 between 23rd August and 23rd October (increase of 252).

PLR Subscribers / Email Distribution List

This is the list of contacts that have been added to the project database to be kept updated about the project and receive regular updates including latest brochures and the PLR newsletter.

7 email blasts sent between 23rd August and 23rd October including:

- Project update 23 August EIS on public display sent to 3175 community and stakeholder members
- Project update 5 October – October newsletter sent to 3901 community and stakeholder

	<p>members</p> <ul style="list-style-type: none"> • The Parramatta Business Chamber sent out invitations to the EIS Business Information session twice, once on 4th October and then 11th October to their database of 850 email accounts. • Project update 18 October – Stage 2 announcement sent to 4060 community and stakeholder members. • Outgoing email to Westmead businesses to inform them of the pop-up session as Part of Ride and Stride sent to 49 businesses. Westmead Health also advertised this to the community.
1800 Information Line (1800 684 490)	
The project free-call phone number continued to be available during EIS exhibition for individuals with queries or wishing to speak to the project team.	Approximately 30 phone calls were received over the period.
Email (parramattalightrail@transport.nsw.gov.au)	
The project specific email address continued to be available for individuals to get in contact with the project and respond to project specific queries.	Over 40 emails were received over the period. 27 enquiries were also received in person over the period either during place manager visits or at the EIS sessions.
Media Activity	
The EIS exhibition period was publically announced by the Minister and Tim Poole (PLR Program Director) at a press conference in Prince Alfred Square, Parramatta on Wednesday 23rd August.	This was attended by 8 media outlets. During the EIS exhibition period, 24 pieces of media coverage were generated which reached over 2,324,000 people across TV, radio, and online and print media.
Advertising	
<p>26 advertisements were placed in key metropolitan and local newspapers to announce the beginning of the EIS exhibition and where this would be on display.</p> <p>Flyers were distributed to businesses across the alignment ahead of the Business Information Session.</p> <p>To satisfy EP&A Regulations regarding land owner</p>	<p>Adverts were placed in the following publications:</p> <ul style="list-style-type: none"> - Sydney Morning Herald - Daily Telegraph - Parramatta Advertiser - Parramatta Holroyd Sun - Inner West Courier - Northern District Times

notification, an advertisement was also placed 14 days prior to the EIS going on public exhibition.	<ul style="list-style-type: none"> - Western Sydney Business Access <p>And community language newspapers:</p> <ul style="list-style-type: none"> - El Telegraph (Arabic) - Australia New Express Daily (Mandarin) - Daily Chinese Herald (Cantonese) - Top News Weekly (Korean)
Social Media	
Transport for NSW and stakeholder social platforms such as Facebook and Linked In were used to advertise the EIS Community Information Sessions.	<p>There were a total of 5 posts which reached a combined audience of 152,500. These included:</p> <ul style="list-style-type: none"> - 2 x TfNSW Facebook Page (15,600 followers) - 1 x NSW Public Transport Facebook Page (54,000 followers) - 1 x TfNSW Linked In Page (80,200 followers) - 1 x Carlingford Bowling Club (2,700 followers)
Over the EIS period, a total of 1267 issues were raised across all project channels. These are summarised in Appendix 7.	

4. Environmental Impact Statement display locations

The EIS and its accompanying documents were available to view at a number of locations including:

- Department of Planning and Environment, Information Centre Level 22, 320 Pitt St, Sydney NSW 2000.
- City of Parramatta Council, 126 Church Street, Parramatta NSW 2150.
- City of Parramatta Council Library, 1 – 3 Fitzwilliam Street, Parramatta NSW 2150.
- Dundas Valley Branch Library, 21 Sturt Street, Dundas Valley NSW 2117.
- Transport for NSW, Parramatta Light Rail Project Office, Level 10, 130 George Street, Parramatta NSW 2150.
- Transport for NSW Transport Projects, Level 5, Tower A Zenith Centre, 821 Pacific Highway, Chatswood NSW 2067.
- Telopea (Masterplan Office), 6 Shortland Street, Telopea NSW 2117
- Nature Conservation Council, 14/338 Pitt Street, Sydney NSW 2000.

During this time, display material and access to the EIS were made available to the public in order to provide the community, stakeholders and agencies with an outline of expected environmental and social impacts and proposed management and mitigation measures.

A poster, EIS brochures and overviews were provided at each of the above display locations to provide information on the submissions process and encourage attendance at the community information sessions.

An electronic copy of the EIS was also available on the Department of Planning and Environment's website at: http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=8285 and a digital tool was embedded on the Parramatta Light Rail's website to assist the community and stakeholders with navigating the EIS at <http://www.parramattalightrail.nsw.gov.au/eis-navigator>.

5. Promotion of the EIS public exhibition

To promote the EIS public exhibition period, a 4 page project brochure was distributed to 165,000 residential and commercial properties in the Greater Parramatta to the Olympic Peninsula (GPOP) area as well as government agencies and key stakeholders. This brochure provided a project update, details of the EIS process and invited community members to EIS community information sessions. This was also sent by email to 3175 community and stakeholder members through the PLR subscribed email list. The Parramatta Council also included details of the sessions in their newsletter which is sent to database via email and letterbox drop.

In addition to this, the four Parramatta Light Rail place managers met with the community and businesses to raise awareness about the EIS and ensure they knew where to get more information.

Advertisements were also placed in key suburban and metropolitan newspapers (including the Sydney Morning Herald, Daily Telegraph, Parramatta Advertiser, Parramatta Holroyd Sun, Inner West Courier, the Northern District Times, the Western Sydney Business Access (readership 80,000) and community language newspapers El Telegraph (Arabic), Australia New Express Daily (Mandarin), Daily Chinese Herald (Cantonese), Top News Weekly (Korean) to announce the Environmental Impact Statement display.

The advertisements provided details of the exhibition and community information sessions, including dates, locations and opening hours and invited community members to write submissions in response to the EIS. The relevant contact details for lodging a submission were also included in the advertisements.

A copy of the advertisement can be viewed in Appendix 1.

6. PLR quarterly newsletter

In October, the latest project newsletter was distributed to 65,000 letter boxes along the Parramatta Light Rail preferred route. This quarterly newsletter keeps the community informed with the latest project information as well as PLR team activities. This edition featured an update on the EIS exhibition and highlighted opportunities for the community to have it's say through the Department of Planning and Environment's website or navigate the EIS for their information using the EIS navigator tool on the project website.

7. Key stakeholder briefings

Twenty nine key stakeholders were contacted on the day that public exhibition of the EIS commenced (23rd August) and informed of the process, how they could make a submission and offered a meeting with the PLR team.

Key project stakeholders include:

- Australia Post
- Australian Turf Club
- Business Chamber
- City of Parramatta Council
- Create NSW
- Committee for Sydney
- Department of Education and Training
- Fire and Rescue NSW
- Greater Sydney Commission
- Health Infrastructure NSW
- Infrastructure NSW
- Infrastructure Partnerships Australia
- Land and Housing Corporation
- Museum of Applied Arts and Sciences
- NRMA
- NSW Police
- Parramatta Chamber of Commerce
- Parramatta Park Trust
- Property NSW
- SCentre Group
- State Emergency Services
- Small Business Commissioner
- Tourism and Transport Forum
- Urban Growth NSW
- Venues NSW
- Wesley Mission
- Western Sydney Business Chamber
- Western Sydney Local Health District
- Western Sydney University
- Westmead Health

Over the exhibition period, a number of meetings were held between the project team and key stakeholders. Objectives of these meetings included project updates, addressing project interfaces and identifying issues, concerns or suggestions for improvement based on the project presented in the EIS. Meetings with stakeholders where aspects of the EIS were discussed as part of the agenda were held with UrbanGrowth NSW, City of Parramatta Council, Western Sydney Local Health District, Parramatta Park Trust, Westmead Children's Hospital, Westmead Adult's Hospital, Cumberland Hospital and cycling representative groups. The Project team also attended three meetings with the City of Parramatta Council's PLR Community and Business Advisory Group during the public exhibition period and also held meetings with the Business Chamber and NSW Small Business Commissioner to discuss the EIS.

In addition, at the start of the public exhibition period, emails were sent to approximately 60 various groups including: disability representative groups, educational facilities, business organisations, community organisations, places of worship, clubs and major venues to inform them of the public exhibition and how they could make a submission.

A presentation to Westmead Health staff was also given which was attended by over 30 members of staff from the 3 Westmead Health hospitals.

Details of all stakeholder meetings during the public exhibition period have been recorded on the Consultation Manager system.

8. PLR Advisory Group meeting

The Parramatta Light Rail Advisory Group was formed in August 2017 to provide advice and encourage discussion, ideas and collaboration from a range of key Government and local stakeholders to the project. The first of the quarterly meetings was held on Friday 25th August and the EIS process and exhibition details were a key focus of the meeting.

This was attended by 11 stakeholders including the Australian Turf Club, Department of Education and Training, Department of Industry, Housing and Urban Renewal, Land and Housing Corporation, Museum of Applied Arts and Sciences, Tourism and Transport Forum, Parramatta Leagues Club, Urban Growth NSW, Western Sydney Business Chamber and Western Sydney University.

9. Community and Business information sessions

A series of information sessions were held during the public exhibition period at various locations across the project area at a variety of times to maximise engagement. Over 270 people attended these sessions in total which provided opportunities for members of the community and stakeholders to discuss the EIS with the project team and ask questions about the project. Project team staff from various technical disciplines (e.g. construction, traffic, environment) were in attendance at each session to clarify the information presented in the EIS as well as listen to any concerns that members of the community had in relation to the project. Community members who attended the sessions were encouraged to make a formal submission on the Department of Planning and Environment's website.

The business information session was attended by over 35 businesses from Parramatta CBD and Westmead. Attendees had the opportunity to speak to the PLR project team as well as the Sydney

Coordination Office about impacts, access and timeframes as well as and how businesses would be supported and the areas activated throughout construction in particular.

Details of the community and business information sessions held during the public exhibition are provided in Table 2.

Table 2: Community & Business information sessions during EIS public exhibition

LOCATION	VENUE	ADDRESS	DATE	TIME
Parramatta CBD	PARKROYAL Parramatta	30 Phillip Street, Parramatta	Thursday 31 August 2017	4 pm–8 pm
Dundas	Dundas Sports and Recreation Club	9 Elder Road, Dundas	Saturday 2 September 2017	10 am–2 pm
Westmead	One Hotels and Apartment	175 Hawkesbury Road, Westmead	Wednesday 13 September 2017	4 pm–8 pm
Carlingford	Carlingford Bowling Club	334 Pennant Hills Road, Carlingford	Saturday 16 September 2017	10 am–2 pm
Camellia and Rosehill	Rosehill Bowling Club	James Ruse Drive and Hassall Street, Rosehill	Thursday 21 September 2017	4 pm–8 pm
North Parramatta	Novotel Sydney Parramatta	350 Church Street, Parramatta	Saturday 23 September 2017	10 am–2 pm
North Parramatta Business Session	Novotel Sydney Parramatta	350 Church Street, Parramatta	Thursday 12 October 2017	7 am–12 pm

Table 3 Community & Business information sessions attendance and feedback

LOCATION	NUMBER OF ATTENDEES	TOP ISSUES RAISED
Parramatta CBD	39	<ul style="list-style-type: none"> - Traffic, parking & public transport - Route choice and determination - Heritage - Property acquisition - Business impacts
Dundas	44	<ul style="list-style-type: none"> - Traffic, parking & public transport - Epping extension - Noise & vibration - Route & design - Active transport

Westmead	29	<ul style="list-style-type: none"> - Property acquisition - Traffic, parking & public transport - Noise & vibration
Carlingford	64	<ul style="list-style-type: none"> - Traffic, parking & public transport - Noise & vibration - Environment & heritage - Route & design - Active transport
Camellia & Rosehill	23	<ul style="list-style-type: none"> - Route & design - Environment & heritage - Traffic, parking & public transport - Construction impacts
North Parramatta	33	<ul style="list-style-type: none"> - Traffic, parking & public transport - Construction impacts - Operational impacts - Route & design
North Parramatta Business Session	42	<ul style="list-style-type: none"> - Business activation - Construction impacts - Operational impacts - Property acquisition

Images from the EIS Information Sessions can be viewed in Appendix 2.

10. Pop-up events and stakeholder stalls

In addition to the community information sessions described above, Parramatta Light Rail also held four pop up stalls at the following locations which reached an audience of 740 people:

- Kidtopia Festival, Parramatta Park 6th – 8th October
- Deepavali Festival, Parramatta Park 14th – 15th October
- Westmead Ride and Stride Week at the Adults Hospital 19th October
- Westmead Ride and Stride Week at the Children’s Hospital 20th October

The purpose of these informal sessions was to inform members of the community that the EIS was on public display and to raise public awareness about the proposal. These sessions were staffed by the communication and engagement team. Information made available at each of these sessions included the EIS overview document, the project brochure, precinct specific factsheets and the project FAQs.

Images from the pop-up events can be viewed in Appendix 3.

11. Media activity

The EIS exhibition period was publically announced by the Minister and Tim Poole at a press conference in Prince Alfred Square, Parramatta on Wednesday 23rd August. This was attended by media representatives from the Sydney Morning Herald, ABC TV, Channel 9, Channel 7, Channel 10, 2GB, AAP and the Parramatta Advertiser and a supporting press release was also issued that morning.

24 pieces of coverage were generated over the exhibition period, summarised in Table 4.

Table 4 Media coverage summary

PUBLICATION	TITLE	DATE	AUDIENCE
Channel 2	Parramatta Light Rail EIS announcement and reaction	Wed 23 rd August	Approx. 1,550,000 viewers across TV coverage.
Channel 7	Parramatta Light Rail EIS announcement and reaction	Wed 23 rd August	
Channel 9	Parramatta Light Rail EIS announcement and reaction	Wed 23 rd August	
Channel 10	Parramatta Light Rail EIS announcement and reaction	Wed 23 rd August	
Channel 9	New accommodation will be built for families of patients at the children hospital at Westmead	Thurs 7 th September	
Channel 7	NSW Government has committed to building new accommodation for families of patients at the Children's Hospital at Westmead	Thurs 7 th September	
ABC Radio metro and regional	The NSW Government says it doesn't know yet how much it will cost to build Parramatta Light Rail	Wed 23 rd August	Approx. 144,000 listeners across radio coverage
2SM Radio metro and regional	The NSW Government has released a statement detailing stage one of Parramatta Light Rail	Wed 23 rd August	
Southern Cross Radio ACT	It has been confirmed that more than 40 homes and businesses will need to be demolished to make way for Sydney's new Parramatta Light Rail	Wed 23 rd August	
Southern Cross Radio Wollongong	It has been confirmed that more than 40 homes and businesses will need to be demolished to make way for Sydney's new Parramatta Light Rail	Wed 23 rd August	

Triple M	Dozens of Parramatta homes will have to be bulldozed to make way for the new light rail project, with 41 properties being demolished altogether.	Wed 23 rd August	
2SM Radio metro and regional	Dozens of homes and businesses will be acquired to make way for the first stage of the Parramatta light rail line in Sydney's western suburbs.	Thurs 24 th August	
ABC Online	Parramatta Light Rail: Consultation for stage one nears end as Government confirms acquisitions	Wed 23 rd August	N/A
Parramatta Advertiser	What you need to know about Parramatta Light Rail	Wed 23 rd August	
Sydney Morning Herald	Homes, businesses to make way for first stage of Parramatta light rail	Wed 23 rd August	
Parramatta Sun	Light Rail is on track	Thurs 24 th August	
Sydney Morning Herald	Home and businesses to go off the rails	Thurs 24 th August	
Hill Shire Times	Light Rail Vision Firms Up	Tues 29 th August	
Parramatta Advertiser	Mission accommodation relocation 'infrastructure with love'	Wed 13 th September	
Parramatta Sun	Parramatta Mission on a light rail journey	Thurs 14 th September	
Parramatta Sun	On track for feedback	Thurs 28 th September	
Northern District Times	Case to extend the line	Wed 4 th October	
Hills News	On track to have their say	Thurs 5 th October	
Northern District Times	Common sense to extend the line	Wed 11 th October	

**Approx. 630,000
readership across online
and print media**

We received 15 media enquiries and no media attended the EIS community information sessions.

Media coverage content can be viewed in Appendix 4.

12. PLR Website

The project website (www.parramattalightrail.nsw.gov.au) is an ongoing source of information, resources and updates for community members and stakeholders. The latest details about the EIS featured heavily on the homepage and there was also a dedicated EIS tab where a digital navigator was created and embedded to browse the EIS by specific content and interests. The project website has had 57,877 page views over the EIS period, an increase of 227% on the equivalent two month period ahead of this.

Traffic also significantly increased to the “Library” tab on the website up by 535% to 4,460 views which allows visitors to download content such as the project brochure, precinct factsheets and EIS summary.

The new EIS Navigator tool received 2,887 views over the exhibition period and had the longest dwell time of all the website pages with visitors spending an average of 3:25 minutes per visit using this tool.

13. Community contact and information points

The project contact points included the project information line (1800 684 490) and email address (parramattalightrail@transport.nsw.gov.au) which were available during the public exhibition of the EIS period. Community and stakeholders were encouraged to contact the project team to discuss the EIS and submissions process. A total of 91 phone calls, emails or face to face inquiries were received via these channels between 23rd August and 23rd October.

A summary of all enquiries and issues raised over the EIS period can be viewed in Appendix 7.

PLR ENVIRONMENTAL IMPACT STATEMENT APPENDICES

APPENDIX 1 – Advertisements

1. EIS Newspaper Advertisement

PARRAMATTA LIGHT RAIL

TELL US WHAT YOU THINK

Western Sydney's classic major infrastructure project is the way close with the Parramatta Light Rail Stage 1 Environmental Impact Statement (EIS) to give public input on the community can have the city.

Parramatta Light Rail Stage 1 will connect Westmead to Campbelltown Parramatta (PLR) over a 52km route.

The EIS includes details on the route for Parramatta Light Rail Stage 1, key benefits, urban design, and the impacts of construction and operation.

The EIS for Parramatta Light Rail Stage 1 will be submitted by the Department of Planning and Environment from August 28 2017 to October 4 2017.

Community workshops sessions are being held along the Parramatta Light Rail Stage 1 route where the project team will be available to answer questions.

Visit the Department of Planning and Environment at www.majorprojects.planning.nsw.gov.au to make a submission.

INFORMATION SESSION TIMES AND LOCATIONS		
Thursday 21/08/2017	10am - 5pm	Westmead, Westmead
Thursday 20/08/2017	10am - 5pm	Westmead (entry and Westmead exit)
Wednesday 23/08/2017	10am - 5pm	One Hills and Kippax Westmead
Wednesday 16/09/2017	10am - 5pm	Campanile Bowling Club
Thursday 21/09/2017	10am - 5pm	Harold Bowling Club
Wednesday 13/09/2017	10am - 5pm	Westmead Bowling Club Westmead

Find out more about Parramatta Light Rail at www.parramattalightrail.nsw.gov.au or by calling the project information line on 1800 564 430.

2. Western Sydney Business Access – August edition

WESTERN SYDNEY BUSINESS

ACCESS | ISSUE 76 AUGUST 2017

Delivering Parramatta Light Rail

Overlandford

Parramatta Light Rail

Preferred route - Stage 1

- Stage 1 preferred route
- Light rail stop
- Line to elect only
- Train station
- Bus interchange
- Ferry terminal
- Stage 2 planning corridor



Delivering Parramatta Light Rail

Parramatta Light Rail is one of the five Government major public transport projects in Western Sydney, being delivered as part of a record \$7.5B infrastructure program under NSW.

It will link Parramatta's booming CBD with new commercial, hotel, jobs, schools, hospitals, and the rapidly growing residential areas of Orangeville and beyond.

Other major projects along the route include Western Sydney Station, the new development of Arthur Phillip High School, new student campuses at Parramatta CBD and Westmead, and a vibrant city centre for Orangeville.

Parramatta Light Rail Stage 1 will connect Parramatta to Orangeville via Parramatta CBD with two-way track 12.5km long with 16 stops.

This is the first stage of the Parramatta Light Rail project. Construction of the entire Parramatta Light Rail Stage 1 is scheduled to commence next year and open in 2023.

Parramatta Light Rail is the precursor of

subsequent second and third stage work along the preferred route to identify all utilities. These investigations include water, sewer, gas and other underground services.

The investigations are undertaken to support the design of the light rail corridor including which utilities will remain and which will be relocated. The latest technology is being used, including ground penetrating radar and laser scanning to give an indication about what services and other features along Stage 1 of Parramatta Light Rail.

The Environment and Heritage Department (EHD) for Stage 1 will go on to plan the major infrastructure and feedback to the community by the Department of Planning and Environment. The EHD includes details on the route, key benefits, urban design, and the impact of construction and operation.

The community is invited to have its say on the project by making a formal submission when the EHD is on public exhibition.



For more information or to make a submission, visit the Department of Planning and Environment's website at www.snp.gov.au/projects/planning/par-169.html.

First-hand experience for WSU students

THREE Western Sydney students have been invited to lead the on-site planning for the multi-million-dollar project through a placement with the Parramatta Light Rail project team.

Melissa Fryden University is a key stakeholder in the region and Parramatta Light Rail Stage 1 will connect three of its campuses at Westmead, Parramatta and Rydalmere. The students, studying

four degrees in planning, were invited to gain first-hand experience working behind the scenes at the early stages of the project.

They worked on sustainable options for the project, such as using recycled materials and local energy to power lighting and information boards at the 17 stops, as well as planning now about the development applications process.



Parramatta Light Rail - Talking to local businesses



Parramatta Light Rail Stage 1 will connect Westmead to Carlingford via Parramatta CBD over a 13-kilometre route with 16 stops.

The Parramatta Light Rail project team is committed to keeping local businesses along the route informed.

Members of the project team are visiting businesses along the Parramatta Light Rail route to conduct surveys in preparation for construction to begin in 2019.

These surveys will help the Parramatta Light Rail team understand how your business functions and help minimise impacts to businesses both during construction and operation.

For more information, please contact the Parramatta Light Rail project team at parramattalightrail@transport.nsw.gov.au or 1800 464 430.

Visit the Parramatta Light Rail website at www.parramattalightrail.nsw.gov.au.

Top left: Artist's impression of light rail service in CBD, Parramatta. Above left: Artist's impression of light rail at Westmead hospital. Courtesy: South West Sydney Local Health District. Bottom left: Parramatta Light Rail Project Manager talking to staff from a local business and to the project team. Photo credit: about the construction of light rail in Parramatta, NSW.

<p>Supporting your growing business</p> <p>Small to medium businesses can receive a range of services from the NSW Government, including:</p> <ul style="list-style-type: none"> Business grants Business loans Business insurance Business advice <p>For more information, visit www.business.nsw.gov.au or call 137 496.</p>	<p>Government</p> <p>NSW Government NSW Business Development Corporation NSW Small Business Development Corporation NSW Infrastructure Development Corporation NSW Treasury</p>	<p>Support</p> <p>NSW Government NSW Business Development Corporation NSW Small Business Development Corporation NSW Infrastructure Development Corporation NSW Treasury</p>
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www.parramattalightrail.nsw.gov.au
 parramattalightrail@transport.nsw.gov.au
 1800 464 430



Western Sydney Business Access - August 2017

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3. Western Sydney Business Access – September edition

Key features of Parramatta Light Rail

Parramatta Light Rail is one of the State Government's major public transport projects in 2016 to 2021, valued at \$1.3 billion. It's a key part of a \$3 billion infrastructure program until 2025.

Key features of the Parramatta Light Rail Stage 1 include:

- A new light rail network of 13.6km in length
- 16 stops that are fully accessible and integrated into the urban environment
- High-frequency turn-up-and-go service, seven days a week from 5am to 1am
- Service will operate approximately every 7.5 minutes in the peak period between 7am and 7pm. Buses and conventional services affect vehicles. An 8km trial will deliver operational services up to 200 customers
- Interchange with existing rail and 877 bicycles at Westwood, Parramatta CBD and Collingull Street
- Service of the light rail will be provided across the general area within the Parramatta CBD along Church Street (generally between Market and Macquarie Streets) and Macquarie Street (generally between Macquarie Place and North Street)
- Prising and maintenance facility located in Collingull Street will be available to be utilised, cleaned and maintained
- New bridge structure along the alignment including over James Blair Drive and Chifley Creek



Parramatta Light Rail (near the City, South Sydney, Parramatta, Westwood, Macquarie Place, North Street) will be available to be utilised, cleaned and maintained

and service on the T6 Collingull Street with frequent light rail services

- Active transport facilities and additional urban design features along sections of the alignment will be a key priority
- Integration with the Opal ticketing system
- Real-time information will be provided at stops and light rail vehicles via mobile phone and audio

Taking care of business

Understanding the needs of businesses along the alignment has been and will continue to be an important consideration in planning for the construction and operation of the project.

Parramatta Light Rail will provide a new mode of public transport to businesses along the alignment of light rail.

- The bus stop will be replaced by a new bus stop during construction, which will be replaced by a new bus stop during construction.
- Change in intelligence for

The project for NSW is already making to the business community to understand the impact of the project on businesses along the alignment. This will allow the project team to develop plans that will minimise any disruption to businesses and provide the best possible outcomes for businesses along the alignment.

This includes consultation, working with businesses, supporting businesses to manage the impact on businesses with the alignment, and providing information to businesses about the project. The project team is also working with businesses to understand their needs and provide the best possible outcomes for businesses along the alignment.

The project team is also working with businesses to understand their needs and provide the best possible outcomes for businesses along the alignment. This includes consultation, working with businesses, supporting businesses to manage the impact on businesses with the alignment, and providing information to businesses about the project.

Have your say

Over the next few weeks, the project team will be consulting with businesses along the alignment to understand their needs and provide the best possible outcomes for businesses along the alignment.

The project team is also working with businesses to understand their needs and provide the best possible outcomes for businesses along the alignment.

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Parramatta Light Rail Environmental Impact Statement now on exhibition



One of Western Sydney's major infrastructure projects is a step closer with the Parramatta Light Rail Stage 1 Environmental Impact Statement now on public exhibition so the community can have its say.

Parramatta Light Rail Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camelsia over a 12 kilometre route.

The Environmental Impact Statement (EIS) for Parramatta Light Rail Stage 1 will be exhibited by the Department of Planning and Environment from August 23 2017 to October 23 2017.

The EIS includes details on the route for Parramatta Light Rail Stage 1 key benefits urban design and the impacts of construction and operation.

Visit the Department of Planning and Environment at <http://majorprojects.planning.nsw.gov.au> to make a submission. Alternatively, you can find out more about Parramatta Light Rail at www.parramattalightrail.nsw.gov.au or by calling the project information line on 1800 644 490.

Viewing with a maximum of 1000 people on Church Street Parramatta.

Community information sessions

Community information sessions are being held along the Parramatta Light Rail Stage 1 route which the project team will be available to answer questions about the Environmental Impact Statement.

Drop in anytime at the following locations and session times:

Date	Time	Venue	Address
Thursday 21 August 2017	8am - 8pm	PARKROYAL Parramatta	20 Prince Street Parramatta NSW 2150
Saturday 2 September 2017	10am - 2pm	Dundas Sports and Recreation Club	8 Edouard Road Dundas NSW 2117
Wednesday 13 September 2017	8am - 8pm	One Hubbs and Apartments	175 Immanuel Road Westmead NSW 2112
Saturday 16 September 2017	10am - 2pm	Carlingford Bowling Club	114 Parkland Hill Road Carlingford NSW 2111
Thursday 21 September 2017	8am - 8pm	Woodhill Bowling Club	Coonan St James Park Drive and James Street Woodhill NSW 2143
Saturday 23 September 2017	10am - 2pm	Newbold Sydney Parramatta	300 Church Street Parramatta NSW 2150



Supporting and Interpreting Services

For more information on the EIS or to make a submission visit majorprojects.planning.nsw.gov.au or call 1800 644 490. Email 1800644490@nsw.gov.au

Arabic

للمزيد من المعلومات حول التقرير البيئي الأثرية أو لتقديم ملاحظات يرجى زيارة majorprojects.planning.nsw.gov.au أو الاتصال بـ 1800 644 490. بريد إلكتروني: 1800644490@nsw.gov.au

Burmese

အပိုအချက်အလက်များအတွက် majorprojects.planning.nsw.gov.au သို့မဟုတ် 1800 644 490 ကို ဖုန်းဆက်သွယ်ပါ။ အီးမေးလ်: 1800644490@nsw.gov.au

Malay

Untuk maklumat lanjut mengenai EIS atau untuk membuat cadangan, sila kunjungi majorprojects.planning.nsw.gov.au atau hubungi 1800 644 490. Email: 1800644490@nsw.gov.au

Polish

Więcej informacji na temat EIS lub aby zgłosić uwagi, odwiedź stronę majorprojects.planning.nsw.gov.au lub zadzwoń pod numer 1800 644 490. E-mail: 1800644490@nsw.gov.au

Urdu

اگر آپ کو EIS کے بارے میں مزید معلومات کی ضرورت ہے یا آپ کو کوئی رائے دینے کی ضرورت ہے تو براہ کرم majorprojects.planning.nsw.gov.au پر جا کر دیکھیں یا 1800 644 490 پر کال کریں۔ ای میل: 1800644490@nsw.gov.au

Parramatta Hub (New open)

100-110 Church Street Parramatta NSW 2150
1800 644 490



WESTERN SYDNEY BRISBANE ACCENT 187534463 217

16

4. Western Sydney Business Access – October edition



An example of how the project will improve the quality of the public realm and create a vibrant, active and safe environment for people to enjoy.

Business Information Session

Permatra Light Rail has made an additional commitment to understand the needs of local business along the alignment as part of planning the construction and opening of Stage 1. Working with the project team to improve access and create great public space to attract customers to the region's growing small and medium business.

Permatra Light Rail Program Director Tim Poole said that understanding and supporting local business is a priority and the project team will be working through the Transport for NSW, Sydney Coordination Office, City of Parramatta and a number of other organisations and agencies to work with business to create and targeted strategies to support Permatra Light Rail access for business.

"Businesses within already heavily developed areas of the Parramatta Light Rail Stage 1 corridor have been proactively engaged as part of the project to ensure business have the information they need," Mr Poole said.

"We will have clear and effective channels of communication between local business and the project team."

The Parramatta Light Rail Advisory Group is another way the project is bringing together key stakeholders, the community and business on the journey.

The Advisory Group met for the first time in late August with the purpose of bringing in local expertise and viewpoints to guide the efforts of the Parramatta Light Rail team in delivering the project and to ensure the needs of stakeholders, community and business are being addressed as required.

This part for NSW Sydney Coordination Office Coordinator General Ming Dowling provided an overview of the activities that business will experience as Parramatta in collaboration with local business and the City of Parramatta Council.

"Part of keeping Sydney's growing premier supporting local business is the priority of local government, law enforcement and across the delivery CEO and the community," he said.

"We work with hundreds of small business and stakeholders like local chamber of commerce to design local level actions that promote business and local

foot traffic throughout the construction period.

"This includes local businesses that do things and come on social media, our news focused signage and wayfinding as well as property owners to affect as we work through planning."

Parramatta Chamber of Commerce President David Hill said that he was looking forward to working with the project team on the existing development in the precinct.

"We need to call on Parramatta businesses to contribute their thoughts on what they want to see happen and bring them on the light rail project," he said.

A dedicated Facebook will support business information as the part of the project has been organised by the project team.

The Parramatta Light Rail Business Information Session will be held on Thursday October 12 from 10am to 12pm at Parramatta on 350 Church Street in Parramatta.

The drop-in session will provide an opportunity for business to learn about

- Permatra Light Rail and to speak directly with the project team to answer any questions about the Business Access Support Statement.
- How Parramatta Light Rail will work with the Sydney Coordination Office to improve access to business and create great public space and opportunities for business and services and support with targeted initiatives such as Travel Choice.
- How the project team will maintain pedestrian and cycle friendly environment through construction through the month or so-work period in specific areas of the city.
- The Business Access Support Statement will be shared with business to access advice to support and enhance their business before, during and after construction of the light rail.

Environmental Impact Statement Update

Transport for NSW has prepared an Environmental Impact Statement (EIS) for the Parramatta Light Rail Stage 1 work that includes options and the associated potential benefits and not to highlight working design requirements and options of the proposed project.

The project will undergo an assessment and impact assessment under the Environmental Planning and Assessment Act 1979 (EP&A Act).

Approved by the NSW Minister for Planning is required following public consultation before Transport for NSW can proceed with construction of the project.

The Parramatta Light Rail project team has been holding community information sessions during the consultation period.

The consultation process is being undertaken and is open to all interested parties.

During August and September around 250 people attended consultation along the proposed Parramatta Light Rail route.

As part of the consultation process, you are encouraged to make a formal submission to the Department of Planning and Infrastructure.



Community information sessions are a key part of the EIS process and are held to provide the public with the opportunity to provide feedback on the project.

Making a submission through the EIS process is your chance to "have your say" on the Parramatta Light Rail project.

Submit your comments to writing@t...

can be helped either electronically or in person. The full EIS and its accompanying documents can be viewed on the Department of Planning and Infrastructure website: www.transport.nsw.gov.au

For more information about the project, visit the Parramatta Light Rail website at www.parramattalightrail.nsw.gov.au or call the Project Information Line on 1300 074 496.

Parramatta Light Rail – Business Information Session

October 12, 2017 from 7am-11am



Western Sydney's latest major infrastructure project is one step closer with the Parramatta Light Rail Stage 1 Environmental Impact Statement now on public exhibition to enable the community to have its say.

Parramatta Light Rail Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camels with a 12-kilometre route and is expected to open in 2023.

The Parramatta Light Rail project team is committed to keeping local businesses along the route informed on details in the Environmental Impact Statement for Stage 1 including key benefits, urban design, and the impacts of construction and operation.

Businesses along the light rail route are invited to attend an information session where the project team will be available to answer questions about the Environmental Impact Statement for Parramatta Light Rail Stage 1. Drop in anytime during the session time below!

Date	Time	Where	Address
Thursday 12 October 2017	7am – 11am	Regional Sydney Parramatta	250 Church Street Parramatta NSW 2150

The Environmental Impact Statement (EIS) for Parramatta Light Rail Stage 1 will be exhibited by the Department of Planning and Environment from August 23 to October 20 2017.

To make a submission, visit the Department of Planning and Environment at <http://map.project.planning.nsw.gov.au>

Alternatively, you can find out more about Parramatta Light Rail at www.parramattalightrail.nsw.gov.au or by calling the project information line on 1800 684 490.

See a city's impression of light rail on MyOpinion Street, Parramatta



Planning, P&E and Engineering Submissions

For more information on the project, visit www.parramattalightrail.nsw.gov.au or call 1800 684 490. For more information on the project, visit www.parramattalightrail.nsw.gov.au or call 1800 684 490.


Address:
Head Office: Level 11, 250 Church Street, Parramatta, NSW 2150
Phone: +61 2 921 4000
Fax: +61 2 921 4000
Email: planning@parramattalightrail.nsw.gov.au

Contact:
Project Manager: +61 2 921 4000
Project Officer: +61 2 921 4000
Project Officer: +61 2 921 4000
Project Officer: +61 2 921 4000

Notes:
This information is for general information only. It is not intended to constitute an offer of any financial product or service. For more information, please contact your financial adviser.

www.parramattalightrail.nsw.gov.au

#ParramattaLightRail #ParramattaLightRail #ParramattaLightRail



APPENDIX 2 – Images from the EIS Community Information Sessions

1. Parramatta CBD 31st August



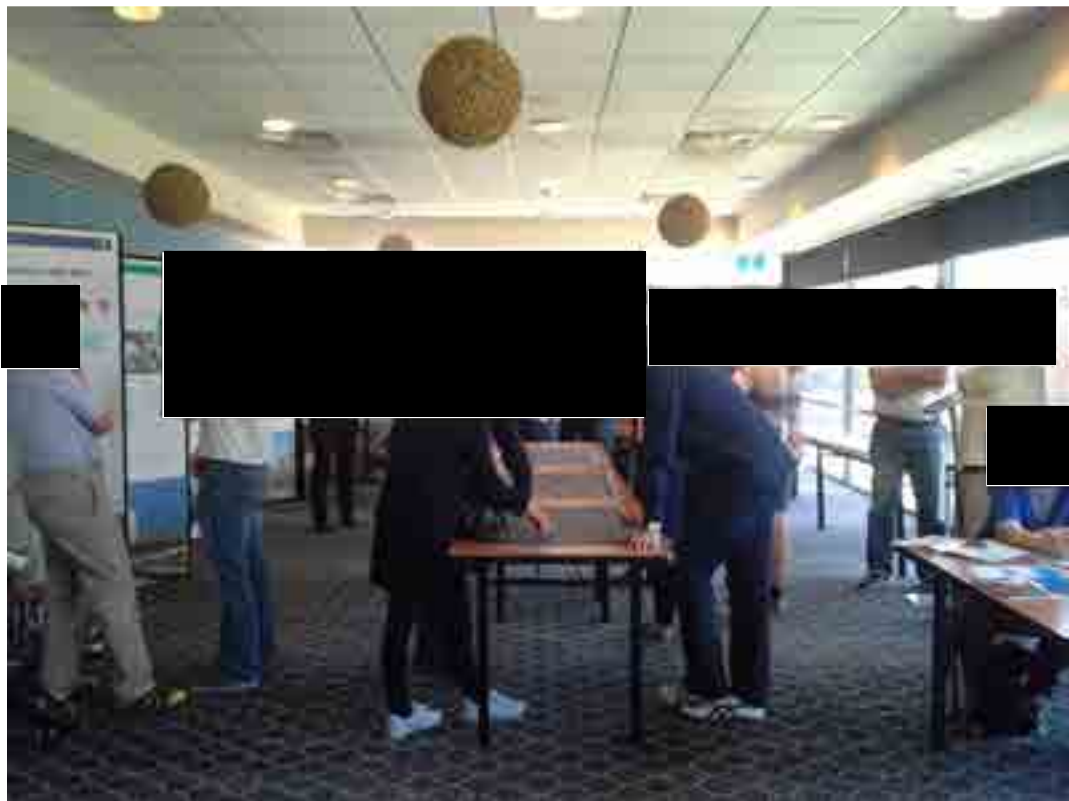
2. Dundas 2nd September



3. Westmead 13th September



4. Carlingford 16th September



5. Rosehill / Camellia 21st September



6. North Parramatta 23rd September



7. Parramatta Business Session 12th October



APPENDIX 3 – Images from the Pop-Up Sessions

1. Kidtopia Festival Parramatta Park 6th – 8th October



2. Deepavali Festival Parramatta Park 14th – 15th October



3. Ride & Stride Westmead Adults Hospital 19th October



4. Ride & Stride Westmead Children's Hospital 20th October



APPENDIX 4 – Media Release

Light Rail Powering On In Parramatta - Wednesday 23 August 2017

Parramatta Light Rail has reached the next major milestone with the project's Environmental Impact Statement (EIS) being released today to allow for community and stakeholder feedback.

Minister for Transport and Infrastructure, Andrew Constance said the Parramatta Light Rail will transform Sydney's second CBD, with reliable and modern public transport offering 16 stops that will link major health, education and entertainment precincts in the region.

"We are getting on with the job of delivering this important infrastructure project and I encourage the community to get involved and help shape this exciting project for Western Sydney," Mr Constance said.

"Parramatta Light Rail will revolutionise the way people move around the region, and create more local jobs and improve the access to major health and sporting destinations."

The Parramatta Light Rail highlights include:

- Services approximately every 7.5 minutes between 7am and 7pm and every 15 minutes outside the all-day peak
- 16 fully accessible stops linking major health, education, cultural and entertainment hubs across the region
- Creation of two light rail pedestrian zones within the Parramatta CBD

- A cycling and pedestrian link from Parramatta to Carlingford providing a complete off-road connection
- Access to light rail for an estimated 130,000 people within walking distance of the stops, increasing to 180,000 by 2041 - more than half the area's total population.
- Cutting congestion on Parramatta Road by removing the train level crossing
-

“We have seen on other large-scale infrastructure projects such as Sydney Metro Northwest that positive improvements can be made as a result of submissions to the EIS process, so your feedback can really make a difference.”

The NSW Government has also applied for Parramatta Light Rail to be considered as Critical State Significant Infrastructure. This will be assessed at the same time as the EIS. Construction on Stage 1 is expected to start in 2018, with light rail to begin operating in 2023.

Planning work for Stage 2 of the project is being developed in collaboration with Sydney Metro West and is expected to be completed by the end of 2017.

The community can find out more about Parramatta Light Rail and have its say on the project from today with the Environmental Impact Statement (EIS) on display until 23 October 2017.

To see new artists impressions or get more information about the project and the Environmental Impact Statement visit <http://www.parramattalightrail.nsw.gov.au>.

APPENDIX 5 – Media Coverage

1. [Channel 2 Coverage – Wednesday 23rd August
Parramatta Light Rail EIS announcement and reaction
Broadcast Clip \[click\]](#)
2. [Channel 7 Coverage - Wednesday 23rd August
Parramatta Light Rail EIS announcement and reaction
Broadcast Clip \[click\]](#)
3. [Channel 9 Coverage – Wednesday 23rd August
Parramatta Light Rail EIS announcement and reaction
Broadcast Clip \[click\]](#)
4. [Channel 10 Coverage – Wednesday 23rd August
Parramatta Light Rail EIS announcement and reaction
Broadcast Clip \[click\]](#)
5. [Channel 9 Coverage – Thursday 7th September
New accommodation will be built for families of patients at the children hospital at Westmead.](#)
6. [Channel 7 Coverage – Thursday 7th September
The NSW Government has committed to building new accommodation for families of patients at the Children's Hospital at Westmead.](#)

7. ABC Radio metro and regional - Wednesday 23rd August
The NSW Government says it doesn't know yet how much it will cost to build Parramatta Light Rail
8. 2SM Radio metro and regional - Wednesday 23rd August
The NSW Government has released a statement detailing stage one of Parramatta Light Rail
9. Southern Cross Radio ACT - Wednesday 23rd August
It has been confirmed that more than 40 homes and businesses will need to be demolished to make way for Sydney's new Parramatta Light Rail
10. Southern Cross Radio Wollongong - Wednesday 23rd August
It has been confirmed that more than 40 homes and businesses will need to be demolished to make way for Sydney's new Parramatta Light Rail
11. Triple M - Wednesday 23rd August
Dozens of Parramatta homes will have to be bulldozed to make way for the new light rail project, with 41 properties being demolished altogether.
12. 2SM Radio metro and regional – Thursday 24th August
Dozens of homes and businesses will be acquired to make way for the first stage of the Parramatta Light Rail line in Sydney's western suburbs.
13. ABC Online – Wednesday 23rd August
Parramatta Light Rail: Consultation for stage one nears end as Government confirms acquisitions
Ewan Gilbert



The final cost might still be unknown but Western Sydney residents have just eight more weeks to have their say on the details of stage one of Parramatta Light Rail. The NSW Government released the Environmental Impact Statement (EIS) for the project, detailing the entire 12-kilometre route, with 16 stops from Westmead to Carlingford via the Parramatta CBD.

The document outlines the anticipated traffic and parking impact as well as noise, heritage management and sustainability issues facing the project during construction and once it is up and running in 2023.

Transport Minister Andrew Constance said the feedback received would determine the price paid. "We will know the final price when the contract is signed," he said.

"We're asking for community input and that will refine the ultimate design in terms of the project and then of course the final cost of the project is when we get the contractor signed up."

'Sad but necessary' acquisitions confirmed

The Minister was able to confirm the number of properties set to be demolished to make way for the tram.

"What we have is 41 full acquisitions. A combination of commercial and principally residential [properties]," Mr Constance said.

"They will now be able to input into this process over the next eight weeks or so and give that feedback.



"We're very sensitive to that."

Work on the route is set to start next year and David Borger from the Sydney Business Chamber said the city should be excited about reaching the final stages of consultation.

"It's great to finally know all of the detail about Parramatta Light Rail," he said.

"We think stage one is going to be an absolute gamechanger for this city."

Mr Borger said the compulsory acquisitions, while sad, were necessary.

"These things are never easy, but you can't make an omelette unless you break a few eggs," he said.

The EIS will be on display until October 23.

Mixed community reaction

Guan You Law is concerned his cafe will suffer when the light rail is constructed.

"It's bad news," he said.



PHOTO: Guam You Law owns a cafe in Parramatta and is worried about the light rail's construction. (ABC News: Philippa McDonald)

"For new businesses, you need one or two years to grow. This has come in the first year, and it will definitely affect it."

A total of about 863 parking spaces will be directly impacted by the project. Of these spaces, about 168 will be relocated into adjacent streets in accordance with a pre-defined parking mitigation policy.

Local resident Dhyana Rasaku supports the proposal.

"I don't think it's such a bad thing," she said.

"I think it will bring more pedestrians to the area and it's a cafe and restaurant precinct, so without the cars going through, the light rail will bring more atmosphere."

14. Parramatta Advertiser – Wednesday 23rd August What you need to know about Parramatta Light Rail Tony Bosworth



Further details of the Parramatta Light Rail have been revealed including stop locations and frequency of services.

PARRAMATTA light rail is right on track, said Transport Minister Andrew Constance today as he visited Centenary Square and outlined more information about the development and its Environmental Impact Statement (EIS).

Here is all we now know about light rail:

- Stage 1 of the project will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres
- It will provide access to light rail for an estimated 130,000 people within walking distance of light rail stops by 2026, increasing to 180,000 by 2041



- There will be 16 stops including Westmead, Westmead Hospital, Children’s Hospital, Cumberland hospital, Factory St, Fennell St, Prince Alfred Square, Eat St, Parramatta Square, Harris St, Tramway Avenue, Camelia, Rydalmere, Dundas, Telopea, Carlingford.
- Services will depart approximately every 7.5 minutes between 7am and 7pm and every 15 minutes outside the all-day peak
- Each air conditioned 45 metre long light rail vehicle will be driver-operated and able to carry around 300 passengers.
- There will be a shared pedestrian and cycle path between Parramatta and Carlingford as part of the construction
- There will also be two light rail and pedestrian zones, one along Church St (between Market and Macquarie Sts) and Macquarie St between Horwood PI and Smith St
- New bridges to be built over James Ruse Drive and Clay Cliff Creek on the Parramatta River, Kissing Point Rd and Vineyard Creek, Rydalmere



Light rail will replace the heavy rail track along the Carlingford line.

- Congestion will be cut on one of Sydney's major arterial roads by removing the train level crossing on Parramatta Road
- Construction will start in 2018 and the network is expected to begin operating in 2023
- So far, \$1 billion has been earmarked for light rail.
- At least 863 parking spaces will be lost due to light rail. Around 168 of those will be relocated into nearby streets
- Some road intersections along or near the new track are likely to see worse traffic congestion, according to the EIS
- There will be some impacts on both Aboriginal archaeological sites and non-Aboriginal heritage items, says the EIS



The iconic Royal Oak Hotel is slated for closure to make way for the light rail.

- Both businesses and residential homes will be acquired and demolished or removed, including the Royal Oak Hotel, Harry's Café de Wheels and a block of 28 homes
- Stage 2 — which will see light rail out to Olympic Park, has now been confirmed today by Mr Constance who said it would be built hand-in-hand with the planned underground Metro West to avoid duplication.

"We are getting on with the job of delivering this important infrastructure project and I encourage the community to get involved and help shape this exciting project for Western Sydney," Mr Constance said.

The EIS is on public display for the next 80 days and residents can lodge submissions at here.

15. [Sydney Morning Herald – Wednesday 23rd August](#)
[Homes, businesses to make way for Parramatta Light Rail](#)
[Matt O'Sullivan](#)

More than 40 homes and businesses along the 12-kilometre route of the first stage of the new Parramatta light rail line will be compulsorily acquired and another 78 are earmarked for partial purchase for the multibillion-dollar project.

Parramatta's well-known "eat street" al fresco dining strip along Church Street in the central business district also faces significant disruption while two rail tracks are built.

Construction on the first stage of the line that stretches from Westmead to Carlingford via Parramatta's CBD and Camellia is due to start in the middle of next year and take as long as five years.

Trams are scheduled to start running in 2023 along the route which will feature 16 stops.

The environmental impact statement for the first stage, released on Wednesday, also reveals that hundreds of trees of varying sizes are set to be pruned or felled, and almost 700 car parks permanently removed.

Those businesses targeted for acquisition include the popular Royal Oak Hotel on Church Street. But Transport Minister Andrew Constance urged people to keep in mind the "big picture" of the benefits a public transport project of the size of the light rail line would bring to businesses and residents.

"This is a game changer for the west. [But] when you build major infrastructure, unfortunately property acquisitions come into play," he said.



The al fresco restaurants along Eat Street in Parramatta face disruption. Photo: Wolter Peeters
Mr Constance said one of the "great challenges" of the first stage would be reducing disruption to businesses along the restaurant-lined Church Street from construction.

The government has come under fire from the disruption caused to businesses from the \$2.1 billion light rail line from Circular Quay in Sydney's CBD to Kensington and Randwick in the south-east.



Construction of the first stage of the line is due to start in the middle of next year.

"I hope they have learnt from what happened in the CBD," Labor's transport spokeswoman, Jodi McKay, said. "They are already foreshadowing that this is going to have a negative impact and they need to get this right."

The project will also result in significant change to bus stops and routes, and roads in and around the planned light rail line. Parts of Church and Macquarie streets in Parramatta's CBD will be closed to traffic, resulting in them becoming pedestrian zones.

Four new bridges will be built for the line, and five existing bridges widened or modified. The T6 Carlingford heavy rail between Parramatta Road and Carlingford will be closed and replaced by light rail.

Ten Aboriginal archaeological sites along the route have also been identified. Test excavations found intact artefacts at five of the sites, and "salvage excavations" will be undertaken at four of the five sites.

The 45-metre light rail vehicles that will operate on the Parramatta line will be longer than the 30-metre trams on the inner west line from Central Station to Dulwich Hill.

However, they will be shorter than the 67-metre tram sets that will run on the other new line under construction from Circular Quay to Sydney's south east.



The government has set aside \$1 billion for the first stage of the Parramatta light rail line, while it will also impose a special infrastructure contribution on new developments along the route.

The contribution will amount to about \$200 per square metre for new residential developments. Funding from the levy will also go towards infrastructure, such as new schools and road upgrades. However, Mr Constance said other special levies such as an annual \$110 fee on property owners in Parramatta would not be imposed.

Planning documents have previously put the total cost of the entire Parramatta light rail project at more than \$3.5 billion, which was originally to be built in one fell swoop as far as Strathfield.

However, the government later decided to build it in two stages and will not reveal the final cost of the first part until after a contractor has been signed up.

Mr Constance said it was "too early to tell" whether the second stage of the light rail would extend as far as Strathfield, saying it would depend on plans for the proposed \$20 billion metro rail line from Sydney's CBD to Parramatta. "I don't want to create a light rail route that in essence runs along the

metro route – that is just silly," he said. Details about the route for stage two of the light rail line will be released later this year. Each tram on the new line will be able to carry up to 300 passengers, and operate between 5am and 1am seven days a week. Parramatta Light Rail program director Tim Poole said his team had been talking to affected property owners since the route was revealed in February. "Obviously no one likes to be acquired but what we have is a process underway now where we are giving everyone a fair go," he said. "We won't pretend to think that the construction period won't be tough [for the al fresco restaurants along Church Street]."

16. Parramatta Sun – Thursday 24th August
 Light Rail is on track
 Kylie Stevens

Light rail is on track

BY KYLIE STEVENS

COMMUNITY feedback is the next step in the journey for Parramatta light rail.

New details about the project were revealed on Wednesday with the release of the Environmental Impact Statement (EIS) which is now on public exhibition.

"We are getting on with the job of delivering this important infrastructure project and I encourage the community to get involved and help shape this exciting project for western Sydney," Transport Minister Andrew Constance said. "Parramatta Light Rail will revolutionise the way people move around the region. We have seen on other large-scale infrastructure projects such as Sydney Metro Northwest that positive improvements can be made as a result of submissions to the EIS process so your feedback can really make a difference."

New details include the creation of two light rail pedestrian zones at the Parramatta LBI and a cycling and pedestrian link from Parramatta to Caddisford to



ALL ABOARD: Access to Parramatta Light Rail for an estimated 130,000 people within walking distance of stops will increase to 180,000 by 2041 – more than half of Parramatta's population. Stage one is due to be completed in 2023.

provide a complete off-road connection. Traffic congestion on Parramatta Road will be reduced with the removal of the main level crossing.

The state government has applied for the project to be considered as Critical State Significant Infrastructure, which will be assessed at the same time as the IIR. Planning work for stage two

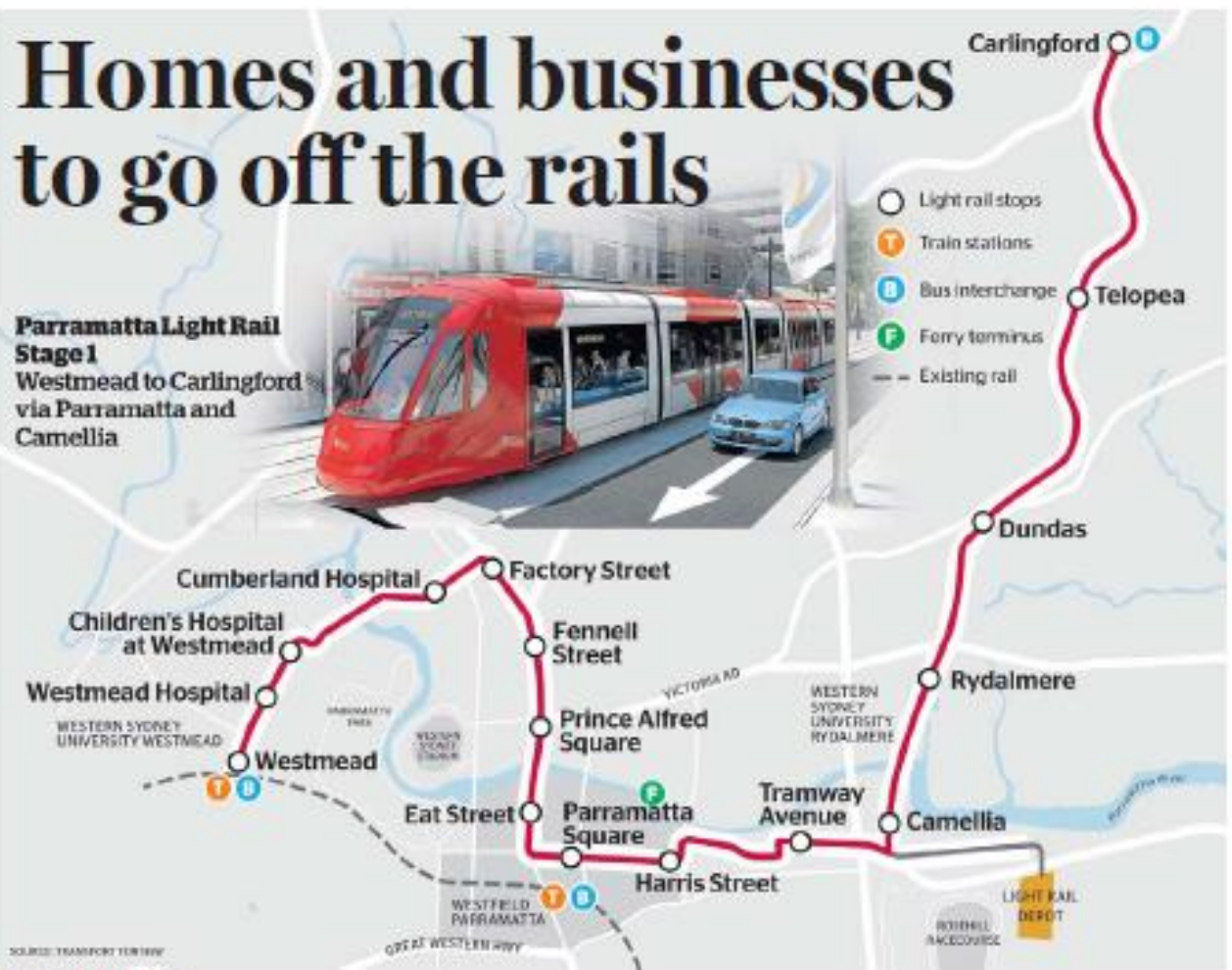
to extend to Sydney Olympic Park is being developed in collaboration with Sydney Metro West and is due to be completed by the end of this year.

"It was good to hear that it's definitely happening and a commitment about stage two so we can unlock the potential of Sydney Olympic Park, which is most part of the

city of Parramatta," Sydney Business Chamber, western Sydney director David Berger said. "With construction of stage one due to start next year they need to start working with retailers in Parramatta. We're going to have an impact during construction, where businesses will have to find ways to work around it to continue trading."

Mr Berger questioned the proposed location of a maintenance facility near new housing earmarked for Camellia. "I think they could find a better place for it."

The EIS is on exhibition until October 23. Community information sessions will be held in the next months. Details: parramattalightrail.nsw.gov.au



Matt O'Sullivan
 Transport reporter

More than 40 homes and businesses along the 12-kilometre route of the first stage of the new Parramatta light rail line will be compulsorily acquired and another 78 are earmarked for partial purchase for the multi-billion-dollar project.

Parramatta's "eat street" at fresco dining strip along Church Street also faces disruption while two rail tracks are laid.

Construction on the first stage of the line that stretches from Westmead to Carlingford via Parramatta's CBD and Camellia is due to start in the middle of next

year and take as long as five years.

Trams are scheduled to start running in 2023 along the route which will feature 16 stops.

The environmental impact statement for the first stage, released yesterday, also reveals that hundreds of trees are set to be pruned or felled, and almost 700 car parks permanently removed.

Those businesses targeted for acquisition include the popular Royal Oak Hotel on Church Street.

But Transport Minister Andrew Constance urged people to keep in mind the "big picture" the light rail line would bring to businesses and

residents. "This is a game changer for the west. [But] when you build major infrastructure, unfortunately property acquisitions come into play," he said. Mr Constance said one of the "great challenges" of the first stage would be reducing disruption to businesses along the restaurant-lined Church Street from construction.

The government has come under fire from the disruption caused to businesses from the \$2.1 billion light rail line from Circular Quay in Sydney's CBD to Kensington and Randwick in the south-east.

"I hope they have learnt from

what happened in the CBD," Labor's transport spokeswoman, Jodi McKay, said.

The project will also result in significant change to bus stops and routes, and roads in and around the planned light rail line. Parts of Church and Macquarie streets in Parramatta's CBD will be closed to traffic, resulting in them becoming pedestrian zones. Four new bridges will be built for the line, and five existing bridges widened or modified. The T6 Carlingford heavy rail between Parramatta Road and Carlingford will be closed and replaced by light rail.

Ten Aboriginal archaeological sites along the route have also been identified. Test excavations found intact artefacts at five of the sites, and "salvage excavations" will be undertaken at four of the five sites.

The 45-metre light rail vehicles that will operate on the Parramatta line will be longer than the 30-metre trams on the inner west line from Central Station to Dulwich Hill.

However, they will be shorter than the 67-metre tram sets that will run on the other new line under construction from Circular Quay to Sydney's south east.

The government has set aside \$1 billion for the first stage of the Parramatta light rail line, while it will also impose a special infrastructure contribution on new developments along the route.

The contribution will amount to about \$200 per square metre for new residential developments. Funding from the levy will also go towards infrastructure, such as new schools and road upgrades.

However, Mr Constance said other special levies such as an annual \$110 fee on property owners in Parramatta would not be imposed.

Light rail vision firms up

Residents can now have their say on new Parramatta to Carlingford connection

Tony Bosworth

THE Parramatta Light Rail project has passed a major milestone, with public feedback now being sought.

Transport Minister Andrew Constance last week released the environmental impact statement for the network, which will connect Westmead to Carlingford via Parramatta CBD and Camellia, with a two-way track spanning 12km.

It will provide access to light rail for an estimated 120,000 people within walking distance of light rail stops by 2020, increasing to 180,000 by 2041.

There will be 16 stops including Westmead, Westmead Hospital, Children's Hospital, Cumberland Hospital, Factory St, Pennell St, Prince Alfred Square, Rat St, Parramatta Square,

Harris St, Tramway Ave, Camellia, Rydalmere, Dundas, Telopea and Carlingford. Services will depart about every 7½ minutes between 7am and 7pm and every 15 minutes outside the all-day peak.

Each airconditioned, 40m long light rail vehicle will be driver-operated and able to carry about 300 passengers.

There will be a shared pedestrian and cycle path between Parramatta and Carlingford as part of the construction.

Bridges will be built over James Ruse Drive and Clay Cliff Creek on the Parramatta River, Kissing Point Rd and Vineyard Creek, Rydalmere. The rail level crossing on Parramatta Rd will be removed.

Construction is scheduled to start in 2018 and the network is expected to begin operating in 2022.

So far \$1 billion has been earmarked for light rail but the project is expected to cost at least \$5 billion.

Stage two - which will see light rail to Olympic Park - has also been confirmed and it will be built hand-in-hand with the planned underground Metro West to avoid duplication.

The EIS is on public display for the next 80 days. Residents can lodge submissions at parramattalightrail.nsw.gov.au

19. Parramatta Advertiser – Wednesday 13th September
Mission accommodation relocation ‘infrastructure with love’

“INFRASTRUCTURE with love” is how one government minister has described taking a portion of land in Westmead for the Parramatta light rail.

Parramatta Mission’s accommodation for families with sick children is on the corner of Hawkesbury Rd and Hainsworth St, a corner the government needs for the light rail to turn safely when the first trains are operating in 2023.

When light rail construction is complete, the property – minus the section absorbed by the light rail – will be returned to Parramatta Mission to build apartments on the site. This will double the accommodation that the mission has now.

In the meantime, a space at The Children’s Hospital at Westmead will be redeveloped for interim accommodation. The relocation will cost from \$5million to \$10million.

Light rail stops in the Westmead precinct will be at Hawkesbury Rd near Railway Pde, connecting commuters to buses and trains; Westmead Hospital and The Children’s Hospital.

Construction is expected to start mid-2018, with work at Westmead due to start in early 2019.

Transport Minister Andrew Constance said it had been turned into a great opportunity.

“It’s infrastructure with love ... there will be more apartments for the family of littlies who are sick,” he said.

20. Parramatta Advertiser – Wednesday 13th September
Parramatta Mission on a light rail journey
Kylie Stevens

Parramatta Mission on light rail journey

A BRIDGE and better accommodation facility for sick children and their families is on track.

Prime Minister Gladys Berejiklian and Transport Minister Andrew Constance were in Westmead last week to announce that the Parramatta Mission facility will double in capacity and be funded

by the Parramatta Light Rail project. A small portion of the Hainsworth Street site known as Wesley Aquatic Centre is needed to build light rail. The state government has struck a partnership between Parramatta Mission and The Children’s Hospital at Westmead to redevelop under-utilised space in hospital grounds into new units.

When construction is completed, the current site will be returned to Parramatta Mission to rebuild interim arrangements will be finalised before light rail construction starts in Westmead in 2018.

“This is infrastructure with a heart,” Mr Constance said.

“What we have here is Parramatta Mission working in partnership with the state government to have a position turned into an incredible opportunity.”

Parramatta Mission chief executive Rossell Kelli-Harrellson is grateful.

“The current facility consists of six bedroom units.

The new building will be at least double that,” he said.

“Construction will affect a number of Parramatta Mission’s activities but we’re fully supportive of light rail.”

Stoney Children’s Hospital Network chief executive Dr Michael Epton is thrilled about a light rail stop outside the hospital. The nearest train station is more than 600 metres away.

“Children and their families come from all over Australia so they need access to good public transport, which will finally come together over the next five years,” he said.

“It will also take you off the track.”

- KYLIE STEVENS

On track for feedback

BY KYLIE STEVENS

WHETHER you're on board or not, now is the time to have your say on Parramatta light rail.

The Environmental Impact Statement (EIS) remains on public exhibition following a recent series of community information sessions.

The expressions of interest in design, construct, operate and maintain the first stage of the \$2 million project opened last week.

But not everyone is on board. An update on development in Parramatta at a property conference last week prompted a former lord mayor Alan Hyams to raise concerns.

While he supports the project in general, he fears what the proposed route may mean for Church Street businesses during construction.

"Church Street suffered greatly from the opening of Parramatta Westfield in 1975 and only started to recover when council decided to move the buses from Church

Street," Mr Hyams said.

"Should East Street be destroyed or severely impeded by light rail, which is likely, it will take many years for business activity to recover in Church Street."

He believes an alternative route along O'Connell and Macquarie streets would be more suitable. "O'Connell Street is wider than that section of Church Street through East Street and has few existing businesses which could

be affected," he said.

Wentworthville resident Vic Manija has seen the impact construction has caused in Sydney CBD. He believes similar consequences in Parramatta will outweigh community benefits and will make the traffic congestion worse.

"This project needs to be shelved," he said. "The cost of

light rail as compared to road option is almost 10 times more expensive, causes more disruption and also takes much longer to build. This is

not an effective use of road. It's \$2 billion of taxpayers' money down the gurgler."

Mr Manija believes more bus rapid transit corridors and more car parks and extending the Carlingford

heavy rail line to Epping would be more effective.

The Parramatta light rail team were contacted on Monday for a comment and hadn't responded by late Wednesday.

Public submissions to the EIS close October 23.

What do you think? Email views to kstevens@fairfaxmedia.com.au.

22. Northern District Times – Wednesday 4th October
 The case to extend the line
 Letter to Editor



23. Hills News – Thursday 5th October
 On track to have their say
 Kylie Stevens

On track to have their say

BY KYLIE STEVENS

CONSULTATION with affected businesses is the next step for Parramatta light rail.

An information drop-in session will be held on October 12 at Novotel Parramatta, 7-11am for businesses owners concerned about the impact on trade when construction starts next year. It's part of the public exhibition period for the project's Environmental Impact Statement.

"Business owners will be able to discuss with team experts potential business impacts during the construction and operation of light rail," a spokeswoman said.

"The team is also working with the Sydney Coordination Office to manage impacts on businesses during construction and operation, as well as on activities and events that will bring peo-

ple into the CBD to ensure Parramatta remains open for business throughout the construction phase."

She said feedback has been positive. "More than 230 people have attended six EIS community information sessions where the project's technical experts have provided detailed information around potential impacts."

The spokeswoman also responded to concerns that the light rail, which goes from Carlingford to Westmead via Parramatta, will make traffic congestion worse.

"Light rail will result in less congestion across Greater Parramatta as people will make use of the improved public transport network across the region," she said.

"However, there will be some road intersections along or near the alignment where traffic impacts could worsen due to necessary

traffic changes to allow for light rail to operate safely.

"Work is now underway with stakeholders, including Roads and Maritime Services and Parramatta Council, to look at how traffic conditions could be improved at these intersections."

Resident Gary Cater believes the proposed route will be detrimental to Fat St businesses, historic buildings and a potential world heritage listing for the North Parramatta precinct.

He believes an alternative route via O'Connell and George streets is more practical.

24. Northern District Times – Wednesday 11th October
Common sense to extend the line
Neil Donovan

Common sense to extend line

I FEEL profound disappointment for Richard Ure (*Letters, Northern District Times*, October 4).

I have read Richard's letters to your newspaper over several months and have concluded he is suffering from what my late

mother termed "a good dose of common sense".

Of course the light rail should extend to Carlingford Court and other areas identified.

However, you see, that makes too much sense for our government masters, who ensure that the eastern suburbs of Sydney are catered for by every conceivable means of transport both public and private; in fact, probably more by public transport and the taxes that NSW residents pay than any other means. But come out west and "it's too expensive" to extend; "it's too difficult to engineer", the excuses go on and on like the animated video to which Richard alludes.

It's time to pack up Richard, for you and me both, and move to towns and cities where community consultation and sensible planning is a reality and where "common sense" has more currency than the holding of political power for power's sake.

Neil Donovan, via email

APPENDIX 6 SOCIAL MEDIA

1. Transport for NSW Linked In Page – Wednesday 23rd August



2. Transport for NSW Facebook Page – Thursday 24th August



3. Transport for NSW Facebook Page – Thursday 31st August



4. NSW Public Transport Facebook Page – Tuesday 19th September



5. Carlingford Bowling Club Facebook Page – Thursday 14th September

Carlingford Bowling Club
19 September

The community is being encouraged to have its say on Parramatta Light Rail with the project's Environmental Impact Statement (EIS) now on public exhibition. The Parramatta Light Rail project team will be hosting a Community Information Session about the EIS at Carlingford Bowling Club this Saturday from 10am to 2pm. Community members can drop in at any time, see the project plans and ask questions. If you can't make this Saturday, a list of the remaining sessions and places in the community where people can view the EIS is available at the Parramatta Light Rail website at www.parramattalightrail.nsw.gov.au/get-involved



Get Involved | Parramatta Light Rail

The NSW Government has been engaging with key stakeholders and the community to maximise the benefits of Parramatta Light Rail. The Environmental Impact Statement for Parramatta Light Rail Stage 1 will be...

[Learn More](#)

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APPENDIX 7 EIS GENERAL ISSUES RAISED BY THE COMMUNITY OVER THE EIS EXHIBITION PERIOD

TOTAL ISSUES RAISED	1267	%
Access	214	16.9%
Environment	151	11.9%
Parking	118	9.3%
Property	102	8.1%
Impact	95	7.5%
Alignment	93	7.3%
Communication	79	6.2%
PLR	60	4.7%
Information	52	4.1%
Traffic	45	3.6%
EIS	38	3.0%
Design	36	2.8%
Transport and Traffic	34	2.7%
Construction	31	2.4%
Project Management/Planning	24	1.9%
Community Engagement	23	1.8%
Safety	13	1.0%

Support for Project	12	0.9%
Heritage	11	0.9%
Against Project	7	0.6%
Interchange	7	0.6%
Light Rail Vehicles	6	0.5%
Social Health Impacts	4	0.3%
Utilities	4	0.3%
Complaints	4	0.3%
Compliments	3	0.2%
Non PLR	1	0.1%

ACCESS SUMMARY TABLE	214	%		%	
Property access	41	19.2%			
Driveway Business	23	10.7%			
Delivery access	44	20.6%			
Transport/Vehicle access	17	7.9%			
Pedestrian Access	65	30.4%	Public Footpaths	26	40.0%
			Walkways	4	6.2%
			Parks	9	13.8%
Easy access requirements	7	3.3%			
Station accessibility	3	1.4%			
Disabled/mobility access	7	3.3%			

ALIGNMENT SUMMARY TABLE	93	%		%	
Route Options	17	18.3%			
Route Extension	35	37.6%	Extension to Strathfield via SOP	10	20%
			Carlingford Terminus to Epping	38	78%
Future network extensions	13	14.0%	Extension to Castle Hill	1	2%
Alternative options	13	14.0%			
Preferred alignment announcement	6	6.5%			

COMMUNICATION SUMMARY	79	%
Inadequate consultation	2	2.5%
Public display	10	12.7%

Request for information	52	65.8%
Request to join mailing list/receive project updates	15	19.0%

CONSTRUCTION SUMMARY	31	%
Construction impacts	12	38.7%
Construction timeline	11	35.5%
Out of hours work	2	6.5%
Power supply	2	6.5%
Service relocation	1	3.2%
Surrounding developments	3	9.7%

DESIGN SUMMARY	36	%
Construction Compounds	3	8.3%
Frequency of service	4	11.1%
Functional Design	5	13.9%
Journey time between LR stops	1	2.8%
PLR Stage 2	12	33.3%
Project Design	6	16.7%
Urban Design	3	8.3%
Wire free	2	5.6%

ENVIRONMENT SUMMARY	151	%			%
Animal habitat	2	1.3%			
Contamination	4	2.6%			
Environment impacts	3	2.0%			
Flooding	1	0.7%			
Flora and Fauna	6	4.0%			
Heritage	6	4.0%	Aboriginal	2	33.3%
		0.0%	Non Aboriginal	4	66.7%
Impacts on other infrastructure	2	1.3%			
Loss of Amenity	4	2.6%			
Noise construction	21	13.9%			
Noise mitigation	17	11.3%			
Noise operation	18	11.9%			
Pollution	7	4.6%			
Sustainability	2	1.3%			
Tree removal	7	4.6%			
Vibration	37	24.5%	Vibration construction	15	40.5%

			Vibration mitigation	12	32.4%
			Vibration operation	9	24.3%
			Vibration general	1	2.7%
Visual	11	7.3%	Amenity construction	7	63.6%
			Amenity operation	4	36.4%
Water run off	2	1.3%			

HERITAGE SUMMARY	11	%
Indigenous Heritage	1	9.1%
State Heritage Listed	1	9.1%
General	9	81.8%

IMPACT SUMMARY	95	%
Impact Business	46	48.4%
Impact Community Facilities	6	6.3%
Impact Cycle way/paths	3	3.2%
Impact environmental impact	9	9.5%
Impact Pedestrian and cyclists	8	8.4%
Impact Residence	6	6.3%
Impact Traffic	16	16.8%
Impact Train Services	1	1.1%

INFORMATION SUMMARY	52	%
Information alignment	15	28.8%
Information light service	1	1.9%
Engagement	6	11.5%
Funding	1	1.9%
Future network extensions	1	1.9%
General project enquiry	2	3.8%
Network selection process	2	3.8%
Other	3	5.8%
Procurement opportunities	11	21.2%
Urban Design	2	3.8%
Why Light Rail	8	15.4%

PARKING SUMMARY	118	%
Business parking	25	21.2%
Commuter parking	14	11.9%
Disabled parking	3	2.5%
Loss of parking	20	16.9%
Parking Impacts construction	21	17.8%
Parking Impacts operational	18	15.3%
Parking Loading Zones	9	7.6%
Parking Resident	8	6.8%

LIGHT RAIL STOPS SUMMARY	60			%
Light rail stops	60	Cumberland	1	1.7%
		Dundas	1	1.7%
		Eat Street Stop	4	6.7%
		Factory	3	5.0%
		Fennell Street Stop	4	6.7%
		Prince Alfred Square Stop	14	23.3%
		Robin Thomas Reserve Stop	2	3.3%
		Telopea Stop	7	11.7%
		Tramway Avenue Stop	1	1.7%
		Western	1	1.7%
		Westmead Children's Hospital Stop	3	5.0%
		Westmead Terminus Hospital Stop	13	21.7%

SAFETY SUMMARY	13	%
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Light stop	2	15.4%
Motorist safety	1	7.7%
Night time	2	15.4%
Pedestrian/cyclist safety	5	38.5%
Travel safety	3	23.1%

SOCIAL/HEALTH IMPACTS SUMMARY	4	%
Loss of community facilities	4	100%

SUPPORT SUMMARY	19	%
Positive	12	63.2%
Negative	7	36.8%

TRAFFIC SUMMARY	45	%		%
Congestion	11	24.4%		
Cyclists	3	6.7%		
Intersections	15	33.3%		
Pedestrian traffic	10	22.2%		
Public transport	6	13.3%	Buses	6

TRANSPORT & TRAFFIC SUMMARY	34	%
Bus services	6	17.6%
Clearways	2	5.9%
Connectivity to precinct	6	17.6%
Opal Fares	5	14.7%
Traffic impacts	14	41.2%

PROPERTY SUMMARY	102	%			%
Property general	5	0.049			
Property Access	22	0.216			
Property Acquisition	48	0.471			
Property impact general	26	0.255	PLR Related	1	0.038
Request for compensation	1	0.010			

PROJECT SUMMARY	24	%
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Need/justification	5	20.8%
Planning approvals process	2	8.3%
Completion timeframe	4	16.7%
Cost	4	16.7%
Project timeline	5	20.8%
Staging	4	16.7%

LIGHT RAIL VEHICLE SUMMARY	6	%
LRV Design	2	33.3%
LRV Noise level	1	16.7%
LRV Patronage	1	16.7%
LRV Manufacturer	1	16.7%
LRV Length	1	16.7%

UTILITIES SUMMARY	4	%
Telecommunications	1	25.0%
Electricity	2	50.0%
Water	1	25.0%

INTERCHANGE SUMMARY	7	%
Heavy	3	43%
Forced mode change	1	14%
Bus and Coach Interchange	2	29%

APPENDIX 8 EIS community and stakeholder engagement plan

Parramatta Light Rail

Community and stakeholder engagement

EIS exhibition period (expected 23 August to 4 October 2017)

EIS Consultation approach

A program of community and stakeholder engagement activities will be undertaken to support the exhibition of the EIS. These activities will be designed to raise awareness, provide consistent and accurate information, and answer questions raised by community members who will be invited to make submissions on the EIS to the Department of Planning and Environment (DP&E). Activities will be held at various locations across the project area at different times and periods of the week to maximise engagement. The project's website will provide community members and stakeholders with access to information, resources and updates.

Place Managers have been appointed to act as the key point of contact for the project along the preferred alignment encompassing; Westmead and North Parramatta, Parramatta CBD, Camellia and the Carlingford line including Rydalmere, Dundas, Telopea and Carlingford. Consultation activities will continue as the Project progresses to detailed design and construction

Activity	Description
Community information sessions	<p>Staffed sessions across the project area to provide community members with an opportunity to discuss the EIS with the project team, ask questions and find out more about the submissions process.</p> <p>Participants will be able to:</p> <ul style="list-style-type: none"> - review copies of the EIS or get information on where to access the EIS - speak to project team members and DP&E staff - view display information and pick up copies of collateral (see below) - obtain information on how to make a submission to DP&E - participate in a short (3 questions) about the information presented on the day <p>Proposed Sessions and Dates</p> <ul style="list-style-type: none"> - Parramatta CBD – PARKROYAL Parramatta, Thursday 31 August 4pm to 8pm Dundas – Dundas Sports and Recreation Club, Saturday 2 September 10am to 2pm - Westmead – One Hotels and Apartments, Wednesday 13 September 4pm to 8pm - Carlingford - Carlingford Bowling Club, Saturday 16 September 10am to 2pm - Camelia/Rosehill – Rosehill Bowling Club, Thursday 21 September 4pm to 8pm - Parramatta North – Novotel Parramatta, Saturday 23 September 10am to 2pm
Community information session materials	<p>A range of new collateral will be made available to support the EIS exhibition period, including:</p> <p>Printed material summarising key items of interest:</p> <ul style="list-style-type: none"> • Project Overview • Project Brochure • What is light rail, including how it is constructed • About PLR – Stage 1 • Route, stops, distance, journey times • Look and feel of rail stops, ATL – mainly images • Environment – Noise and vibration, Flora and fauna, heritage • Traffic and transport during construction • Traffic and transport when light rail is operational • Precinct fact sheets <ul style="list-style-type: none"> ○ Westmead ○ Parramatta North ○ Parramatta CBD ○ Rosehill and Camellia including uplift of Parramatta Road ○ Carlingford

	<ul style="list-style-type: none"> Supporting businesses <p>Information panels for display</p> <ul style="list-style-type: none"> The EIS exhibition process, how to make a submission, next steps – to be provided by DPE About this display – purpose of the display, next steps in the project What is a light rail? How is light rail constructed What is the Parramatta Light Rail Stage 1? Construction of Parramatta Light rail – Timeline, early works, enabling works, construction Construction impacts – noise and vibration, flora and fauna, heritage Traffic during construction Traffic during operation Active Transport Link Precinct specific fact sheets explaining construction and operation – compounds, access routes, traffic, noise, permanent infrastructure, mitigation measures x 5 Large-scale maps of whole route and also precinct maps Maps of construction compound sites
Website content and updates	<p>The website will be regularly updated during the EIS exhibition period with a link to the DP&E website to access copies of the EIS.</p> <p>The Project Overview, brochure, fact sheets, maps and images, community newsletter and responses to FAQs will be uploaded on the project website.</p> <p>Information about community information sessions will also be available on the website.</p> <p>Links to key stakeholder websites, such as Council, WSU, LAHC etc and vice versa will also be negotiated.</p>
EIS displays	<p>Copies of the EIS (for reference only), Project Overview (for reference only), Project brochure (to take away), poster about EIS being on display as well as other collateral including fact sheets, will be displayed at key locations across the PLR project area to provide community and key stakeholders with information on the project and directions on how they can find out more as well as how to make a submission.</p> <p>Proposed locations:</p> <ul style="list-style-type: none"> TfNSW (Parramatta Office) DP&E (City Office) TfNSW (Chatswood Office) Nature Conservation Council Carlingford Branch Library Dundas Valley Branch Library City of Parramatta Council Office City of Parramatta Council Library Telopea (Land and Housing Project Office)
Static	Posters will be displayed across multiple locations during the EIS exhibition period

displays	<p>advertising the community information sessions and how to make a submission.</p> <ul style="list-style-type: none"> - Parramatta Visitor Information Centre - Riverside Theatres - Rosehill Bowling Club - Carlingford Bowling Club - Parramatta Leagues Club - UNE Campus - Westmead Adult's Hospital - Children's Hospital at Westmead - WSU Campuses (Westmead, Parramatta CBD & Parramatta) - Parramatta Bus Station (potentially other bus shelters across the LGA) - Parramatta Ferry Terminal - Service NSW and other key government agencies in the Parramatta LGA - Supermarkets - Train stations across the alignment including – Parramatta, Westmead, Carlingford, <ul style="list-style-type: none"> ▪ Telopea, Rydalmere, Dundas, Camelia, Rosehill, Clyde. - Westfield Parramatta, Carlingford Court
Door knocking	<p>Properties in close proximity to the light rail route and stop locations will be door knocked by the Place Managers to provide project information and invite them to attend the information sessions and review the EIS as well as instructions on how to make a submission.</p> <p>Flyers may also be produced to promote specific information sessions in the local area as they are scheduled.</p>
Community Newsletter	<p>In July 2017, the quarterly Parramatta Light Rail community newsletter will be sent to approximately 65,000 properties along the route to provide updates about the project and providing information that an EIS is about to be placed on exhibition.</p>
Project Overview	<p>A brochure outlining the project as contained in the EIS will be printed and copies kept for reference at static displays, community displays and TfNSW offices.</p>
Project Brochure	<p>The Project Brochure will be distributed to around 65,000 properties on the route to provide information about the EIS being on exhibition and community information session dates.</p> <p>This will be translated into community languages spoken in the project area – Mandarin, Cantonese, Korean and Hindi.</p>
Stakeholder emails	<p>Targeted letters and emails will be sent to key stakeholders to invite them to provide a submission to DP& E as well notifying them of the location of EIS displays and community information sessions.</p>

Stakeholder briefings and meetings	<p>Meetings and briefings with stakeholders will be held to provide information on aspects of the EIS to address any issues.</p> <p>Stakeholders will include:</p> <ul style="list-style-type: none"> - Key stakeholders including City of Parramatta Council - Businesses along the route - Chambers of Commerce, Business Chambers - Community groups - Government agencies - Nominees of the upcoming City Of Parramatta Council elections - Media
Newspaper advertisements	<p>Notifications will be placed in metropolitan and suburban papers by DP&E about the exhibition period and submission process.</p> <p>PLR will supplement these with advertisements in community language newspapers (Mandarin , Cantonese, Korean and Hindi) to provide details of the EIS exhibition activities including the locations of community information sessions and static displays and submission process.</p> <p>An advertisement required to satisfy EP&A Regulations regarding landowner notification will be placed at least 14 days before EIS is placed on public exhibition.</p>
Emails	<p>Throughout the exhibition period, emails will be sent to individuals who have provided their email address to be kept informed of the project. They will be invited to attend the community information sessions and be given information on the EIS submission process. This will include key Government stakeholders.</p>
USB copies of the EIS	<p>The EIS will be available on USB drives for any community member who requests a copy specifically due to inability to access the EIS on a website.</p>
Project information line and email	<p>The project team will continually monitor calls and emails during the exhibition period.</p> <p>A script will be developed to ensure consistency in information provided either via telephone or email.</p>

Examples of the types of display boards that could be produced for information sessions are below:



The following action plan provides an overarching view of the key communication activities to be undertaken during the EIS exhibition period, which is expected to start on 23 August 2017 and finish on 4 October 2017. Activities may change as planning progresses and new information becomes available. The action plan will need to be regularly reviewed and updated.

Table 1: EIS exhibition community and stakeholder engagement action plan – April to October 2017

Task	April 17	May 17	June 17	July 17	Aug 17	Sept 17	Oct 17	Onward	Responsibility
Locations									
Information Sessions									
Initial planning, align on strategy	✓	✓	✓	✓					PLR Comms & Engagement Team
Organise dates and venues			✓	✓					PLR Comms & Engagement Team
Design layout			•	•					PLR Comms & Engagement Team
Hire display boards and other material as required			•	•					PLR Comms & Engagement Team
Letterbox drop brochure to residents - Postcard				•	•				PLR Comms & Engagement Team
Send invites to stakeholders – email & letter				•	•				PLR Comms & Engagement Team
Prepare staffing rosters				•	•				PLR Comms & Engagement Team
Prepare FAQ				•	•				PLR Comms & Engagement Team
Hold staff briefing					•				PLR Comms & Engagement Team
Hold information sessions					•	•			PLR Comms & Engagement Team
Prepare outcomes report							•		PLR Comms & Engagement Team

Task	April 17	May 17	June 17	July 17	Aug 17	Sept 17	Oct 17	Onward	Responsibility
Static Displays – libraries, hospitals, universities – public places									
Initial planning, align on strategy	✓	✓	✓	✓					PLR Comms & Engagement Team
Identify & book display locations			✓	•					PLR Comms & Engagement Team
Design layout			✓	✓					PLR Comms & Engagement Team
Produce displays and other material as required				✓	•				PLR Comms & Engagement Team
Set-up displays					•	•			PLR Comms & Engagement Team
Collateral and Advertising									
EIS Document									
Initial planning, align on strategy	✓	✓	✓	✓					PLR Comms & Engagement Team
Draft and finalise EIS document			✓	✓					Environment Team
Print EIS document					•				Environment Team
Copy EIS document onto USB's –					•				PLR Comms & Engagement Team
Distribute EIS document					•	•			Environment Team and PLR Comms & Engagement Team
Project Overview and Brochure									
Initial planning, align on strategy	✓	✓							Jacobs and PLR Comms & Engagement Team
Draft and finalise Project Overview			•	•	•				Jacobs
Print Project Overview				•	•				Jacobs
Project Brochure									
Initial planning, align on strategy	✓	✓	✓	✓					PLR Comms & Engagement Team

Task									Responsibility
	April 17	May 17	June 17	July 17	Aug 17	Sept 17	Oct 17	Onward	
Draft and finalise Project Brochure				✓	•				PLR Comms & Engagement Team
Translate Project Brochure				✓					PLR Comms & Engagement Team
Print Project Brochure					•				PLR Comms & Engagement Team
Distribute Project Brochure					•	•			PLR Comms & Engagement Team
Fact Sheets and panels									
Initial planning, align on strategy	✓	✓	✓	✓					PLR Comms & Engagement Team
Draft and finalise design for fact sheets and panels			•	•					PLR Comms & Engagement Team
Draft and finalise text for fact sheets and panels			✓	✓	•				PLR Comms & Engagement Team
Translate fact sheets					•				PLR Comms & Engagement Team
Approval for fact sheets and large display boards including PLR Team & Ministers Office			•	•	•				PLR Comms & Engagement Team
Print fact sheets and panels			•	•	•				PLR Comms & Engagement Team
Newspaper Advertising									
Initial planning, align on strategy	✓	✓							PLR Comms & Engagement Team
Book advertising space (community language newspapers)			•	•					PLR Comms & Engagement Team
Draft and finalise advert text and design – Statutory required advertising (14 days prior to EIS exhibition) – Advertising EIS Information				•					PLR Comms & Engagement Team

Task	April 17	May 17	June 17	July 17	Aug 17	Sept 17	Oct 17	Onward	Responsibility
Sessions									
Approval for advertising including PLR Team and Ministers Office				•					PLR Comms & Engagement Team
Translate advertising				•					PLR Comms & Engagement Team
Approval for advertising including PLR Team and Ministers Office				•					PLR Comms & Engagement Team
Publish adverts					•	•			PLR Comms & Engagement Team
Media Releases, Ministerial & Events									
Draft and finalise text for media release to announce EIS exhibition period and information sessions			•	•	•				PLR Comms & Engagement Team
Distribute media release					•				PLR Comms & Engagement Team
Ministerial – draft & distribute				•	•	•			PLR Comms & Engagement Team
Media event (tbc)				•	•				PLR Comms & Engagement Team
Speech, venue.....(tbc)				•	•				PLR Comms & Engagement Team
PLR Website									
Initial planning, align on strategy	✓	✓							PLR Comms & Engagement Team
Draft updated content & EIS Digital Strategy			•	•					PLR Comms & Engagement Team
Updated content reviewed and approved				•	•				PLR Comms & Engagement Team
Website goes live with updated content					•	•			PLR Comms & Engagement Team
Social Media									

Task	April 17	May 17	June 17	July 17	Aug 17	Sept 17	Oct 17	Onward	Responsibility
Initial planning, align on strategy	✓	✓							PLR Comms & Engagement Team
Draft social media plan			•	•					PLR Comms & Engagement Team
Approve social media plan				•					PLR Comms & Engagement Team
Post content with determined approvals				•	•				PLR Comms & Engagement Team
Meetings with Key Stakeholders									
Identify relevant stakeholders	✓	✓	•	•					PLR Comms & Engagement Team
Draft and finalise letter to stakeholders				•					PLR Comms & Engagement Team
Send letters with summary of EIS					•				PLR Comms & Engagement Team
Call stakeholders to arrange meeting					•	•			PLR Comms & Engagement Team
Hold meetings					•	•			PLR Comms & Engagement Team
Follow up as required.						•	•		PLR Comms & Engagement Team

This phase of engagement will begin in late October 2017, once the EIS exhibition period ends.

A detailed program of activities will be developed, with this phase to be a continuation of engagement undertaken in previous phases. The aim will be to keep the community and stakeholders informed about how the EIS submissions and community concerns are being reviewed and addressed in the final EIS, updating them on project progress and publication of the EIS.

Once the EIS public exhibition period finishes, DP&E will collate and provide TfNSW with copies of all submissions received so that a submissions report can be produced to respond to the issues raised. The submissions report is due to be made public in xxxxxx 2018. Anyone making a public submission will be notified in writing of the publication of the submissions report.

Engagement activities to be undertaken, and tools to be used, may include, but not be limited to:

- Briefings and meetings with stakeholders
- Targeted focus groups (ie. Disability and CALD)
- Additional information sessions and pop ups as required
- Attending community events
- Distribution of October 2017 and January 2018 editions of community newsletter to provide a status update
- Update emails to those on the PLR distribution list
- Media releases, ongoing announcements on project progress
- Input by communications team into submissions report (internal activity)
- Newspaper adverts about the release of the final EIS
- Planning approval xxxx 2018



Transport
for NSW

PLR Stage 1 Project
Enabling Works Contract
ISD-17-6763
Safety Management Requirements

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1. Introduction

- (a) The requirements of this Safety Management Requirements' document reflect practicable steps that the Contractor is capable of implementing to ensure compliance with WHS Legislation.
- (b) This document:
 - (i) forms part of the Management Requirements; and
 - (ii) must be read in conjunction with the Deed.
- (c) This document forms part of TfNSW's consultation with the Contractor on matters of safety generally. It enables TfNSW to share its experience and learnings with the Contractor.
- (d) Unless noted otherwise, wherever used in this document, words and phrases have the meaning given to them in the General Conditions or in the Management Requirements.

2. Managing Health and Safety

- (a) The Contractor must:
 - (i) manage health and safety in accordance with the WHS Legislation, Codes and Standards, NSW Government Guidelines and contractual requirements; and
 - (ii) ensure compliance, by it and those persons it exercises control over, with relevant Laws, Codes and Standards, codes of practice and contractual requirements as a minimum.
- (b) The Contractor must establish and maintain an effective Safety Management System that facilitates the flow of safety information both within the Contractor's organisation and between the Contractor's organisation, Subcontractors, Interface Contractors, TfNSW and the Independent Certifier.
- (c) The Contractor must regularly review procedures, processes and work practices according to risk, to ensure that procedures, processes and work practices continue to be applicable, relevant, and effective in their controls for which they were developed or intended.

3. Safety Culture

3.1. Leadership and Commitment

- (a) The Contractor must continuously promote a safer, healthier and more productive workplace.
- (b) The Contractor must provide strong leadership and promote safety as a core value, establishing and enforcing high standards of performance and ensuring relevant expertise is available.

- (c) The Contractor must ensure that open and effective consultation with TfNSW and the Independent Certifier, providing timely response to safety issues and concerns.
- (d) The Contractor must ensure the Safety Management System and the safety culture support and provide:
 - (i) senior management commitment to safety;
 - (ii) commitment to work with TfNSW to develop project-specific lead and lag indicators;
 - (iii) shared care and concern for hazards;
 - (iv) workers to adapt to their changing environment where required;
 - (v) organisational learning through monitoring, analysis and feedback systems;
 - (vi) methods for providing feedback and set timeframes for such provision;
 - (vii) methods to communicate and share learning from successes and failures;
 - (viii) the encouragement of teamwork and of worker involvement in promoting and maintaining a positive safety culture;
 - (ix) methods to demonstrate how site safety rules will be reflected in the practice on it and how such rules will be incorporated into the Contractor's Activities; and
 - (x) methods to enable the ongoing development of safety improvements developed in consultation and communication with the Principal's Representative, as required.
- (e) During the project, the Contractor must demonstrate their commitment to safety management, by the development, implementation and maintenance of the safety management processes.
- (f) The Contractor must have processes and procedures to nurture, consider, document and share all safety innovations presented on the project. This may include innovations to processes, technology or any other ideas that may affect safety and efficiency. An innovation register must be developed and maintained to document and monitor all innovations that have been brought forward to the project.
- (g) The Contractor must develop, implement and maintain a visible leadership program that demonstrates the Contractor's senior management and leadership proactive commitment to safety excellence on the project. Examples of visible leadership initiatives that the Contractor may wish to include as part of their visible leadership program include the Contractor's senior management and leadership involvement in:
 - (i) safety interactions;
 - (ii) safety observation conversations;
 - (iii) safe act observation; and
 - (iv) conducting frequent site interactions, reviews and behavioural observations.

3.2. Responsibilities, Accountabilities and Authorities

- (a) The Contractor must allocate, document and communicate safety responsibilities, accountabilities and authorities.

- (b) Accountabilities, responsibilities and authorities cover the scope of services and operations at any given time, i.e. business as usual, degraded and emergency situations.
- (c) A safety organisation structure must be established and maintained by the Contractor e.g. charts, position descriptions, safety accountabilities, responsibilities and delegations.

3.3. Participation and Consultation

- (a) The Contractor must:
 - (i) implement safety management processes, initiatives and activities;
 - (ii) consult with staff regarding safety to nurture participation and engagement;
 - (iii) develop and maintain processes to support the participation of workers and contractors in activities which promote improvements to safety performance;
 - (iv) establish, in consultation with the Principal's Representative, how the cease work and issues resolution process will be managed.

4. Contractor's Project Safety Management Plan

- (a) The Contractor must develop, implement and update a Safety Management Plan in accordance with the requirements of the TSR.
- (b) The Safety Management Plan must:
 - (i) document how the Safety Management System is to be applied to the delivery of the contract;
 - (ii) make provision for development of procedures to meet the safety management requirements stated in the contract, Law, this document and comply with the "NSW Government Work Health and Safety Management Systems and Auditing Guidelines";
 - (iii) be updated to reflect any relevant changes to the above;
 - (iv) identify how the Contractor's safety communication and consultation arrangements will interface with the PLR Health and Safety Committee and ;
 - (v) document how the Safety Management System will be communicated to all persons associated with the Contractor's Activities such that it is incorporated effectively into the Contractor's activities;
 - (vi) make provision for any site-specific management measures;
 - (vii) describe the Contractor's, processes and procedures for recording and control of safety management documents; and
 - (viii) describe how safety documentation will be retained and managed.
 - (ix) describe the Contractor's approach to:
 - (A) managing risks to health and safety;
 - (B) how safety risk reviews will be conducted;

- (C) ensure that all risks are identified and preferred controls are applied according to the hierarchy of controls will be implemented ;
- (D) how the appropriate risk management processes will be implemented and maintained This may include, but is not limited to:
 - (1) basic personal risk assessment (take 5, step back, etc...);
 - (2) job safety analysis or task risk assessments;
 - (3) safe work method statements;
 - (4) formal risk assessments (including plant and area risk assessments);
 - (5) project and site risk registers;
 - (6) hazard logs and bowties;
 - (7) semi-quantitative risk assessments; and
 - (8) quantitative risk assessments.

5. Personnel, training and competency

5.1. Leadership and support resources

- (a) The Contractor must at all times have in their project team have a Senior Management Representative responsible for implementing and maintaining the safety requirements of this document (including monitoring the effectiveness of the Contractor's Safety Management System in complying with all safety requirements) and reporting to the Principal's Representative.
- (b) The Contractor must establish a Project Safety Leadership Team.
- (c) The role of the Project Safety Leadership Team is to:
 - (i) ensure necessary safety information is made available to all staff and subcontractors within the Contractor organisation that all staff's duties and be performed safely and effectively;
 - (ii) promote health and safety initiatives; and
 - (iii) support effective safety decision-making.
- (d) The Contractor must ensure all levels of management are suitably aware of:
 - (i) The current safety risk profile, to enable proactive management of safety risk
 - (ii) The current level of compliance with our safety duties and legislative obligations
 - (iii) The current level of safety performance
- (e) The Contractor must identify and provide the resources required to implement, maintain, and continually improve safety management.

5.2. Competency and capability

- (a) The Contractor must ensure that:
 - (i) all personnel, including subcontractors and visitors complete safety training that is appropriate to the project and the tasks that they are required to perform;
 - (ii) training provided to all personnel, including subcontractors and visitors is carried out by persons with appropriate knowledge, skills, and experience.
 - (iii) personnel must be made aware of relevant safety, health and wellbeing requirements, hazards, risks and controls, and are deemed competent to perform the tasks associated with their role.
 - (iv) that appropriate licences and certificates of competency are gained and maintained by workers performing duties where statutory WHS, Rail Safety and other legal requirements exist.
 - (v) all rail safety competencies (if required) are maintained on TfNSW's Pegasus/Onsite Track Easy access card systems unless otherwise specified.

5.3. Subcontractors

- (a) All Subcontractors must include appropriate obligations, specifically requiring Subcontractors to:
 - (i) implement systems that address these Safety Management Requirements
 - (ii) adhere to the Contractor's Safety Management System; and
 - (iii) comply with relevant legislation.
- (b) Subcontractors must identify the senior management representative responsible for implementing these requirements and for monitoring the effectiveness of the Subcontractor's safety management system in complying with all safety requirements.
- (c) The Contractor must establish and document relationships, lines of communication, responsibilities, accountabilities and system interfaces between the Contractor, its subcontractors , its suppliers and Interface Contractors.

6. Safety risk management

- (a) The Contractor must implement processes, procedures to:
 - (i) manage safety risks; and
 - (ii) improve safety performance.
- (b) The Contractor's risk management processes and procedures must comply with the AS/NZS ISO 31000 Risk Management – Principles and Guidelines.
- (c) The Contractor must consider any previous risk assessments completed by TfNSW.
- (d) The Contractor must:
 - (i) eliminate all risks to health and safety so far as is reasonably practicable; and

- (ii) if it is not reasonably practicable to eliminate risks to health and safety; minimise those risks so far as is reasonably practicable applying, maintaining and reviewing the prescribed Hierarchy of Control Measures.

7. Fitness for work

7.1. General

- (a) The Contractor must:
 - (i) ensure that personnel are fit for work and physically capable of safely performing the requirements of the position; and
 - (ii) develop policies and procedures to ensure that personnel are fit for work.

7.2. Alcohol and Drugs

- (a) TfNSW's policy of zero tolerance of alcohol and illegal drug use applies to this Contract and all the Contractor's Activities. Alcohol and illegal drugs are not permitted on any Site or on premises controlled or managed by TfNSW.
- (b) The Contractor must develop policies and procedures to ensure this policy of zero tolerance of alcohol and illegal drugs use is adhered to at all times.
- (c) The Contractor must develop and implement effective alcohol and drug testing procedures inclusive of the number of tests to be performed annually and the periods throughout the year that testing will take place. All Alcohol and Other Drug testing procedures must be in line with relevant Laws and Australian Standards.
- (d) The Contractor must ensure that all persons associated with the Contractor's activities (including the Contractor's personnel, visitors, Subcontractor workers and agents) are aware of their obligations to comply with all alcohol and other drug requirements.
- (e) Any persons under the influence of alcohol or drugs are prohibited from working on any projects carried out for, controlled or managed by TfNSW, regardless of their work location. Prescription and over-the-counter drugs may also affect a person's ability to work safely and the Contractor, in consultation with the Principal's Representative, will determine its policy in relation to prescription and over-the-counter drugs on a case by case basis.
- (f) The Contractor and workers of Subcontractors may be subject to alcohol and drug testing by an authorised testing officer or agent of TfNSW at any time whilst carrying out the Contractor's Activities (including within the Contractor's Site amenities or facilities).
- (g) Testing for the presence of alcohol and other drugs may be undertaken at any time that workers are present on Site, including:
- (h) The Contractor must immediately remove anyone from Site that tests positive to alcohol or drug tests or who refuses an alcohol or drug test, and the Principal's Representative notified immediately.
- (i) The Contractor must take disciplinary action against a person who breaches TfNSW's policy of zero tolerance of alcohol and illegal drug use. The nature of the disciplinary action to be taken must be communicated to the Principal's Representative.

- (j) Each individual that signs on at the commencement of each shift declares themselves to be free of alcohol and drugs.
- (k) In addition to the requirements set out in this clause, if the Contractor's activities are in or adjacent to the Rail Corridor and the rail environment, the applicable alcohol and other drugs procedures must comply with the Rail Safety National Law and the testing regime must include prestart testing prior to Track Possessions.

7.3. Exposures to health related hazards

- (a) The Contractor must ensure, so far as reasonably practicable, that personnel are not exposed to health related hazards. Managers are responsible to ensure that assessment and ongoing monitoring is conducted (appropriate to the nature of operations and risk of exposure) of all occupations, tasks and work environments to identify and control exposure to contaminants with the potential to adversely affect health. Such exposure includes, although is not limited to:
 - (i) asbestos and other fibres;
 - (ii) dust and particulates;
 - (iii) ultraviolet light;
 - (iv) communicable disease;
 - (v) flora and fauna;
 - (vi) acoustic shock;
 - (vii) chemicals; and
 - (viii) unsuitable ergonomics;

7.4. Health assessments and programs

7.4.1. Physical and mental demands

- (a) The Contractor must establish, implement and maintain a process to assess the physical and mental demands necessary to perform specific roles to ensure that all personnel are capable of performing their intended role.
- (b) The Contractor must ensure that specific role's requiring competencies and medicals are kept up to date in alignment with state and federal schemes.
- (c) Prior allocating work to personnel involved in the project, the Contractor must ensure:
 - (i) the health status and physical capabilities of selected personnel is known;
 - (ii) the selected personnel are capable of performing the required duties; and
 - (iii) are not likely to be adversely affected by the workplace, work processes or work environment.

7.4.2. Wellbeing

- (a) PLR recognises the importance of having a well and healthy workforce. The TfNSW Health and Wellbeing Program shall be implemented for TfNSW workers to provide

opportunities to improve employees' health and general quality of life through a range of structured and innovative health strategies. Contractors are encouraged to implement programs for worker health and wellbeing.

7.4.3. Employee Assistance Program (EAP)

- (a) Contractors must implement and maintain programs for employee assistance.

7.4.4. Fatigue

- (a) Strategies and processes must be established by the Contractor to manage fatigue risk. This should include fatigue management education, awareness programs and standards.

7.5. Injury Management and Workers Compensation

- (a) The Contractor must maintain current workers' compensation insurance with an approved insurer / agent.
- (b) The Contractor must have establish and maintain an injury management process that as a minimum, meets legislative requirements.

8. Emergency and Significant Incident Management

- (a) The contractor must identify all potential emergency situations and document emergency procedures. The contractor must review and revise its emergency preparedness and response procedures, as well at periodically test such procedures.
- (b) The contractor must ensure that adequate resources, including equipment, personnel, plant and vehicles, warning devices and communications required for emergency response are identified, maintained, tested and available.
- (c) The contractor must ensure that employees, contractors and visitors (as appropriate), are trained in and understand the actions they are required to take during an emergency. Personnel with specific duties during emergency situations are trained in their roles and responsibilities and the use of emergency response resources. Emergency response drills and exercises are scheduled and conducted regularly, including liaison with and involvement of external response organisations as appropriate.

8.2. Emergency Evacuation

- (a) Locations of work and projects must have an emergency management or evacuation plan in the case of an emergency. This plan must outline the steps which are considered as necessary to ensure effective emergency evacuation for all situations which may cause harm to persons or damage to property and the environment.

8.3. First Aid

- (a) The contractor must have a process for providing first aid from a qualified first aider for all those suffering from injury or illness in the workplace. This process may be included in the locations emergency management plan or equivalent.
- (b) The Contractor must provide a defibrillator and suitable training in its use for its first aid personnel at each major first aid location.

8.4. Significant Incident Management/Crisis Management

- (a) The contractor must have an Emergency Management Plan in the case of a significant incident and must establish an Emergency Management Team to manage the process.
- (b) The contractor must adhere to the requirements of the Transport for NSW Significant Incident Management Procedure and escalation process, attached in Annexure G of the TSR.

9. Safety Incident investigation and reporting

9.1. General

- (a) The Contractor must implement processes to ensure safety incidents, including near misses, are reported, investigated and analysed to identify and document the factors and underlying causes that contributed to the incident. Corrective and preventive actions must be taken to prevent recurrence and to share incident learnings.
- (b) The Contractor must ensure that where/if the Contractor's Activities involve work in or adjacent to the Rail Corridor or the rail environment, the Project Work Health and Safety Management Plan includes provision for rail safeworking arrangements, based upon (without limitation) compliance with the Australian Network Rules and Procedures.

9.2. Investigation of Incidents

- (a) The Contractor must implement appropriate incident investigation processes to ensure the factors and underlying causes that contributed to the incident are identified, and so that corrective and preventive actions are taken to prevent recurrence and to share incident learnings. The level of the investigation undertaken must represent the seriousness of the incident including the actual consequence and the potential outcome (risk) that could have occurred.
- (b) The level of investigation must be determined in consultation with the Principal's Representative or delegate. Levels of investigation are as follows.
 - (i) *Basic investigation:* Applied to incidents with an insignificant consequence or a low risk.
 - (ii) *5-Why's investigation or equivalent:* Applied to incidents which are not considered serious yet still need still required deeper investigation.
 - (iii) *ICAM or equivalent:* Applied to incidents which are considered serious (medically treated injury and above or serious near miss). Where an incident is

deemed Serious, an investigation may be conducted by TfNSW in conjunction with any investigation undertaken by the Contractor.

9.3. Safety Performance reporting

- (a) The Contractor must establish (in collaboration with the Principal's Representative) the processes for reporting incidents to ensure:
- (i) incidents are reported to appropriate stakeholders within agreed timeframes;
 - (ii) notifiable occurrences are reported to the Regulator and to senior management;
 - (iii) incidents are recorded in the TfNSW event management system (INX) by the Contractor;
 - (iv) injuries are reported to the appropriate return to work coordinator (RTW);
 - (v) incidents are reported to other site controllers interfacing with the works; and
 - (vi) reporting requirements shall adhere to TfNSW standards and procedures.

9.4. Safety Alerts

- (a) Safety Alerts must be created and effectively distributed by the Contractor to the safety department for all incidents considered serious to ensure they are actioned appropriately and the learnings are shared throughout TfNSW and to other appropriate stakeholders.

10. Particular safety requirements

10.1. General

- (a) Operational controls, procedures and approved work practices must be established by the Contractor to maintain health and safety assist the safe delivery of projects, and to implement the actions to control risks and satisfy objectives and targets.

10.2. High Risk/Critical Risk Work

- (a) Procedures and processes must be developed, documented, implemented and maintained by the Contractor to ensure that High Risk or Critical Risk activities are identified and are conducted in a safe manner. High Risk or Critical Risk work may be identified via legislative requirements, through the TfNSW Bowties, or through project risk assessment.

10.3. Quick Hitch

- (a) The Contractor must ensure that quick hitch attachments fitted to excavators and other earth moving machinery are of the fully automatic type with a secondary locking attachment. The secondary attachment is to be capable of preventing the excavator attachment from releasing in the event of a partial or total failure of the power supply or when the operator stops operating the machine. All half-hitch, mechanical-hitch, form-lock, semi-automatic types are prohibited.

10.4. Plant and Equipment

- (a) The Contractor must ensure that no modifications have been made to any item of plant without approval and acceptance from the original equipment manufacturer for the relevant item of plant.
- (b) The Contractor must ensure that records for inspection, maintenance and repair of each item of plant on site are kept and maintained up to date.

10.5. Electrical

- (a) Live electrical work is not permitted to be carried out on the Site and isolated circuits must be treated as live by the Contractor until they have been proven otherwise dead by testing. The only exception to the above is for the purpose of testing, as specified in the Safework NSW Code of Practice "Managing Electrical Risks in the Workplace".

10.6. Use of Portable Earphone Equipped Music Devices

- (a) The use of portable earphone equipped music players on Site is prohibited.

10.7. Fires or Burning Off

- (a) Fires or burning off are not permitted anywhere on Site.

10.8. In Vehicle Monitoring Systems (IVMS)

- (a) IVMS are to be fitted in all Heavy Vehicles used on Site unless established otherwise.
- (b) General exemptions to the above would be for non-project delivery drivers, and suppliers providing one off deliveries.
- (c) All breaches in relation to IVMS must be managed in accordance with the incident reporting and investigation process (Section 8).
- (d) Incidents involving speeding, fatigue and log book breaches must be monitored, reported and acted upon by the Contractor.

11. Performance evaluation

11.1. Monitoring, measurement, analysis and evaluation

- (a) The Contractor must implement and maintain a process to monitor Contractor, subcontractor and supplier health and safety performance, and their compliance with their proposed safety management obligations outlined in their contracts and safety management plans and systems.
- (b) The Contractor must ensure there is a systematic approach to examine whether project activities conform to planned arrangements.
- (c) The Contractor must establish with TfNSW weekly, monthly and yearly lead and lag indicators. These lead and lag indicators must be established in consultation with the PLR safety team and should progress as the program develops.

11.2. Safety audits

- (a) If required, the Contractor must work collaboratively with TfNSW to develop a collaborative safety audit schedule.
- (b) The Contractor must:
 - (i) implement processes, procedures and protocols to conduct audits and self-assessments to determine the extent of conformance with the requirements of their Safety Management System;
 - (ii) conduct regular and random audits;
 - (iii) document and communicate actions arising from audits and self-assessments of work activities with and for the Independent Certifier; and
 - (iv) monitor the progress until completion, verification and close out.

11.3. Inspections

- (a) The Contractor must:
 - (i) implement and consistently apply processes, procedures and protocols to conduct health and safety inspections;
 - (ii) conduct inspections at frequencies appropriate to the level of risk of the tasks and activities and report results to stakeholders as appropriate.
- (b) PLR reserves the right to audit, inspect or conduct site visits at any stage of the project should it be safe to do so.

12. Failure to comply

If the Principal's Representative is of the opinion that the Contractor has not complied, or is not complying with any health and safety requirements in the Deed the safety management requirements or under the Rail Safety National Law or WHS Legislation, including the requirement to eliminate or minimise the risks so far as is reasonably practicable, then the Principal's Representative may:

- (a) direct the Contractor to immediately comply with the obligation; and/or
- (b) if it is in the opinion there is an immediate risk to the health, safety or welfare of any persons as a result of the non-compliance, direct the Contractor to immediately suspend carrying out all or any part of the Contractor's Activities until such time as the Contractor is complying.

Transport for NSW
Parramatta Light Rail
Climate Change Risk Assessment

PLR-ARA-SN-0000-RPT-00001

Issue | 08 January 2018

This report takes into account the particular instructions and requirements of our client

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

Job number 250297

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1 Introduction

There is a wide body of scientific evidence indicating that warming of the climate system is occurring at a steady rate. Studies, reports and evidence demonstrate climate warming trends over the past century, and in particular the last 50 years, have led to an increase in extremes in weather conditions and associated hazards impacting infrastructure.

Climate change, including extreme weather conditions and severe climate extremes, can lead to costly impacts in terms of maintenance, repairs and loss of patronage for transport infrastructure. Building resilient infrastructure for a current and changing climate conditions will assist in reducing vulnerability and ensure resilience, functionality and longevity of the asset.

The State of the Climate report produced by CSIRO in conjunction with the Bureau of Meteorology (2016) indicates the following key climate trends in Australia:

- Temperature – Australia’s climate has had an increase in both mean surface air temperature and surrounding sea surface temperature by almost 1°C since 1910
- Heat events - The duration, frequency and intensity of extreme heat events have increased across large parts of Australia since the 1970’s
- Fires - There has been an increase in extreme fire weather, and a longer fire season across large parts of Australia since the 1970’s
- Rainfall - Large variability in extreme rainfall events from decade to decade is evident, with very wet events associated with La Nina years
- Oceans - Oceans around Australia have warmed and ocean acidity levels have increased
- Sea levels - Sea levels have risen around Australia, amplifying the effects of high tides and storm surges

Long term planning and management of new infrastructure is required to reduce the potential risk of climate change and potential impacts that climate change may have on infrastructure. Ensuring infrastructure and associated assets are resilient to changes in climate conditions presents an important adaptation opportunity, or in some instances, a requirement for further risk management.

As a major infrastructure provider in NSW, Transport of NSW (TfNSW) aims to provide a world class sustainable transport system. The TfNSW Climate Risk Assessment Guidelines (March 2016), recognise that the impacts of climate change pose a significant risk to its infrastructure assets, its core business and the communities it serves. In response to this, there is a commitment to build climate resilient infrastructure to build across its network of current and future projects.

The infrastructure and construction sectors are not only environmentally vulnerable to extreme weather events, but also financially susceptible Legal

responsibility for considering climate change in asset management and operations is becoming an accountable factor for company Directors.

Considerations of potential risks posed by a changing climate and ensuring these risks are incorporated into strategic decision making is now being seen as a duty of care and due diligence with company Directors who are ultimately accountable to commit proper consideration to these risks.

1.1 Project overview

The Parramatta Light Rail (PLR) Stage 1 is being developed as part of an integrated transport network, linking precincts within the Greater Parramatta region.

Transport interchanges at Westmead, Parramatta and Carlingford (Olympic Park as part of Stage 2) will be designed to facilitate access to the wider network, while a light rail spine between Westmead and Camellia will complement rail, bus, ferry and active transport modes to create legible routes through Parramatta CBD.

The region of Greater Parramatta has a humid sub-tropical climate, with mild to cool winters and warm, hot summers. Rainfall is spread evenly throughout the year. Parramatta is slightly warmer than the Sydney CBD area due to being further inland, resulting in less influence from coastal breezes. The location of the project, with little influence from coastal winds and the likelihood of more extreme weather, makes PLR Stage 1 more vulnerable to climate change impacts.

Overall temperatures within the Parramatta region are expected to become warmer, with more hot days and fewer cold nights, with an increase in the frequency of extreme temperature conditions (hot days above 40°C). The need to consider appropriate adaptation actions to reduce disruptions to operations, provide a quality customer experience, and to ensure the physical components of the network maintain longevity.

A number of key climate risks relevant to the project were initially identified as:

- Infrastructure/track failure resulting from extreme heat conditions
- Inundation of track areas/stops/depots or failure of civil infrastructure systems (stormwater drains) resulting from higher occurrence and extremes of rainfall events
- Structure damage (overhead wires) resulting from high wind events
- Increased bushfire risk to vulnerable sections of the alignment
- Passenger comfort at stops during hot or wet weather periods
- Increased operation and maintenance costs associated with climate hazards and risks
- Impacts to critical infrastructure including substations and signalling equipment

1.2 Objectives

The objectives of this climate change risk assessment is to ensure relevant risks relating to changes in climate and extreme weather events are identified, and subsequent construction and operations of PLR Stage 1 are resilient to these potential changes.

This assessment also contributes to the achievement of the relevant sustainability project requirements which include:

- TfNSW Sustainable Design Guidelines (SDG) version 4.0 – CR3– Climate change risk: All projects with a CapEx >\$15 million to undertake a climate risk assessment that mitigates all extreme and high residual risks. Through the mitigation of all extreme and high risks identified, and adaptation measures identified for at least 50% of all medium risks, a Level 5 target is anticipated for this SDG requirement.
- Infrastructure Sustainability Council of Australia’s (ISCA) rating tool version 1.2 – Cli-1 Climate change risk assessment: To reward the assessment of climate change risks. A performance level score of Level 2 for this credit is achieved where the assessment identifies and adopts available climate change projections, indirect climate risks have been considered, and a multi-disciplinary team participated in identifying climate change risks and issues.
- ISCA rating tool version 1.2 – Cli-2 Adaptation measures: To reward the assessment and implementation of climate change adaptation measures. Adaptation measures identified and adopted for at least 50% of all medium risks results in a performance level score of Level 2 for this credit. A full list of risks and risk types, including adaptation measures for all medium and high risks identified is provided in the climate risk statement attached in Appendix C.

2 Project scope and background

2.1 Project context

The NSW Government has a vision for Greater Parramatta to be a hub of commerce, industry, community and education linked to residential areas between Westmead and Strathfield. Within the next 20 years, Parramatta's population will grow by almost a third to nearly 240,000 while the number of jobs will increase by a similar proportion to over 160,000. The Greater Western Sydney region contains approximately 9% of Australia's population, and over 44% of Sydney's population, with growth rates forecast at 1.8% over the next 20 years.

PLR Stage 1 is needed to help manage the transformation of Parramatta. It will support growth in the region and help to attract people to live, work and visit the area. Around the world, light rail systems have been shown to benefit local economies by encouraging investment in commercial, mixed and residential projects, attracting skilled labour and enhancing the public domain.

The PLR Stage 1 is intended to provide a frequent and reliable transport mode for growing and emerging precincts by bringing businesses, destinations and employers closer to their visitors, employees and customers.

2.1.1 Project description

PLR Stage 1 consists of a light rail network roughly 12 kilometres long, with seven kilometres within the existing road corridor and the rest of the alignment utilising the existing Carlingford and Sandown heavy rail lines.

There are a total of 16 stops (a combination of side and island platforms). The final number of stops will depend on the final design and existing constraints at each stop location. Platforms would be approximately 45 metres long with the creation of two light rail priority zones (no vehicle access) within the Parramatta CBD. LRV driver amenities will be located at Westmead and Carlingford terminus and the Stabling and Maintenance facility (SaM).

The SaM located in Camellia will consist of:

- Stabling and maintenance (SaM) facilities including a workshop containing servicing tracks to carry out LRV inspections
- Administration facilities, and
- An automatic train wash and sanding plant for replenishing LRV sand boxes and for testing sanding equipment.

The alignment will also include a number of new bridge structures along the alignment including over James Ruse Drive, Clay Cliff Creek, Parramatta River (near the Cumberland Hospital) and Vineyard Creek, Rydalmere. There will be modifications to Lennox Bridge (Church Street) and five existing bridge structures along the Carlingford Line (Parramatta River, Vineyard Creek, Kissing Point Road, Adderton Road and Pennant Hills Road) to accommodate the light rail alignment and active transport links.

Alterations to the existing road network includes;

- Line marking, additional traffic lanes, turning lanes, new traffic signals and changes to traffic flows
- Ancillary infrastructure including up to eight electricity substations, overhead lines and poles
- Active transport corridors (shared paths) and additional urban design features along sections of the alignment and at stop locations
- The replacement of existing rail infrastructure along the former Sandown Line corridor, between the junction at Camellia Station and the SaM
- Removal of the remaining rail infrastructure, east of the SaM, and
- The removal of existing rail infrastructure at the Parramatta Road level crossing and closure of the existing Carlingford Line north of Parramatta Road.

The proposed alignment for the proposed action is provided in Figure 1.

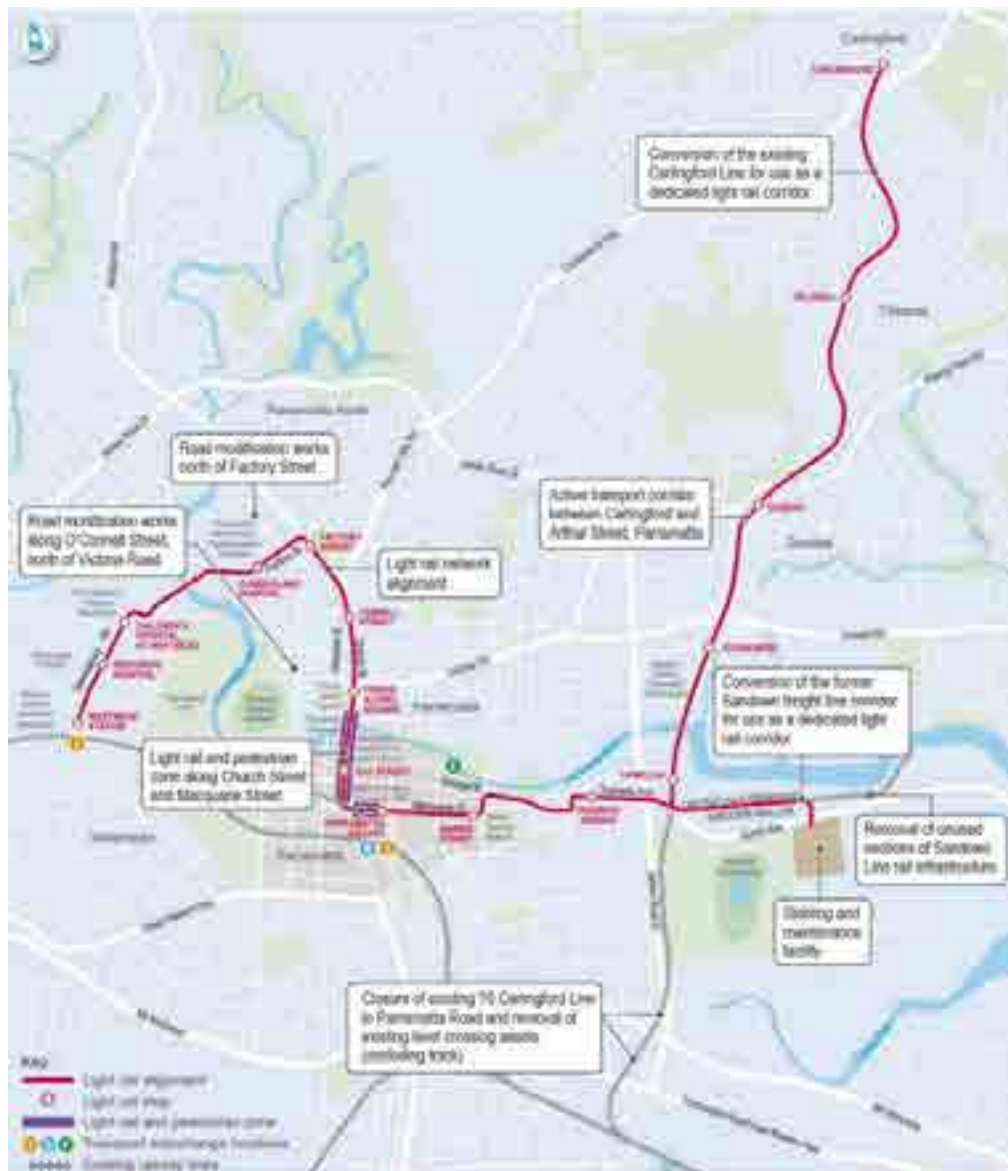


Figure 1: Map of the PLR Stage 1 corridor

2.2 Scope of assessment

This report assesses future climate related risks to both the physical asset (PLR corridor, track, LRV stops, ancillary equipment and facilities) and the operation and customer experience. The primary factors of the assessment is to;

- Assess potential vulnerabilities that need to be considered in the design, construction and the operation processes of the PLR Stage 1
- Provide recommended control measures to incorporate into the design, and
- Provide a working document that assists the mitigation of climate risks through each phase of project delivery and operation

2.3 Asset components and design life

A review of the design with the PLR Stage 1 project team (including representatives from TfNSW) was undertaken to identify the physical and operational components that contribute to the overall functionality of the project. Expected design life was determined for each asset component in order to determine the respective climate projection relevant to each. The key component types and anticipated design life are listed in Table 1 below.

Table 1: The key component types and their corresponding anticipated design life.

Component type	Anticipated design life
Light rail tracks, turnouts and crossings	40 years
Light rail vehicles	30 years
Major civil and structural elements (foundations, bridges, viaducts, tunnels, retaining structures, culverts, embankments etc.)	100 years
Stop structural elements (pre-cast and cast concrete and load bearing masonry and steel canopy structures)	50 years
Stop furniture, fittings and fencing	20 years
Road pavements, car parking surfaces, external paving, footpaths, shared paths and hard landscaping features	30 years
Noise barrier and acoustic panels	30 years
Electrical supply and traction power supply systems, transformers, main distribution boards, switches and control systems	30 years
Low voltage switchboards, lighting fixtures, conduits, cabling and electrical systems, solar PV	30 years
Rail telecommunication systems	30 years
Signalling and LRV location systems and wayside equipment	20 years
Substations and ancillary building structural elements	30 years
Ticketing systems – structures, gantries and other equipment	40 years
Drainage and flood protection, including associated structures/tanks etc.	50 years

Component type	Anticipated design life
Hard landscaping	20 years
LRV wash slab, structure, drainage systems, tanks and sumps	50 years
LRV wash unit, controls and water treatment system	15 years
Other major depot plant	30 years
Rail maintenance vehicle	15 years
Depot building	50 years
Soft landscaping	15 years

3 Background to region

3.1 Historical climate

Parramatta experiences a humid subtropical climate with hot, humid summers and mild to cool winters. Rainfall is fairly evenly spread across the seasons, being slightly higher in the summer and autumn months. Solar exposure is highest in December and January and lowest in June and July. A historic summary of Parramatta's climate conditions is provided in Table 2.

Table 2: Historic climate statistics for Parramatta North¹

Climate effect	Period	Measurement
Maximum average daily temperature (°C)	Annual	23.3 °C
	Summer	27.9 °C
	Autumn	23.6 °C
	Winter	18.1 °C
	Spring	23.7 °C
Highest maximum temperature (°C)	January 2013	45.5 °C
Minimum average daily temperature (°C)	Annual	12.2 °C
	Summer	17.1 °C
	Autumn	12.9 °C
	Winter	7.0 °C
	Spring	11.9 °C
Lowest temperature (°C)	July 2002	-1.0 °C
Average total rainfall (mm)	Annual	970.6 mm
	Summer	300.5 mm
	Autumn	269.8 mm
	Winter	194.3 mm
	Spring	206.7 mm
Average 9am wind speed (km/h)	Annual	7.8 km/h
Average 3pm wind speed (km/h)	Annual	12.9 km/h
Average 9am relative humidity (%)	Annual	73 %
Average 3pm relative humidity (%)	Annual	55 %
Mean daily solar exposure (MJ/m ²)	Annual	16.2
Number of days over 35 °C	Annual	10.6 days p.a.

The project alignment is comprised of a number of crossings over the Parramatta River and tributaries. A review of existing flooding information has identified that

¹ Historic data is taken from Parramatta North weather station (station number 066124) for available period 1967 – 2016. Data presented is mean data taken from this time period.

significant lengths of the corridor are prone to flooding, particularly in Westmead, Parramatta, Harris Park, Rosehill, Camellia and Rydalmere.

3.2 Weather influences and effects

3.2.1 East Coast Lows

An East Coast Low (ECL) is the term used for a low-pressure weather system which forms off the east coast of Australia and can result in dangerous weather to coastal and adjoining areas. An ECL can form under a variety of circumstances at any time of the year, although historically have been more frequent during Autumn and Winter months.

In Parramatta, an ECL can result in the following conditions and hazards:

- Gale or storm force winds along the coast and adjoining areas, and
- Heavy widespread rainfall leading to flash and/or major river flooding

The Bureau of Meteorology (BoM) has been tracking ECLs since 1973 and found that between 1973 and 2004, there have been ten significant maritime lows every year.

3.2.2 Heat island effect

Localised warming, or urban heat island effect, is caused by large paved, concreted areas and dark coloured surfaces. The sun's heat is absorbed by manmade surfaces instead of being reflected by vegetation, resulting in an increase in ambient temperatures.

In Sydney, the coastal sea breeze only reaches to Strathfield and surrounding areas. Any locations further west of this, including the Parramatta region, are particularly at risk of the heat island effect. This, mixed with high density built environment and reduced vegetation cover, results in an urban heat island effect in the region. This can increase background ambient temperatures by 5-10 °C. The risks of rapid development resulting from the construction of PLR Stage 1 will ultimately increase the amount of paved surfaces in the area. Vegetation will be removed through construction, however the design will take into account the urban heat island effect and ensure more vegetation is planted.

3.3 Past climate hazards and weather events

The Parramatta region is within the broader Sydney basin and is subject to a varied range of climatic hazard events such as severe storms and heatwaves. The frequency of hazardous climate events in the Parramatta region is increasing². In recent years this has included storms from ECL resulting in destructive winds, fallen trees and powerlines, power outages, structural damage to houses, buildings

² Parramatta City Council – Climate Extremes Risk Assessment & Adaptation Plan, 2011

and scattered debris. Heavy rain and hail causing flash flooding, road and rail closures and the termination of ferry services due to storm surges.

Over the last few years, four severe storms causing significant damage and impact to the Parramatta region have occurred:

- June 2016 – Extreme storms across the Sydney basin with wild winds and heavy rain causing damage to houses, flash flooding and sea surge, and road closures. Flooding over rail tracks caused service disruptions and ferries were suspended as buses replaced the ferry between Parramatta and Rydalmere. There were reduced services of the Inner West Light Rail services due to problems with the overhead wiring.
- January 2016 - Two days of heavy rain, destructive winds, lightning and severe thunderstorms across Western Sydney. Power lines and trees were brought down across Parramatta and roughly 50,000 homes and businesses across the city and Western Sydney were without power as a result. Wind gusts reached up to 100 km/h with widespread flash flooding. Train lines were closed and the Parramatta ferry terminated at Rydalmere.
- December 2015 - Severe storms and hail across the Sydney basin, with some areas along the coast experiencing winds of up to 200 km/h.
- April 2015 - Severe thunderstorms moving across parts of Sydney and Western Sydney resulting in a downpour of large hailstones. The hail caused five warehouses to collapse in Western Sydney and 50,000 customers were left without power. Train services were also cancelled. The severity and impact of these unpredictable storms on infrastructure is increasing. Previous storm events on record before 2015 occurred in early 2010 and the summer of 2010-2011.

3.3.1 Extreme heat and heatwaves

Heatwaves in the Parramatta region are becoming more frequent with five recorded since January 2013. The longest heat spell recorded in Sydney occurred in March 2016 with 36 days consistently above 26°C. Night temperatures have also been warm with a record of 21 nights consistently above 20°C. This has been exacerbated due to the lack of a coastal sea breeze.

Recent extreme heat events included:

- November 2015 – The second hottest November day in Sydney was 41°C in Parramatta, with heatwave conditions experienced across most of NSW
- November 2014 – prolonged period of heat with temperatures across Sydney reaching 30°C by 9.00am and daily temperatures in Western Sydney reaching 42°C. The high temperatures were accompanied by dry and gusty winds
- May 2014 - A prolonged period of time when unseasonal weather was recorded across the south and south-eastern corridor of Australia. The cause of these varied weather patterns was due to a large high pressure system located over the Tasman Sea. This low pushed down the usual Autumn cold fronts causing Sydney to experience unusually low levels of precipitation and

warmer weather for this time of year with 16 days above 22°C, a record since 1972.

- January 2013 – Sydney experienced its hottest day on record, with the temperature in Parramatta reaching up to 45.6°C. The previous record in Sydney was 45.3°C set in 1939

Having heatwaves in March 2016 and May 2014 suggest that changing weather patterns are now leading to heat events outside of the summer months. A study undertaken by Greening Australia using data from the Bureau of Meteorology (BoM) shows that over the last 40 years Western Sydney has observed a rise in annual temperatures.

A historical maximum daily temperature graph below (Table 3) shows Parramatta’s maximum daily temperatures from 1975 to 2016. The data was collected from the North Parramatta weather station.

Table 3: Historic Daily Maximum temperature - Parramatta

Location	Period (years)	Total days of data	Average days above 35°C/ annum	Average days above 40°C/ annum	Average days above 45°C/ annum	Average heatwave events above 35°C/ annum	Average heatwave events above 40°C/ annum	Average heat wave events above 45°C/ annum
Parramatta	41	15,333	10.9	1.5	0.006	0.03	0.4	0.0
Sydney	106	39,050	3.39	0.48	0.02	0.03	0.01	0.00

3.3.2 Heat island effect

The same study undertaken by Greening Australia concluded a heat island effect is increasingly impacting the Western Sydney region, with the difference between coastal Sydney temperatures and Western Sydney temperatures widening.

Parramatta City Council recently conducted an aerial heat mapping exercise in order to identify and to future mitigate extreme heat pockets. Figure 2 below shows the heat effect within Parramatta CBD.



Figure 2: Parramatta heat map

Much of the PLR Stage 1 corridor has recorded day time surface temperatures above 40°C, as the alignment is within the existing road corridors. Some areas adjacent to the alignment recorded surface temperatures between 49°C and 53°C.

Landscaping and soft ground cover within the PLR Stage 1 design will help to reduce the potential heat island effect. Tree planting will provide shade, which can lead to changes to localised microclimates, lowering temperatures and making the commute for passengers more enjoyable.

4 Methodology

4.1 Overall approach

This climate change risk assessment has been carried out in accordance with the TfNSW Climate Risk Assessment Guidelines (March 2016) ('the TfNSW Guidelines') and in line with the TfNSW SDG v4.0 CR3 requirement – Climate change risk. The climate change risk assessment has also been undertaken in accordance with:

- Australian Standard 2013, *AS 5334 - 2013 Climate change adaption for settlements and infrastructure – A risk based approach*
- Australian Greenhouse Office 2006, *Climate Change Impacts & Risk Management: A Guide for Business and Government*
- Infrastructure Sustainability Council of Australia (ISCA) 2016, *Infrastructure Sustainability Rating Tool Technical Manual: Cli 1 – Climate Risk Management*
- Green Buildings Council of Australia 2015, *Green Star Communities v1 Submission Guidelines: Credit 04: Adaptation and Resilience*

The TfNSW Climate Risk Assessment Guidelines identify five steps to undertaking a climate risk assessment. These are:

- Step 1: Assessing risk exposure
- Step 2: Develop risk statements
- Step 3: Undertake risk assessment
- Step 4: Identify adaptation initiatives
- Step 5: Reassessing risk

4.2 Baseline data

Historical climate data was obtained from the BoM in order to establish a climate baseline for the PLR Stage 1 corridor. The Parramatta North monitoring station located at Masons Drive North Parramatta, provided the best option for data collation as it is in good proximity to the project.

The data collected from BoM included the following:

- Maximum daily temperature
- Highest maximum temperature
- Rainfall
- Wind speed
- Relative humidity
- Solar radiation

NSW and ACT Regional Climate Modelling (NARClIM) data was used as a reference source for the number of hot days (days over 35°C) experienced within the Sydney region.

A summary of the baseline climate data is provided above in Section 3.1, Table 2.

To further understand current climatic conditions, a review of other climate change and environmental risk assessments for the same locality was undertaken. Hazard reporting and the current flood modelling data across the project corridor was also reviewed as part of this assessment. A summary of this information is provided in Section 3.2 above.

4.3 Climate projections

Climate projection data was sourced from the CSIRO's Australian Climate Futures (hereafter referred to as Climate Futures). Climate Futures is an interactive tool which references a range of global and regional climate models as well as statistically downscaled results to determine projection data for a range of climate variables as guided by the user.

Climate Futures uses the four Representative Concentration Pathways (RCPs) adopted in AR5 based on different greenhouse gas (GHG) scenarios. When applied, the RCPs describe four plausible climate futures for the project corridor, changing the levels of greenhouse gasses emissions that could be expected.

The RCPs are:

- RCP 2.6 – assumes global annual GHG emissions (measured in CO₂-equivalents) peak between 2010-2020, and the decline substantially thereafter
- RCP 4.5 – assumes global annual GHG emissions peak around 2040, and then decline
- RCP 6 – assumes global annual GHG emissions peak around 2080, and then decline
- RCP 8.5 – assumes global annual GHG emissions continue to rise throughout the 21st century

Graphs demonstrating the RCP scenarios is provided in Figure 3.

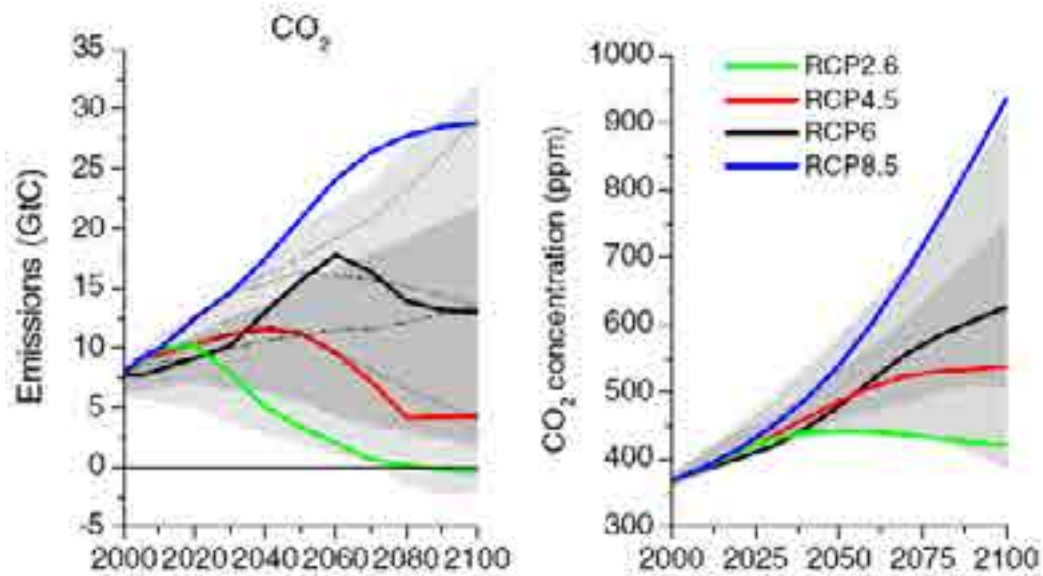


Figure 3: AR5 RCP scenarios

RCP 8.5 was adopted for two chosen time periods, allowing the forecast climate scenarios to demonstrate the higher end of projections that may impact the project. This is a prudent risk management process that allows for more of a precautionary approach to climate adaptation through the design process.

As outlined in Section 2.3, most of the asset components for the project range in design life between 15-50 years, with structural elements typically designed for a 100-year life span. Two time periods, 2030 and 2090, were selected to establish climate scenarios that represent the near-term and long-term design life of the assets components associated with the project.

The Climate Futures Online Projections Builder tool was used to obtain projections for a range of climate variables in order to establish climate scenarios for 2030 and 2090. For each climate variable, the Projections Builder tool calculates projections using the CSIRO chosen reference models and identifies the ‘maximum consensus projection’ which matches with at least 33% of the models and at least 10% more models than any other projection. The results from the Projections Builder tool, are provided in Appendix A and summarised in Table 4 in Section 5.1 below.

The Climate Futures data was selected instead of the NSW and ACT Regional Climate Modelling (NARClM) data as it provides for more preferable time intervals and more detailed projections. However, the projection data for the expected increase in the number of hot days (days over 35°C) was sourced from the online NARClM Climate Data Portal, as this information was not available from the Climate Futures Online Projections Builder tool.

4.4 Sea level rise

The NSW Government’s *NSW Sea Level Rise Policy Statement* (November 2009) was created to predict sea level rises caused by climate change and to inform both local and state future planning for coastal development. The draft policy specifies

NSW's sea level planning benchmarks above 1990 mean sea levels of 0.4 metres by 2050 and 0.9 metres by 2100. At the time, this benchmark was consistent with the upper limit of the IPCC's Fourth Assessment Report (AR4) projections of 0.79 metres global average sea level rise by 2090 to 2099.

In September 2012, the NSW Government abandoned the 2009 *NSW Sea Level Rise Policy Statement* and associated planning benchmarks and encouraged local councils within NSW to adopt local sea level rise projections to provide greater flexibility to local conditions across the state.

The Parramatta City Council *Climate Extremes Risk Assessment and Adaptation Plan* (Parsons Brinckerhoff, 2011), references sea level rise projections from the 2009 *NSW Sea Level Rise Policy Statement*. There is no publically available information to suggest that Parramatta City Council has since developed alternate sea level rise projections. Therefore, for the purposes of this assessment, the sea level rise projections from the 2009 *NSW Sea Level Rise Policy Statement* have been adopted.

4.5 TfNSW Standard

The Asset Standards Authority (ASA) branch of TfNSW has recently issued a standard relating to Ambient Environmental Conditions (March 2017) which provides some guidance on allowances for climate change.

This document defines the ambient environmental conditions that TfNSW heavy and light rail assets, will be designed and subsequently operated to. A number of projections of future environmental conditions are referenced within the document including temperature, wind speed, rainfall and UV radiation levels. These projections will form part of the design requirements for future TfNSW assets and provide mitigation measures for climate change.

4.6 Flooding

A climate change flood impact assessment was carried out for both existing and PLR Stage 1 Scheme models, and a comparative assessment of the relative difference carried out as part of the flooding assessment undertaken for the Environmental Impact Statement (EIS).

The Floodplain Risk Management Guideline – Practical Considerations of Climate Change (DECC 2007) guidance recommends that until further clarity is available on the impact of climate change on rainfall intensity, flood modelling should incorporate sensitivity analyses utilising increases in rainfall intensities of between 10 and 30 per cent.

Given the long design life of the PLR Stage 1 project, the effect of both the upper and lower bound intensity increases were evaluated. The following scenarios were adopted as being representative of the lower and upper bound climate change estimates over the life of the PLR Stage 1 project, and assume a combined increase in rainfall intensity and a rise in the sea levels:

- Scenario 1 (Lower Bound) – 10% increase in rainfall intensity and a 400mm rise in sea level; and
- Scenario 2 (Upper Bound) – 30% increase in rainfall intensity and a 900mm rise in sea level.

In order to assess the climate change impacts on PLR Stage 1 operations, and the sensitivity of the impact assessment to climate change, 1% AEP (Annual Exceedance Probability) and 0.2EY (Exceedances per Year) events (approximately equivalent to 1 in 100 year and 1 in 5 year events respectively) were adopted for analysis.

4.6.1 Changes since EIS

Changes to the PLR Stage 1 alignment have been made subsequent to the EIS. Key changes which influence flood risk, including risks associated with climate change, and should be taken into account if additional climate change risk assessments are undertaken in the future. These changes include:

- An intention from TfNSW to provide an increased level of flood immunity for the PLR. The minimum flood immunity was originally targeted as the 0.2 EY, without consideration of climate change. This has now been modified to the greater target of the 0.2EY with lower bound climate change and the 5% AEP (approximately equivalent to 1 in 20 year event). The implications of providing this increased performance (including requirements for increased drainage infrastructure) throughout the alignment are currently being assessed.
- In connection with the above, the alignment has been elevated through Tramway Avenue to provide enhanced flood immunity.
- Alterations have been made to the alignment in a number of locations as a result of overall design development. These include, but are not limited to the adoption of a flush finish on Church Street through the Parramatta CBD, and modifications to the alignment and urban design through the Parramatta North Urban Transformation (PNUT) area and Hawkesbury Road, Westmead. These have not yet been assessed in terms of flood immunity and flood risk.

5 Climate variables

5.1 Summary of projections

The climate projections for the two scenarios are provided in Table 4 below, alongside the historical baseline climate statistics. For data obtained from the Climate Futures Online Projections Builder tool, the maximum consensus value is presented

Table 4: Climate projections for 2030 and 2090

Climate effect	Period	Baseline	Reported as	RCP 8.5 2030	RCP 8.5 2090
Maximum daily temperature (°C)	Annual	23.3 °C	Absolute change	+1.24	+3.81
	Summer	27.9 °C	Absolute change	+1.04	+3.43
	Autumn	23.6 °C	Absolute change	+1.07	+3.61
	Winter	18.1 °C	Absolute change	+1.64	+4.08
	Spring	23.7 °C	Absolute change	+1.25	+4.21
Highest maximum temperature (°C)	January 2013	45.5 °C	Expected measurement	46.5 °C ³	48.9 °C ⁴
Minimum daily temperature (°C)	Annual	12.2 °C	Absolute change	+1.01	+4.24
	Summer	17.1 °C	Absolute change	+1.14	+4.13
	Autumn	12.9 °C	Absolute change	+1.09	+4.50
	Winter	7.0 °C	Absolute change	+0.98	+4.26
	Spring	11.9 °C	Absolute change	+0.82	+4.15
Lowest temperature (°C)	July 2002	-1.0 °C	Expected measurement	0.02 °C ⁴	-3.26 °C ⁵
Average total rainfall (mm)	Annual	970.6 mm	Percentage change	-11.0	-15.2
	Summer	300.5 mm	Percentage change	-4.1	-6.4
	Autumn	269.8 mm	Percentage change	-2.7	-18.7
	Winter	194.3 mm	Percentage change	-8.5	-11.1
	Spring	206.7 mm	Percentage change	-27.3	-25.3
Average 9am wind speed (km/h)	Annual	7.8 km/h	Percentage change	+0.2	+6.4
Average 3pm wind speed (km/h)	Annual	12.9 km/h	Percentage change	+0.2	+6.4
Average 9am relative humidity (%)	Annual	73 %	Percentage change	-1.4	-4.1

³ Expected measurement based on the addition of summer projection to best represent temperature relevant for maximum temperature period

⁴ Expected measurement based on the addition of winter projection to best represent temperature relevant for lowest temperature period

Climate effect	Period	Baseline	Reported as	RCP 8.5 2030	RCP 8.5 2090
Average 3pm relative humidity (%)	Annual	55 %	Percentage change	-1.4	-4.1
Mean daily solar exposure (MJ/m ²)	Annual	16.2	Percentage change	+1.0	+1.8
				2030	2070
Extreme winds			Percentage change	+3	+>3
Number of days over 35 °C	Annual	10.6 days p.a.	Absolute change	+3.4	+7.4
				2020	2050
Number of days per year with ‘very high’ fire weather (FFDI>25)		7.6 days	Percentage change	4 - 16	9 - 58
Number of days per year with ‘extreme’ fire weather (FFDI>50)		1.2 days	Percentage change	16 - 38	4 - 127
		1990		2050	2100
Sea-level (m AHD)	Permanent	0 m AHD		+0.4	+0.9

6 Climate change risk assessment

6.1 Overview of process and workshop

A project Climate Change risk assessment workshop was hosted by Arup on October 11 2016, with attendees from key design disciplines and stakeholder groups. A list of the workshop attendees is provided in Appendix B.

In the workshop, participants confirmed the asset, maintenance and operational components of the project. Participants were then guided through a series of climate change hazards and risks that may impact the PLR Stage 1 project and assisted in developing specific climate risk statements that were applicable to the project. This resulted in 42 risk statements which were developed for the project that considered impacts to the physical asset components, operation of the light rail and the customer user experience.

Risk ratings were assigned to each statement for both the 2030 and 2090 time periods based on the RCP 8.5 climate projections.

Following the workshop subsequent meetings were then held with each project discipline team to refine the risk statements, confirm the likelihood and consequence ratings for the risks relevant to their discipline in accordance with the TfNSW Enterprise Risk Management assessment criteria, identify and develop potential adaptation measures, and complete a residual risk rating for post adaptation periods 2030 and 2090. The final output of the risk and adaptation assessment is provided in Table 5 below. A full copy of the risk assessment framework, including term definition of likelihood and consequence used to inform the workshop outcomes is provided in Appendix C.

6.2 Risk ratings

Following the identification of potential climate risks undertaken through the workshop process and the subsequent rating of risks in accordance with likelihood and consequence, an appropriate set of adaptation planning and design options were considered.

Actual and proposed adaptation measures against each of the identified risks were discussed with the respective discipline leads to enable the climate risk to potentially be reduced or managed. The identified adaptation planning and design options can be categorised into one of the following:

- Avoiding the risk through strategic planning and delivery
- Accept the risk and continue to manage and budget for it, including consideration of appropriate insurance cover
- Engineered or technical solutions
- Education, awareness and advocacy programs

- Changes to internal systems and procedures, including adaptive management which allows for incremental change in design over time as technology and circumstances change

Through the consultation process with relevant discipline leads, a range of appropriate adaptation measures and strategies that can be employed to manage existing risks from climatic events and the risks that may potentially occur with projected climate change were established.

6.3 Indirect climate risks

Indirect climate change risks are defined as the change of an impact on another system or organisation, which disrupts the direct supply of goods or services that your infrastructure system or organisation critically relies upon, thereby adversely impacting on your system or organisation in accordance with the Cli-1 credit of the IS Rating tool.

The potential for indirect climate risks affecting the project highlight the level of interdependencies between resources and their reliance on one another. A number of indirect climate risks relevant to the project include:

- Disruption to power supply upstream of the alignment as a result of climate variables (storm, wind, heatwave), affecting electricity supply to the project. This has potential to compromise operational aspects of the infrastructure, leading to loss of revenue and inability to provide service to customers
- Storm damage affecting adjacent roadways and junctions. This has the potential knock on effect to disrupt operations of the light rail
- Dry and wet conditions causing sub-surface ground movement impacting underground infrastructure and utilities impacting other third parties

Associated indirect climate risks have been considered and accommodated within the project Climate Change Risk assessment.

7 Climate Change risk assessment results

7.1 Climate risk statements

Relevant climate risk statements were documented for all relevant climate change variables and their associated project hazards. Current controls were discussed with discipline leads to assist in determining initial risk ratings for the 2030 and 2090 projection periods.

Following the discussion and adoption of feasible and practicable adaptation measures, residual risks were re-assessed for the projection periods. For the purpose of this assessment, risk statements relating to assets and services impacted were identified during the workshop. The complete climate risk statement undertaken during the assessment is provided in Appendix C.

Table 5: Measures applied to High risks

Climate risk statement	Adaptation action	Residual Risk (2030)	Residual Risk (2090)
<i>1. Increased frequency and severity of extreme temperature days >35 °C</i>			
Passenger discomfort and health risk at stop and platforms	Consideration of stop location and orientation and appropriate material selection, including minimal glass and passenger amenity (e.g. inclusion of water bubblers and misting fans at appropriate major stop locations) Shelters refurbished every 10 years and adapted to changing temperatures in new design.	Medium	Medium
<i>2. Increased UV radiation</i>			
Increasing passenger discomfort	Shelters refurbished every 10 years and adapted to changing conditions. Consideration of stop orientation and appropriate material selection.	Medium	Medium

Table 6: Climate risk statements

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
Increased frequency, severity and duration of extreme temperatures (days exceeding 35 °C)				
Light rail track – Operations - Passenger services	Buckling of ballasted track causing: <ul style="list-style-type: none"> • potential derailment • disruption to services • increased travel times due to speed restrictions • Increased operation and capital expenditure. 	RailCorp Standards Track (ESC200) temp range -10 °C to 75 °C - operating range of -10 °C to 45 °C- temperatures also impacted by ambient heat from ballast or thermal mass nearby. In extreme temperatures, wires can sag however current designs are able to handle increased temperature much better. Regular maintenance and inspection of tracks required.	Medium	Medium
Light rail track – Operations - Passenger services	Cracking and movement of embedded track causing: <ul style="list-style-type: none"> • potential derailments • disruption to services • increased travel times due to speed restrictions • Increased operation and capital expenditure. 	RailCorp Standards Track (ESC200) temp range -10 °C to 75 °C - operating range of -10 °C to 45 °C- temperatures also impacted by ambient heat from ballast or thermal mass nearby. Regular maintenance and Medium inspection of tracks.	Medium	Medium
Light rail vehicles - passenger services and driver comfort	Extreme heat causing discomfort in trains and/or failure of HVAC systems resulting in: <ul style="list-style-type: none"> • Ill health & passengers discomfort • Reduced patronage • Air conditioning units on trains failing • Driver discomfort - health impacts Heat in carriages may be exacerbated by urban heat island effects.	Designed to temperature increases. LRV designed for 30 year life.	Medium	Medium
Power mains and cables - passenger services - operations including broader transport network impacts	Disruption of electricity supply from the Ausgrid/ Endeavour Energy network through increased network demand or equipment failure causing more frequent and prolonged brownouts/blackouts causing disruption to services and impacts on the broader transport network, or light rail vehicle to be stuck in intersection.	System designed with n-1 contingency - i.e. if one substation fails the system will still have electricity supply. (Any greater system failure would be quite extreme e.g. city blackout type event).	Medium	Medium

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
Signalling and ITC equipment - passengers services and safety - operations	<p>Direct failure of electrical equipment or reduced lifespan including signalling, ITC systems, traction power and overhead wiring due to heat stress resulting in:</p> <ul style="list-style-type: none"> • safety and operational impacts • passenger service delays • Increased maintenance and capital expenditure. 	Current design standards are now able to deal with extreme temperatures. Maintenance and inspection regimes assure conditions of wiring, etc.	Medium	Medium
Structural materials	Fatigue and accelerated degradation of structural materials such as bridges, overhead wiring structures, stop structures resulting in increased operation and capital expenditure.	Structures designed to standards which provide a range of design temperatures catering for a broad range of temperatures	Low	Low
Passenger services	<p>Passenger discomfort and health risk at stops from sun, heat exposure or dehydration during extreme heat events resulting in:</p> <ul style="list-style-type: none"> • health and safety risk to passengers • Reduced patronage. 	Consideration of shading in stop canopy design	Medium	High
Increase in annual average temperature				
Electrical and traction power supply systems and operations	<p>Inefficiency in electrical systems through increased electrical resistance in conductors and greater electrical line losses as a result of increasing average temperatures resulting in:</p> <ul style="list-style-type: none"> • Additional equipment degradation, increased maintenance and electricity procurement costs. 	Change of resistance would be minor and not have a major impact on performance	Low	Low
Soft landscaping - maintenance	Increase in average temperatures resulting in damage or increased maintenance to soft landscaping features	Careful plant selection - more resilient plants/ tree species	Low	Low
Increased frequency and severity of extreme rainfall events				

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
Damage to infrastructure - tracks, pavement and civil infrastructure	Flooding of tracks (including wash out of ballast track, pavement and foundations) from extreme rainfall, blockage or incapacity of drainage to cope with flow or overland flow resulting in damage to infrastructure.	Allowance for increased rainfall intensity to be added where nominated standards have not already made an allowance for climate change-related rainfall.	Low	Medium
Disruption to services - Light Rail operations	Flooding or inundation of track, pavement or civil infrastructure causing disruption to services.	Under existing base case scenario, some areas will be inundated. Under climate change scenarios, this inundation will be exacerbated. Service and operation would need to be reviewed based on case by case scenario	Medium	Medium
Electrical and ITC systems - operations	Flooding or inundation causing damage and disruption to electrical systems and ITC. This includes OHW, signalling, ITC equipment, traction systems and track sensors.	Under existing base case scenario, some areas will be inundated. Climate change scenarios will exacerbate these impacts. Electrical systems can be raised where required	Medium	Medium
Electrical substations - operations	Flooding or water ingress into electrical substations causing system failure	Substations to be located appropriately in consideration of flood modelling. System designed with n-1 contingency - i.e. if one substation fails the system will still have electricity supply.	Medium	Medium
Embankments - safety - operations	Saturation and flooding of embankments and slopes along the route causing ground instability and/or landslides	As majority of route is along existing roads and track would be mostly at grade, there would be limited embankments.	Low	Low
Hard and soft landscape - maintenance	Extreme rainfall or flooding causing washout of soft and hard landscape.	Planting of adaptive landscaping or avoid planting of landscaping in these areas where possible.	Low	Low
Pedestrian underpasses - passenger services	Extreme rainfall may cause flooding of pedestrian underpasses creating safety issues - access issues - increased maintenance.	Under existing base case scenario, some areas will be inundated. Climate change scenarios will exacerbate these impacts. Access to impacted areas to be assessed as part of controls and safety of operations.	Low	Low
Impact on neighbouring properties	PLR related drainage and stormwater systems may become blocked or be unable to manage flow during heavy rainfall events leading to flooding or inundation of neighbouring property/facilities or PLR track and stop infrastructure.	Prescribed blockage factors are currently considered as part of design	Low	Medium

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
Stops - passenger services	Extreme rainfall and flooding may create access issues to raised stops preventing passengers from safely using services.	Under existing base case scenario, some areas will be inundated. Climate change scenarios will exacerbate these impacts. Access to impacted areas to be assessed as part of controls and safety of operations	Low	Low
Passenger services	Reduced comfort or drop in patronage through inadequate protection from rainfall at stops.	Shelter from the elements provided at stops	Medium	Medium
Reductions in average annual rainfall				
Soft landscaping - maintenance	Damage and increased maintenance for soft landscaping due to reduced rainfall.	Appropriate plant selection - more resilient plants/ tree species	Low	Low
Tracks, civil structures, embankments - operations	Movement of ballast and embankments due to soil instability creating disruption to operations or safety risk.	Slab design - built to specifications Roads CBR - strength compactness of soil -pavement strengths	Low	Low
Increased frequency and severity of extreme wind events				
Track, electrical systems - operations - passenger services	Extreme wind events leading to debris, fallen trees and branches creating obstacles or damage to track, overhead lines or associated infrastructure causing disruption and delay to services.	Consideration of tree species, regular maintenance of any foliage/trees adjacent to track alignment and standard setbacks for tree planting	Low	Medium
Electrical systems, OLE - operations - passenger services	High wind events causing damage to the equipment and pantographs resulting in disruption to services and power loss.	OLE designed for up to 130 km/h. System shut down when wind speeds reach above this.	Low	Low
Infrastructure related structures - safety - operations	Extreme wind events causing damage to wind exposed infrastructure e.g. stop structures, signage, noise barriers, solar panels etc.	Infrastructure designed to maximum wind speeds, as per respective guidelines and standards for the structural elements	Low	Low
Operations - customer services	High wind events (over 130 km/h) leading to cessation of operations causing delays or transport disruption to the broader network	System shut down when wind speeds reach above 130 km/h	Medium	Medium
Stop structures - passenger comfort	Wind events (high wind, wind with rainfall, cold days, hot days) leading to impacts to customer comfort at	Shelters which provide protection from the elements are provided at stops	Medium	Medium

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
	stops resulting in passenger discomfort or drop in patronage.			
LRV - safety - operations	High wind events leading to LRVs blowing over.	LRV designed to maximum wind speeds, as per codes, with system shut down when wind speeds reach above 130 km/h	Medium	Medium
Increased frequency and intensity of lightning				
Signalling and ITC - operations - passenger services	Increased lightning causing damage to signalling and ITC resulting in disruption to services and increased maintenance.	No current controls	Low	Low
LV electrical systems - safety - operations - passenger services	Increased lightning causing damage or outage of LV electrical systems resulting in safety risks and disruption to services.	Design for surge arrestors to be installed at intersections with cables and OHW	Low	Low
Bulk power supply systems - operations - passenger services	Increased lightning disrupting bulk power supply to PLR network causing disruption to services.	System designed with n-1 contingency - i.e. if one power station fails the system will still have electricity supply. (Any greater system failure would be quite extreme e.g. city blackout type event).	Low	Low
Increased carbon dioxide (CO₂) levels in the atmosphere				
Civil structures - maintenance	Increased CO ₂ leading to increased carbonation of reinforced concrete through acidification causing cracking and damage to structures.	Structures designed to RailCorp Structures Assessment standards. Monitoring and maintenance programs to inspect concrete structures	Low	Low
Increased annual average ultraviolet (UV) radiation				
Stops - passenger comfort	Increased UV causing passenger discomfort at stops including heat stress & burns	Consideration of shading in stop canopy design	Medium	High
Stops, structures - maintenance	Increased solar radiation leading to accelerated degradation of external materials on stops and other structures.	Structures designed to standards, which provide for a range of weather conditions	Medium	Medium

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
Driver comfort	Increased UV potentially impacting driver comfort/ health (OHS)	LRV designed to codes.	Low	Medium
Incremental sea level rise and increased frequency and severity of storm surge events				
Damage to infrastructure - tracks, pavement and civil infrastructure	Sea level rise and storm surge leading to flooding of track and critical infrastructure resulting in damage to track, critical infrastructure.	Under existing base case scenario, some areas will be inundated. Under climate change scenarios, this inundation will be exacerbated. Operation to critical infrastructure during event of inundation would need to reviewed based on case by case and individual scenarios	Low	Medium
Disruption to services - Light Rail operations	Flooding –resulting in disruption to services.	Under existing base case scenario, some areas will be inundated. Under climate change scenarios, this inundation will be exacerbated. Service and operation would need to reviewed based on case by case scenario	Low	Low
Stormwater drainage systems	Sea level rise and storm events causing damage and inundation to drainage systems.	Prescribed blockage factors are currently considered as part of design	Low	Low
Bridges, structures, embankments	Scouring of structures such as bridge footings and embankments from rising water levels.	Structures designed to standards in terms of durability.	Low	Medium
Ground infrastructure and landscape	Increase in potential acid sulphate soils resulting from rising saltwater levels and inundation.	Potential acid sulphate soils are located within the flood zone and along creek abutments - in particular along Carlingford line. Piling and concrete type will be considered in areas mapped to contain potential acid sulphate soils. Structures designed to standards in terms of durability. Infrastructure would be built up, rather than disturbing potential acid sulphate soils.	Low	Low
Civil works - embankments - safety	Inundation leading to flooding or saturation of embankments and ground conditions	As majority of route is along existing roads and track would be mostly at grade, there would be limited embankments.	Low	Low
Increased risk of bushfires				
Operations - safety - passenger services	Potential increase in bushfire risk adjacent to track in Carlingford resulting in access and safety issues.	Active transport infrastructure located adjacent to rail corridor will add buffer between vegetation and rail	Low	Low

Asset/Service Impacted	Climate risk statement	Current Controls	Initial risk rating (2030 Projection)	Initial risk rating (2090 Projection)
		infrastructure, reducing the risk of safety issues from bushfires. System shutdown during extreme fire events.		
Maintenance	Bushfire risk in Carlingford creating additional maintenance requirements to clear vegetation near tracks.	Active transport infrastructure located adjacent to rail corridor will increase buffer between vegetation/ infrastructure and rail infrastructure.	Low	Low

7.2 Additional flooding impacts

Based on modelled results from the EIS, six areas were shown to have notable changes to flooding as a result of climate change impacts. These climate change impacts were not included in the original climate change risk assessment as this information was not available at the time, but should be included in any future assessments:

- North Parramatta – where flooding is predicted to impact the road carriageway at the sag in Church Street (between Ross Street and Victoria Road) under the 0.2 EY climate change scenario. The increased flood extents are likely due to a combination of both increased rainfall intensity and higher water levels in the receiving watercourse (Brickfield Creek). The sag is completely inundated in the 1% annual exceedance probability (AEP) existing baseline event, therefore the climate change scenario only worsens the predicted depths, rather than impacting on light rail performance.
- Parramatta CBD precinct – where the alignment through the Parramatta CBD precinct is expected to experience slightly higher flood depths throughout the trapped sags in Macquarie Street (near the Harris Street stop) associated with the higher rainfall intensities predicted in each climate change scenario. Sea level rise is predicted to impact part of the alignment along George Street and Alfred Street, with predicted flooding in these areas which are not impacted in both 1% AEP climate change scenarios. Localised sag just south of the intersection of Church Street and Ross Street PLR alignment is predicted to be inundated under the upper bound climate change scenario. This would be for a duration of 10-15 minutes.
- Rosehill and Camellia precincts – these precincts are predicted to be subject to additional flooding issues under the climate change scenarios, primarily driven by sea level rise (and associated increase in peak water levels in the Parramatta River). The Tramway Avenue stop (as presented at EIS) was shown to be inundated to a depth of 300 mm under the 0.2 EY climate change event however the western part of the stop was shown to be dry under the 0.2 EY upper bound climate change scenario
- Tramway Avenue/Arthur Street intersection – the sag point through this intersection (as presented at EIS) was predicted to be inundated to a depth of up to approximately 320mm in the 0.2EY lower bound climate change event. This ponding would occur for a duration of 3-5 hours. Under the lower bound climate change scenario, ponding within the sag remains separated from flooding in the Clay Cliff Creek. In the 0.2EY upper bound climate change scenario, flooding from Clay Cliff Creek begins to interact with flooding in the sag and results in peak depths of approximately 900mm. This ponding would occur for a duration greater than 5 hours.
- Carlingford Precinct - Vineyard Creek, upstream of the bridge, is up to approximately +40mm under the upper bound climate change scenario. This is the result of the rail embankment being raised in the post-construction case relative to the existing, such that flow no longer overtops the embankment as it does under existing conditions. Note that the bridge over Vineyard Creek

has not been explicitly modelled in the Carlingford TUFLOW GPU model and further assessment is required to confirm project impacts at this location
 Carlingford stop – The reduction in peak water level noted in the baseline post-construction case has reduced to < -10mm under the upper bound climate change scenario.

New flooding modelling will be available in 2018, so all future assessments will need to be carried out with the updated data.

7.3 Identified risk summary

Under both the 2030 and 2090 scenarios, the majority of risks were identified as low risk. A breakdown of risks by identified risk type for both the 2030 and 2090 scenarios is provided in Table 7.

Table 7: Breakdown of risk type

Risk Type	2030 Scenario	2090 Scenario
Low	27	21
Medium	15	19
High	0	2

The management and mitigation measures proposed to address potential climate change risks during detailed design are listed in Table 8.

Table 8: Application of mitigation and adaptation measures across the PLR Stage 1 project

REF to EIS	Stage of project	Mitigation Measure	Applicable Precincts
CC-1	Definition design	Climate change risk treatments would be incorporated into the detailed design of the project and supported by an updated climate change risk assessment and a cost-benefit analysis. Treatments could include adaptation strategies as identified in Table 06 above (more detailed information can be found in Table 10.44 of the EIS) and the following additional strategies to respond to identified high risks: Consideration of stop orientation, appropriate materials selection and passenger amenity (e.g. inclusion of water bubblers and misting fans). Refurbishment of shelters every 10 years and adapted to changing climate conditions as required.	All
CC-2	Construction	Construction-related climate change risks (e.g. increased frequency and severity of extreme rainfall events placing increased pressure on construction water quality control measures) would be considered during the development of environmental management measures as part of the CEMP.	All
CC-3	Operations	Operational procedures would be developed and implemented to enable the light rail system to be maintained and managed efficiently in order to appropriately respond to extreme climate events (temperature, winds or rainfall), as identified in the updated climate change risk assessment.	All

8 Summary

This report summarises the outcomes of potential climate change impacts on PLR Stage 1 through completion of a climate change risk assessment. The report demonstrates a rise in climate uncertainty, affecting the future asset.

Considerations to be made through the design stage need to take into account; the rise in temperatures, the increase in the number of heatwaves per year and the potential for flooding. The projections in this report are to 2090, and need to be taken into consideration as the design life of the asset is 100 years.

As there have been changes to the PLR Stage 1 alignment since the release of the EIS, these new factors must be taken into account when future climate change risk assessments are undertaken.

Alterations have been made to the alignment in a number of locations, and as a result, overall design development, such as Tramway Avenue, will provide enhanced flood immunity. These changes to design have not yet been assessed in terms of flood immunity and flood risk.

An updated flood model will be available in early 2018, and must be used in all future climate change assessments. Parramatta River and surrounding areas are located within a flood plain. The design of the asset is set to 5% AEP, approximately a one in twenty flood. This is different to the EIS which works towards a .2 EY, or a one in five year flood. This increase on the EIS target is to add extra protection and to add longevity of the asset, given the location sitting partially within a flood plain and the potential for sea level rise impacts.

Direct climate change impacts (track flooding) and indirect climate change impacts (storm damage cutting electrical power supply to the asset) both need to be taken into consideration when carrying out future climate change risk assessments.

Future climate change assessments will be completed by Contractors. Through interface meetings, mitigation measures across the project will be assessed and risk rated. All risks classed as 'extreme' and 'high' (and in some cases 'medium') must be mitigated through the design process.

Current weather conditions that lead to flooding and heatwaves, are predicted to increase in intensity over the coming years in the Parramatta region due to an increase in temperatures and the number and intensity of storms. Through construction and operations, future climate change assessments will assist in protecting the asset from future extreme weather conditions.

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Appendix A

Climate projection data

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 3

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	ACCESS1-0	Moderate
Worst Case	CanESM2	Moderate
Maximum Consensus	HadGEM2-CC	Low

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Evapotranspiration Annual
Best Case	ACCESS1-0	3.0%
Worst Case	CanESM2	8.4%
Maximum Consensus	HadGEM2-CC	3.9%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 12

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	NorESM1-M	Low
Worst Case	CanESM2	Low
Maximum Consensus	GFDL-ESM2M	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Evapotranspiration Annual
Best Case	NorESM1-M	8.3%
Worst Case	CanESM2	21.6%
Maximum Consensus	GFDL-ESM2M	14.5%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	NorESM1-M	Moderate
Worst Case	NorESM1-M	Moderate
Maximum Consensus	CanESM2	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Humidity Annual
Best Case	NorESM1-M	0.3%
Worst Case	NorESM1-M	0.3%
Maximum Consensus	CanESM2	-1.4%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 15

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	HadGEM2-CC	Moderate
Worst Case	NorESM1-M	Low
Maximum Consensus	ACCESS1-0	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Humidity Annual
Best Case	HadGEM2-CC	-1.2%
Worst Case	NorESM1-M	2.5%
Maximum Consensus	ACCESS1-0	-4.1%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 1

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	NorESM1-M	Moderate
Worst Case	CanESM2	Moderate
Maximum Consensus	GFDL-ESM2M	Low

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Maximum Daily Temperature					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	NorESM1-M	0.61°C	0.73°C	0.52°C	0.67°C	1.09°C
Worst Case	CanESM2	1.37°C	1.61°C	1.78°C	1.78°C	1.49°C
Maximum Consensus	GFDL-ESM2M	1.64°C	1.24°C	1.25°C	1.04°C	1.07°C

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 8

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	NorESM1-M	Low
Worst Case	CanESM2	Low
Maximum Consensus	GFDL-ESM2M	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Maximum Daily Temperature					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	NorESM1-M	2.70°C	2.55°C	2.06°C	2.49°C	2.98°C
Worst Case	CanESM2	4.70°C	5.11°C	6.15°C	4.89°C	4.79°C
Maximum Consensus	GFDL-ESM2M	4.08°C	3.81°C	4.21°C	3.43°C	3.61°C

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

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TITLE: PLR 1

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CNRM-CM5	Moderate
Worst Case	CanESM2	Moderate
Maximum Consensus	MIROC5	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Minimum Daily Temperature					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	CNRM-CM5	0.65°C	0.76°C	0.89°C	1.06°C	0.43°C
Worst Case	CanESM2	1.22°C	1.31°C	1.35°C	1.30°C	1.38°C
Maximum Consensus	MIROC5	0.98°C	1.01°C	0.82°C	1.14°C	1.09°C

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 2

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	NorESM1-M	Low
Worst Case	CanESM2	Low
Maximum Consensus	HadGEM2-CC	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Minimum Daily Temperature					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	NorESM1-M	3.23°C	2.79°C	2.82°C	2.57°C	2.61°C
Worst Case	CanESM2	4.58°C	4.90°C	5.24°C	5.05°C	4.83°C
Maximum Consensus	HadGEM2-CC	4.26°C	4.24°C	4.15°C	4.13°C	4.50°C

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

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TITLE: PLR 2

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CESM1-CAM5	Moderate
Worst Case	NorESM1-M	Moderate
Maximum Consensus	CanESM2	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Rainfall					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	CESM1-CAM5	-3.8%	1.3%	0.8%	-0.8%	6.5%
Worst Case	NorESM1-M	12.8%	3.9%	-4.3%	13.5%	-10.4%
Maximum Consensus	CanESM2	-8.5%	-11.0%	-27.3%	-4.1%	-2.7%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 9

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CESM1-CAM5	Low
Worst Case	NorESM1-M	Low
Maximum Consensus	CNRM-CM5	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Rainfall					
	June - August (JJA)	Annual	September - November (SON)	December - February (DJF)	March - May (MAM)	
Best Case	CESM1-CAM5	-23.5%	2.3%	-5.1%	4.0%	21.7%
Worst Case	NorESM1-M	25.0%	19.1%	35.2%	19.8%	4.4%
Maximum Consensus	CNRM-CM5	-11.1%	-15.2%	-25.3%	-6.4%	-18.7%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CNRM-CM5	Moderate
Worst Case	GFDL-ESM2M	Low
Maximum Consensus	HadGEM2-CC	Low

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Model	Solar Radiation Annual
Best Case	CNRM-CM5 0.8%
Worst Case	GFDL-ESM2M 3.0%
Maximum Consensus	HadGEM2-CC 1.0%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

These results were produced using the Climate Futures Projections Builder, based on the settings selected by the user. It is important to retain a record of those settings.

TITLE: PLR 16

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Rainfall and Mean Surface Temperature

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	HadGEM2-CC	Moderate
Worst Case	GFDL-ESM2M	Moderate
Maximum Consensus	ACCESS1-0	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Solar Radiation
		Annual
Best Case	HadGEM2-CC	1.5%
Worst Case	GFDL-ESM2M	5.6%
Maximum Consensus	ACCESS1-0	1.8%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

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TITLE: PLR

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2030

Climate Futures Classification: Annual Mean Surface Temperature and Wind Speed

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CNRM-CM5	Moderate
Worst Case	GFDL-ESM2M	Low
Maximum Consensus	CNRM-CM5	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Wind Speed Annual
Best Case	CNRM-CM5	0.2%
Worst Case	GFDL-ESM2M	4.8%
Maximum Consensus	CNRM-CM5	0.2%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

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PROJECTIONS BUILDER: RESULTS

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TITLE: PLR 13

REGION: EAST COAST

EMISSIONS SCENARIO: RCP 8.5

TIME SPAN: 2090

Climate Futures Classification: Annual Mean Surface Temperature and Wind Speed

REPRESENTATIVE MODELS

To identify the representative models, all models were ranked using a multivariate statistical technique (Kokic et al., 2002) to identify the model that is the best fit to the settings selected by the user for the Best and Worst cases.

In addition, where possible, the tool identifies the maximum consensus climate future (i.e. the climate future projected by at least 33% of the models and which comprises at least 10% more models than any other).

Case	Representative Model	Consensus
Best Case	CNRM-CM5	Low
Worst Case	GFDL-ESM2M	Moderate
Maximum Consensus	GFDL-ESM2M	Moderate

Table 1: Climate Futures description, consensus rating and representative model for each of the three cases: Best, Worst and Maximum Consensus.

Case	Model	Wind Speed Annual
Best Case	CNRM-CM5	0.5%
Worst Case	GFDL-ESM2M	6.4%
Maximum Consensus	GFDL-ESM2M	6.4%

Table 2: Projected changes for each of the selected variables and seasons for the three cases described in Table 1.

USING THESE PROJECTIONS

In applying these projections to an impact assessment, the results for each case should be used separately, resulting in separate statements of impact for each case.

Important: The projected changes shown in Table 2 are the results from the corresponding climate model as described in Tables 1 and 2. They represent the projected 20-year average change, calculated over the region selected and are calculated relative to the historic reference period 1986 to 2005. The projected changes are influenced concurrently by the long-term climate trend and the decade variability as simulated by the relevant climate model.

Use of these results is subject to the Terms of Use

Appendix B

Workshop attendees

Name	Organisation	Role / Discipline
	Arup	Workshop Chair / Climate Change
	Arup	Climate Change
	Arup	Sustainability
	Arup	Sustainability
	Arup	Sustainability
	Arup	Project Manager
	Arup	Technical Manager
	Arup	Flooding and Drainage
	Arup	Risk
	Arup	Risk
	Arup	Overhead Wiring
Allison Thomas	TfNSW	Sustainability
Dominic Kennedy	TfNSW	Risk
Michael Flynn	TfNSW	Constructability
Mayling Wong	TfNSW	Design Manager
Michael Wortley	TfNSW	Traffic modelling & transport planning
Tim Green	TfNSW	Environment
	Architectus	Urban Design & Landscape
Apologies		
Robin Bradley	TfNSW	Urban Design & Landscape
Anthony Mifsud	TfNSW	Urban Design & Landscape
Jonathan Luey	TfNSW	Project Manager
Rebecca Miller	TfNSW	Sustainability
	SNC Lavalin	Operations
	SNC Lavalin	Operations

Appendix C

Climate risk statements

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
1	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Light rail track - Operations - Passenger services	Buckling of ballasted track causing - potential derailment - disruption to services - increased travel times due to speed restrictions - Increased operation and capital expenditure.	Railcorp Standards Track (ESC200) temp range -10°C to 75°C - operating range of -10°C to 45°C- temperatures also impacted by ambient heat from ballast or thermal mass nearby. Regular maintenance and inspection of tracks.	C - Medium	C - Medium	Improved maintenance regime - consideration of design techniques to reduce track movement - reduction of thermal mass to avoid ambient temperature build up on hot days. Consideration of steel at junctions to support track stability.	C - Medium	C - Medium
2	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Light rail track - Operations - Passenger services	Cracking and movement of embedded track causing - potential derailments - disruption to services - increased travel times due to speed restrictions- Increased operation and capital expenditure.	Railcorp Standards Track (ESC200) temp range -10°C to 75°C - operating range of -10°C to 45°C- temperatures also impacted by ambient heat from ballast or thermal mass nearby. Regular maintenance and inspection of tracks.	C - Medium	C - Medium	Improved maintenance regime - consideration of design techniques to reduce track movement - reduction of thermal mass to avoid ambient temperature build up on hot days.	C - Medium	C - Medium
3	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Light rail vehicles - passenger services & driver comfort	Extreme heat causing discomfort in trains and/or failure of HVAC systems resulting in: - Ill health & passengers discomfort - Reduced patronage - Air conditioning units on trains failing - Driver discomfort - health impacts Heat in carriages may be exacerbated by urban heat island effects.	Designed to temperature increases. LRV designed for 30 year life.	C - Medium	C - Medium	Increased maintenance/ inspections of LRV HVAC systems during prolonged extreme temperatures. Retirement of trains if HVAC system is in failure. Improved glazing specifications - consider passenger controlled doors (avoid all doors opening at every stop)	D - Low	D - Low
4	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Power mains and cables - passenger services - operations including broader transport network impacts	Disruption of electricity supply from the Ausgrid/ Endeavour Energy network through increased network demand or equipment failure causing more frequent and prolonged brownouts/blackouts causing disruption to services and impacts on the broader transport network, or light rail vehicle to be stuck in intersection.	System designed with n-1 contingency - i.e. if one power station fails the system will still have electricity supply. (Any greater system failure would be quite extreme e.g. city blackout type event).	C - Medium	C - Medium	As these tanks are owned and operated by a third party, TfNSW are not able to control the location of these as part of any adaptation measures. Development of an emergency response strategy will ensure risks are minimised in event of possible explosion	D - Low	D - Low

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
5	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Signalling and ITC equipment - passengers services & safety - operations	Direct failure of electrical equipment or reduced lifespan including signalling, ITC systems, traction power and overhead wiring due to heat stress resulting in - safety and operational impacts - passenger service delays- increased maintenance and capital expenditure.	Current design standards are now able to deal with extreme temperatures. Maintenance and inspection regimes assure conditions of wiring, etc.	C - Medium	C - Medium	Monitoring and maintenance programs to be increased in response to changing temperature thresholds.	C - Medium	C - Medium
6	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Structural materials	Fatigue and accelerated degradation of structural materials such as bridges, overhead wiring structures, stops structures resulting in increased operation and capital expenditure.	Structures designed to standards, which provide a range of design temperatures catering for a broad range of temperatures	D - Low	D - Low			
7	Increase in annual average temperature	Electrical and traction power supply systems - operations	Inefficiency in electrical systems through increased electrical resistance in conductors and greater electrical line losses as a result of increasing average temperatures - resulting in additional equipment degradation, increased maintenance and electricity procurement costs.	Change of resistance would be minor and not have a major impact on performance	D - Low	D - Low			
8	Increase in annual average temperature	Soft landscaping - maintenance	Increase in average temperatures resulting in damage or increased maintenance to soft landscaping features	Careful plant selection - more resilient plants/ tree species	D - Low	D - Low			
9	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Operations - safety	Extreme temperatures resulting in explosion risk of storage tanks within vicinity of the rail corridor (location on route).	N/A	C - Medium	B - High	Operator to develop emergency response strategies	C - Medium	C - Medium

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
10	Increased frequency, severity and duration of extreme temperatures (days exceeding 35°C)	Passenger services	Passenger discomfort and health risk at stops from sun, heat exposure or dehydration during extreme heat events resulting in - health and safety risk to passengers - reduced patronage.	Consideration of shading in stop canopy design	C - Medium	B - High	Shelters refurbished every 10 years and adapted to changing temperatures in new design. Consideration of stop location and orientation and appropriate material selection, including minimal glass.	C - Medium	C - Medium
11	Increased frequency and severity of extreme rainfall events	Tracks, pavement and civil infrastructure - operations - customer service	Flooding of tracks (including wash out of ballast track), pavement and foundations from extreme rainfall, blockage or incapacity of drainage to cope with flow - or overland flow from other locations resulting in disruption to services and damage to infrastructure.	Current controls to be implemented based on flood modelling. Allowance for increased rainfall intensity to be added where nominated standards have not already made an allowance for climate change related rainfall.	D - Low	C - Medium	Base level track and track drainage systems designed for increase in rainfall intensity i.e. increased pipe size to cater for increased runoff.	D - Low	D - Low
12	Increased frequency and severity of extreme rainfall events	Light Rail depot - operations	Flooding or inundation of light rail depot causing damage to facility and disruption to services.	Current controls to be implemented based on flood modelling.	D - Low	D - Low	Depot site to be raised and made flood tolerant if thought to be an issue following completion of flood modelling e.g. all electrical equipment raised / put in control room above stabling yards etc. Locations would be identified on the light rail network where LRV could be parked in event of stabling yards flooding.		
13	Increased frequency and severity of extreme rainfall events	Electrical and ITC systems - operations	Flooding or inundation causing damage and disruption to electrical systems and ITC. This includes powerlines, signalling, ITC equipment, traction systems and track sensors.	Current controls to be implemented based on flood modelling	C - Medium	C - Medium	Drainage systems designed for increase in rainfall intensity. Equipment to be raised where possible. Sensitive equipment to be protected from rain/flood exposure.	D - Low	D - Low
14	Increased frequency and severity of extreme rainfall events	Electrical substations - operations	Flooding or water ingress into electrical substations causing system failure	Current controls to be implemented based on flood modelling. Substations to be located appropriately in consideration of flood modelling. System designed with n-1 contingency - i.e. if one power station fails the system will still have electricity supply.	C - Medium	C - Medium	Substations to be raised and made flood tolerant if thought to be an issue following completion of flood modelling.	D - Low	C - Medium

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
15	Increased frequency and severity of extreme rainfall events	Embankments - safety - operations	Saturation and flooding of embankments and slopes along the route causing ground instability and/or landslides	As majority of route is along existing roads and track would be mostly at grade, there would be limited embankments. Flood modelling would identify where there may be potential problems.	D - Low	D - Low			
16	Increased frequency and severity of extreme rainfall events	Hard and soft landscape - maintenance	Extreme rainfall or flooding causing washout of soft and hard landscape.	Flood modelling would identify where there may be potential problems and landscaping adapted or avoided in these areas where possible.	D - Low	D - Low			
17	Increased frequency and severity of extreme rainfall events	Pedestrian underpasses - passenger services	Extreme rainfall may cause flooding of pedestrian underpasses creating safety issues - access issues - increased maintenance.	Current controls to be implemented based on flood modelling.	D - Low	D - Low			
18	Increased frequency and severity of extreme rainfall events	Drainage and stormwater systems - operations	PLR related drainage and stormwater systems may become blocked or be unable to manage flow during heavy rainfall events leading to flooding or inundation of neighbouring property/facilities or PLR track and stop infrastructure.	Current controls to be implemented based on flood modelling, which considers prescribed blockage factors.	D - Low	C - Medium	Drainage systems designed for increase in rainfall intensity i.e. increased pipe size to cater for increased runoff. Sensitivity tests to be prescribed as a contractor Scope and Performance Requirement (SPR).	D - Low	C - Medium
19	Increased frequency and severity of extreme rainfall events	Stops - passenger services	Extreme rainfall and flooding may create access issues to raised stops preventing passengers from safely using services.	Current controls to be implemented based on flood modelling.	D - Low	D - Low			
20	Increased frequency and severity of extreme rainfall events	Track, infrastructure and operations near Camellia	Proposals to raise land and levels around Camellia may create additional flooding risk to the proposed route track, infrastructure and operations.	Current controls to be implemented based on flood modelling.	D - Low	D - Low			
21	Increased frequency and severity of extreme rainfall events	Passenger services	Reduced comfort or drop in patronage through inadequate protection from rainfall at stops	Shelters designs to fit 20-30 people	C - Medium	C - Medium	Shelters refurbished every 10 years and adapted to changing weather patterns.	C - Medium	D - Low

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
22	Reductions in average annual rainfall	Tracks, civil structures, embankments - operations	Movement of ballast and embankments due to soil instability creating disruption to operations or safety risk.	Road / pavement slabs are designed and built to specifications considering strength / compactness of soil. Road / pavement is upgraded every 20 years	C - Medium	C - Medium	Implementation of more regular maintenance/ monitoring programs, including review of subgrade conditions and road deterioration. Embankments to be designed in consideration of climate change related soils issues.	D - Low	D - Low
23	Reductions in average annual rainfall	Soft landscaping - maintenance	Damage and increased maintenance for soft landscaping due to reduced rainfall	Careful plant selection - more resilient plants/ tree species	D - Low	D - Low			
24	Increased frequency and severity of extreme wind events	Track, electrical systems - operations - passenger services	Extreme wind events leading to debris, fallen trees and branches creating obstacles or damage to track, overhead lines or associated infrastructure causing disruption and delay to services.	Consideration of tree species	D - Low	C - Medium	Possible replacement of deciduous trees with other species in sensitive areas e.g. on gradients/ in shared areas. Active management & increased maintenance schedule. First tram of the day to run without passengers to test safety of track.	D - Low	D - Low
25	Increased frequency and severity of extreme wind events	Electrical systems, OHW - operations - passenger services	High wind events causing damage to overhead wiring and pantographs resulting in disruption to services and power loss.	OHW designed for up to 130 km/h. System shut down when wind speeds reach above this.	D - Low	D - Low			
26	Increased frequency and severity of extreme wind events	Infrastructure related structures - safety - operations	Extreme wind events causing damage to wind exposed infrastructure e.g. stop structures, signage, noise barriers, solar panels etc.	Infrastructure designed to maximum wind speeds, as per guidelines and standards.	D - Low	D - Low			
27	Increased frequency and severity of extreme wind events	Operations - customer services	High wind events (over 130 km/h) leading to cessation of operations causing delays or transport disruption to the broader network	System shut down when wind speeds reach above 130 km/h	C - Medium	C - Medium		#N/A	#N/A
28	Increased frequency and severity of extreme wind events	Stop structures - passenger comfort	Wind events (high wind, wind with rainfall, cold days, hot days) leading to impacts to customer comfort at stops resulting in passenger discomfort or drop in patronage.	Shelters designs to fit 20-30 people	C - Medium	C - Medium	Shelters refurbished every 10 years and adapted to changing weather patterns.	C - Medium	D - Low
29	Increased frequency and severity of extreme wind events	LRV - safety - operations	High wind events leading to LRV blowing over.	LRV designed to maximum wind speeds, as per codes. System shut down when wind speeds reach above 130 km/h	C - Medium	C - Medium	Weighting and design of trains for stability considered in procurement.	C - Medium	C - Medium

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
30	Increased frequency and intensity of lightning	Bulk power supply systems - operations - passenger services	Increased lightning disrupting bulk power supply to PLR network causing disruption to services.	System designed with n-1 contingency - i.e. if one power station fails the system will still have electricity supply. (Any greater system failure would be quite extreme e.g. city blackout type event).	D - Low	D - Low	Planning preparedness response, Basic emergency ma engagement. Organisational arrangements.	#N/A	#N/A
31	Increased frequency and intensity of lightning	Signalling and ITC - operations - passenger services	Increased lightning causing damage to signalling and ITC resulting in disruption to services and increased maintenance.		D - Low	C - Medium			
32	Increased frequency and intensity of lightning	LV electrical systems - safety - operations - passenger services	Increased lightning causing damage or outage of LV electrical systems resulting in safety risks and disruption to services.	Design for surge arrestors to be installed at intersections with cables and OHW	D - Low	D - Low			
33	Increased carbon dioxide (CO2) levels in the atmosphere	Civil structures - maintenance	Increased CO2 leading to increased carbonation of reinforced concrete through acidification causing cracking and damage to structures.	Structures designed to standards. Monitoring and maintenance programs to inspect concrete structures	D - Low	D - Low			
34	Increased annual average ultraviolet (UV) radiation	Stops - passenger comfort	Increased UV causing passenger discomfort at stops including heat stress & burns	Consideration of shading in stops canopy design	C - Medium	B - High	Shelters refurbished every 10 years and adapted to changing conditions. Consideration of stop orientation and appropriate material selection.	C - Medium	C - Medium
35	Increased annual average ultraviolet (UV) radiation	Stops, structures - maintenance	Increased solar radiation leading to accelerated degradation of external materials on stops and other structures.	Structures designed to standards, which provide for a range of weather conditions	C - Medium	C - Medium	Stops refurbished every 10 years. Monitoring and maintenance programs to be increased in response to changing conditions.	D - Low	D - Low
36	Increased annual average ultraviolet (UV) radiation	Driver comfort	Increased UV potentially impacting driver comfort/ health (OHS)	LRV designed to codes.	D - Low	C - Medium	Application of UV films on LRV windows. Back cab to be cooled when not in use - so when driver changes ends the cab is already cool. Potential for use of black fabric screening in extreme conditions.	D - Low	D - Low
37	Incremental sea level rise and increased frequency and severity of storm surge events	Track, critical infrastructure - operations - passenger services	Sea level rise and storm surge leading to flooding of track and critical infrastructure resulting in damage to track, critical infrastructure and disruption of services.	Current controls to be implemented based on flood modelling. Allowance for sea level rise to be added where nominated standards have not already made an allowance for climate change.	D - Low	C - Medium	Base level track and track drainage systems designed for increase in rainfall intensity i.e. increased pipe size to cater for increased runoff. Equipment to be raised where possible at locations.	D - Low	C - Medium

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
38	Incremental sea level rise and increased frequency and severity of storm surge events	PLR depot - operations	Flooding and damage to depot - disruption to services.	Current controls to be implemented based on flood modelling.	D - Low	D - Low			
39	Incremental sea level rise and increased frequency and severity of storm surge events	Stormwater drainage systems	Sea level rise and storm events causing damage and inundation to drainage systems.	Current controls to be implemented based on flood modelling, which considers prescribed blockage factors.	D - Low	D - Low			
40	Incremental sea level rise and increased frequency and severity of storm surge events	Bridges, structures, embankments	Scouring of structures such as bridge footings and embankments from rising water levels.	Structures designed to standards in terms of durability.	D - Low	C - Medium	Monitoring and maintenance programs to be increased in response to changing water levels.	D - Low	D - Low
41	Incremental sea level rise and increased frequency and severity of storm surge events	Ground infrastructure and landscape	Increase in potential acid sulphate soils resulting from rising saltwater levels and inundation.	Potential acid sulphate soils are located within the flood zone and along creek abutments - in particular along Carlingford line. Piling and concrete type will be considered in areas mapped to contain potential acid sulphate soils. Structures designed to standards in terms of durability. Infrastructure would be built up, rather than disturbing potential acid sulphate soils.	D - Low	D - Low			
42	Incremental sea level rise and increased frequency and severity of storm surge events	Civil works - embankments - safety	Inundation leading to flooding or saturation of embankments and ground conditions	As majority of route is along existing roads and track would be mostly at grade, there would be limited embankments. Flood modelling would identify where there may be potential problems.	D - Low	D - Low			
43	Increased risk of bushfires	Operations - safety - passenger services	Potential increase in bushfire risk adjacent to track in Carlingford and Sydney Olympic Park sections resulting in access and safety issues.	Active transport infrastructure located adjacent to rail corridor will add buffer between vegetation and rail infrastructure, reducing the risk of safety issues from bushfires. System shutdown during extreme fire events.	D - Low	D - Low			

ID	Hazard	Asset / service impacted	Climate risk statement	Current controls	2030 Climate projection RCP8.5	2090 Climate projection RCP8.5	Adaptation measure(s)	Residual rating post adaptation 2030 RCP8.5	Residual rating post adaptation 2090 RCP8.5
					Risk	Risk		Risk	Risk
44	Increased risk of bushfires	Maintenance	Bushfire risk in Carlingford and Sydney Olympic Park sections creating additional maintenance requirements to clear vegetation near tracks.	Active transport infrastructure located adjacent to rail corridor will increase buffer between vegetation/ infrastructure and rail infrastructure.	D - Low	D - Low			

Transport for NSW

Parramatta Light Rail

PLR Stage 1: Definition Design -
Energy and Carbon, Water &
Materials Estimates Report

PLR-ARA-SN-0000-RPT-00003

Issue | 8 January 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 250297

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Appendices

Appendix A

ISCA Base Case Framework

Appendix B

Base Case and Design Case Footprinting Calculations

1 Introduction

1.1 Purpose of this report

This report sets out an assessment of the Parramatta Light Rail (PLR) Stage 1 Definition Design in terms of its performance against the energy and carbon, materials and water credits and requirements within both the Infrastructure Sustainability Council of Australia's (ISCA's) Infrastructure Sustainability (IS) Rating Scheme, the TfNSW Sustainable Design Guidelines (SDGs) Version 4.0, and the Environmental Impact Statement (EIS).

PLR Stage 1 consists of four different works packages;

- Early Works – Remediation of Camellia depot
- Enabling Works - Managing traffic flow and access around the alignment, majority of the works focusing around the closures of Macquarie and Church Streets
- Infrastructure (INF) – Demolition and construction of the alignment, and
- Supply, Operate and Maintain (SOM) – Construction of stops, the Stabling and Maintenance (SaM) facility, and the maintenance of the SaM and asset.

An ISCA IS Rating is only required for three of these contracts; Enabling, Infrastructure and SOM. Whilst this report covers the entire project, each of the three contracts will be required to complete their own footprinting calculations specific to each works package to form part of their ISCA submission.

The ISCA credits addressed in this report include:

- Energy and carbon monitoring and reduction (ENE-1);
- Use of renewable energy (ENE-2);
- Water use monitoring and reduction (WAT-1);
- Replace Potable Water (WAT-2); and
- Materials lifecycle impact measurement and reduction (MAT-1).

The following are the targeted performance levels to be achieved by the three works packages within the PLR Stage 1 for each of the ISCA credits listed above:

- Level 2 for ENE-1: ‘Energy and carbon monitoring and reduction’ demonstrating a greenhouse gas emissions reduction of 10% below a base case footprint (15% - INF and 20% SOM)
- Level 1 for ENE-2: ‘Use of Renewable Energy’ - INF and SOM contracts only
- Level 2 for WAT-1: ‘Water Use monitoring and reduction’ demonstrating a reduction in water use of 15% compared to a base case footprint (10% EW, 15% INF and 20% SOM)
- Level 2 for WAT-2: ‘Replace potable water’ demonstrating that at least 50% of water used is from non-potable sources (INF and SOM only); and
- Level 2 for MATt-1: ‘Materials lifecycle impact measurement and reduction’ demonstrating a 15% reduction in materials lifecycle impacts (20% SOM) compared to a base case footprint

The SDG’s Compulsory Requirements (CR) that are required for some or all of the PLR three work packages and which are addressed in this report include:

- Construction Greenhouse Gas Emissions (CR-1);
- Operational Energy (CR-2);
- Construction Water (CR-7); and
- Operational Water (CR-8).

1.2 Scope and limitations

The project boundary for this analysis is PLR Stage 1. The time period of assessment includes construction (estimated to be 3 years) and the design life, which is expected to be 100 years. This period is considered to constitute the ‘whole of life’ of the project. Further information on design life assumptions can be found in Section 2.1.1 below.

The inputs and outputs for this analysis are prescribed by the carbon and energy, water and materials calculation tools described in Sections 3.2, 4.2 and 5.2 respectively.

The analysis was carried out at a relatively early stage in design. Data for both the Base Case and Design Case was collected in November and December of 2016 and was further revised in November 2017, imposing limitations on the footprint analysis including:

- A range of assumptions have been made to support the analysis which may change as the project progresses (e.g. purchase of renewable energy offsets). It is likely that changes to these assumptions will change the outcomes of the carbon and energy, water and materials footprints.
- Data availability has been limited to a narrower range of inputs than will be available at future project stages. Key data gaps at the time of preparation of this report include light rail vehicle (LRV) materials, vegetation clearing and land use change, on-site materials transport, anticipated gas use at the Stabling & Maintenance Facility (SaM) and quantities for a range of construction materials including steel pipe, HDPE pipes, aluminium, glass, timber, plastic sheet and film, composites, coatings and finishes, water treatment chemicals and ceramics. It is anticipated that this data will be incorporated in future footprint reporting for each individual works package by the Contractors.

The level of confidence in the quantities quoted may be considered generally consistent with the project costings given that the data has been sourced from the same design information. On-going refinement of quantities is anticipated during future project stages and will inform future footprint reporting. Future footprint reporting will be completed by the Contractors.

2 Methodology

This section provides an overview of the methodology employed to calculate the energy and carbon, materials and water footprints for construction and operation of PLR Stage 1 for both the ISCA Base Case Design and the Definition Design. This includes descriptions of:

- the key distinguishing features of both the ISCA Base and Definition Design Cases;
- the design life assumptions employed;
- an overview of the calculators used to generate each footprint; and
- an overview of how the outcomes of the footprint analyses for the ISCA Base and Definition Design Cases were compared, and their performance against the relevant ISCA IS Rating Tool and TfNSW SDGs credits.

More specific methodological information about calculations for energy and carbon, water and materials can be found in Sections 3, 4 and 5 below.

2.1.1 Defining the ISCA Base Case and Definition Design Case

The PLR Stage 1 Definition Design has been assessed relative to a Base Case design defined at the Pre-Concept Design stage with the ‘Business As Usual’ (BAU) technologies identified.

The Base Case was agreed in discussion with designers, consultants and estimators working on the project and in consultation with ISCA. Wherever possible, Base Case assumptions were based on existing designs for the project. Where information about the current project was unavailable, Base Case assumptions were made using information drawn from other light rail projects in NSW, Queensland and the ACT. Additionally, Base Case information was found in standards that are relevant to light rail and infrastructure projects in New South Wales (e.g. Roads and Maritime QA Specification B80 Concrete Work for Bridges). Information about assumptions and justifications used for these calculations can be found in the Base Case Framework document (Appendix A).

Base Case inputs were established using the footprint calculation tools described in Section 2.1.2, the ISCA IS Rating Tool credits and the TfNSW SDGs. Requirements for this footprinting report is addressed in the introduction to this report and includes footprints for both the construction and operational phases of the project.

The sustainability measures constituting the Definition Design Case were separately defined and can be found listed in Section 3.3. The Definition Design Case was decided in discussion with designers, consultants and estimators. Sustainability measures which differentiate the Definition Design Case from the ISCA Base Case were proposed by designers and consultants, and were informed by current design decisions and project requirements, industry best practices, credits and requirements for both the IS Rating Scheme and SDGs and industry standards.

2.1.1.1 Design Life Assumptions

A review of the project design in conjunction with the PLR Stage 1 project team identified the physical and operational components that contribute to the overall ability of the asset to perform its primary function. Expected design life was determined for each asset component in order to determine the relevant calculation period for project operations a 100-year lifecycle. The key component types and anticipated design life are listed below.

Table 1: Project components

Component type	Anticipated design life
Light rail tracks, turnouts and crossings	40 years
Light rail vehicles	30 years
Major civil and structural elements (foundations, bridges, viaducts, tunnels, retaining structures, culverts, embankments etc.)	100 years
Stop structural elements (pre-cast and cast concrete and load bearing masonry and steel canopy structures)	50 years
Stop furniture, fittings and fencing	20 years
Road pavements, car parking surfaces, external paving, footpaths, shared paths and hard landscaping features	30 years
Noise barrier and acoustic panels	30 years
Electrical supply and traction power supply systems, transformers, main distribution boards, switches and control systems	30 years
Low voltage switchboards, lighting fixtures, conduits, cabling and electrical systems, solar PV	30 years
Rail telecommunication systems	30 years
Signalling and LRV location systems and wayside equipment	20 years
Substations and ancillary building structural elements	30 years
Ticketing systems – structures, gantries and other equipment	40 years

Drainage and floor protection, including associated structures/tanks etc.	50 years
Hard landscaping	20 years
LRV wash slab, structure, drainage systems, tanks and sumps	50 years
LRV wash unit, controls and water treatment system	15 years
Other major SaM plant	30 years
Rail maintenance vehicle	15 years
Stabling & Maintenance Facility	50 years
Soft landscaping	15 years

2.1.2 Energy and Carbon, Materials and Water Calculators

The calculators used for this project were:

Energy and Carbon

- Construction – TfNSW’s Carbon Estimation and Reporting Tool (CERT) for construction
- Operation – Arup bespoke carbon emissions calculator for operations

Water

- Construction – Arup bespoke water balance calculator for construction
- Operations – Arup bespoke water balance calculator for operations

Materials

- Construction – ISCA IS Materials Calculator

The calculators were used to establish an energy and carbon, water and materials footprint for both the ISCA Base Case and Definition Design Case.

ISCA’s IS Materials Calculator must be used for credit MAT-1, however inputs and assumptions for materials differ from the CERT tool, and these differences will be explored as the analysis progresses.

The weightings assessment that form part of the ISCA score calculation has not been verified by ISCA. Scores are therefore subject to change.

2.1.3 Evaluating performance

The analyses carried out to create the carbon and energy, water, and materials footprints allow the project to address several IS Rating Tool credits and SDG requirements (ENE-1, ENE-2, WAT-1, WAT-2, MAT-1 for ISCA and CR-1, CR-2, CR-7 for TfNSW’s SDGs). Sections 3, 4 and 5 below give further detail on how each footprint analysis meets these requirements.

Comparisons of the footprints for the ISCA Base Case and Definition Design Case have been prepared to evaluate the sustainability performance at Definition Design stage, demonstrating a reduction in construction and operational carbon emissions, water use and embodied impacts associated with materials and resources used. Percentage reductions from the ISCA Base Case to the Definition Design Case for the different footprints have been calculated and used to determine the performance level of the project against each of the relevant IS Rating Tool and SDG credits/requirements to which they relate. The outcomes of this comparison are presented in Table 2 and Table 3

Table 2: PLR carbon, energy and materials sustainability performance at Definition Design

Credit/ Requirement	ISCA Base Case Footprint	Definition Design Footprint	Relative improvement on the Base Case	ISCA IS Rating/TfNSW SDG benchmark achieved for PLR Stage 1	Work Package Targets (reduction on BAU)
ISCA IS Rating Credits					
Energy and carbon monitoring and reduction (ENE-1),	760,718.56 tCO ₂ -e	724,061.16 tCO ₂ -e	37,165 tCO ₂ -e reduction 5.91% reduction	3.20 points Level 1	10% - EW 15% - INF 20% SOM
Use of renewable energy (ENE-2)	760,718.56 tCO ₂ -e	692,200tCO ₂ -e (emissions after PV installation)	30,100 tCO ₂ -e reduction 4.17% reduction	0.64 points Level 1	No target set
Materials lifecycle impact measurement and reduction (MAT-1)	33,191.10tCO ₂ -e	26,633.70tCO ₂ -e	6557.40 t CO ₂ -e reduction 6.2% reduction	2.99 points Level 1	No target set for EW 15% - INF 20% - SOM
TfNSW SDGs					
Construction Greenhouse Gas Emissions (CR-1)	5,227.46 tCO ₂ -e	5,227.46tCO ₂ -e	0 tCO ₂ -e 0%	No Performance Level achieved (no points achieved)	10% - EW 15% - INF 20% - SOM
Operational Energy (CR-2) **NB. Boundary of operational energy footprint doesn't match boundary as defined in SDG	722,300tCO ₂ -e	722,300tCO ₂ -e	0 tCO ₂ -e reduction 0% reduction	No points achieved (reductions through use of renewable energy cannot be considered for this credit)	No target set

Table 3: PLR water sustainability performance at Definition Design

Credit/Requirement	Infrastructure lifecycle water demand (base case)	Infrastructure lifecycle water demand (design case)	Relative improvement on the Base Case	ISCA IS Rating achieved for PLR Stage 1	Work Packages Sustainability Targets (reduction on BAU)
Water use monitoring and reduction (WAT-1)	827,620kL	827,620kL	0% reduction	2.14 points Level 1 achieved	10% - EW 15% - INF 20% SOM
Credit/Requirement	Infrastructure lifecycle potable water demand (base case)	Infrastructure lifecycle potable water demand (design case)	Relative improvement on the Base Case	ISCA IS Rating achieved for PLR Stage 1	
Replace Potable Water (WAT-2),	792,447.5kL	127,260.75 kL	665,186.25 kL 84% reduction	2.97 points Level 2.5	No set target – EW 50% - INF 50% - SOM
TfNSW SDGs					
Credit/Requirement	Total construction water demand	Total non-potable water sourced for construction	Percentage improvement replacing potable water with non-potable	TfNSW SDG Benchmark achieved for PLR Stage 1	
Construction Water (CR-7)	47,690 kL	31,590kL	66 %	P5	
Credit/Requirement	Total operational water demand	Reduction in water usage for operational water demand	Relative improvement on the Base Case	TfNSW SDG Benchmark achieved for PLR Stage 1	
Operational Water (CR-8)	779,930kL	779,930kL	0	P1 achieved (minimum requirement of water benchmarking study being undertaken met)	

3 Energy and Carbon

3.1 Introduction

This section addresses the energy and carbon performance of the project. The anticipated project energy consumption and associated carbon emissions for both construction and operation of the PLR Stage 1 was required to address the following ISCA Rating Tool and SDG credits/requirements:

- Energy and carbon monitoring and reduction (ENE-1): To meet the requirements of this credit monitoring and modelling of the energy use and associated Greenhouse Gas emissions across the asset lifecycle must be undertaken in order to establish a Carbon and Energy Footprint. Extra points can be obtained where benchmark reductions in emissions from the Base Case to Design Case are demonstrated as set by ISCA.
- Use of renewable energy (ENE-2) – To meet the requirements of this credit, opportunities for use of renewable energy must be fully investigated. Extra points can be obtained for substitution of energy from renewable sources up to 40%.
- Construction Greenhouse Gas Emissions (CR-1): To meet this requirement a project must reduce its construction related GHG emissions by a minimum 5% from the project baseline GHG footprint. Extra points can be obtained where benchmark reductions in emissions from the Base Case to Design Case beyond the minimum 5% are demonstrated.
- Operational Energy (CR-2): To meet this requirement covered / uncovered areas of building-related assets and enclosed buildings must be designed and built to reduce energy consumption. Extra points can be obtained where benchmark reductions in emissions from the Base Case to Design Case are demonstrated.

3.2 Methodology

3.2.1 Overview

This section describes the methodology for establishing the energy and carbon performance of the project, including the approaches adopted to calculate the construction and operational carbon footprints for the ISCA Base Case and Definition Design Case.

3.2.2 Scope

Scope 1 emissions are emissions from sources owned or controlled by the project or organisation. Scope 2 emissions are emissions from the consumption of purchased electricity, steam or other sources of energy. Both Scope 1 and Scope 2 emissions have been calculated for construction, operation and maintenance of the

project, for both the Base Case and for the Definition Design Case based on high level assumptions and early design decisions.

Scope 3 emissions are a consequence of the operations of the project or organisation, but are not directly controlled by the project or organization. Scope 3 emissions from materials and transportation of materials to site used during the project's construction have also been calculated and included in the carbon footprint.

Activities considered to be material and therefore incorporated in the footprint calculations include:

- stationary energy use
- mobile energy use
- fugitive emissions
- waste disposal and treatment
- wastewater treatment
- land use changed/vegetation clearing
- materials (addressed in more detail in the Section 5, below).

PLR Stage 1 is a transport infrastructure project that does not contain any industrial processes or larger scale fossil-fuelled power-generation so there are no sources of fugitive emissions. Additionally, there are no material emissions from wastewater treatment. As such, these items are not included in the carbon footprint calculations. Finally, as decommissioning of the project is not anticipated, emissions from the decommissioning process are not considered in this assessment. Carbon emissions associated with ongoing maintenance and refurbishment are included.

3.2.3 Construction carbon footprinting methodology

Calculator

The TfNSW Carbon Estimation and Reporting Tool (CERT) was employed to calculate the project's construction carbon footprint. The CERT is a calculator created by TfNSW for use on projects over \$15 million in order to report and manage energy use and emissions for these projects, and must be used in order to meet requirements in the TfNSW SDGs (Version 4.0). Emissions factors and other data are listed in the calculator and are sourced from the Australian Life Cycle Assessment Society, Australian National Greenhouse Accounts, and Transport Authorities Greenhouse Group Australia and New Zealand's Greenhouse Gas Assessment Workbook for Road Projects. Using these emissions factors and input data on construction energy and fuel, CERT calculates t CO₂-e for the project's construction energy, and any reductions in emissions from reduced energy use or other mitigation measures such as use of lower embodied carbon materials.

Data sources

Materials

Quantities (tonnes or cubic metres) and types of materials used, as well as material transportation types and distances, were required in order to calculate embodied energy emissions for materials for both Base Case and Definition Design Case. This information was collected through consultation with the TfNSW Constructability Team and Infrastructure Technical Advisor (ITA) designers, who provided high level estimates of materials quantities and types, or the nearest proxy, from the lists contain in the CERT, along with justification for these assumptions. Definition Design estimates were based on the measures designers anticipate being adopted to reduce materials use and/or to reduce the embodied impacts of materials used (e.g. through selection of industrial by-products or recycled materials). In some cases, quantities provided were converted to the unit of measurement in the CERT.

Stationary energy use

Estimates were obtained through discussion with TfNSW's Constructability Team, who provided assumptions about energy use during construction based on experience with previous, similar projects, and current planning for roll out of the PLR Stage 1. The Constructability Team provided data on the number of temporary onsite office sites anticipated during construction, estimated rates of energy consumption, numbers of sites anticipated to use grid energy and those using on-site generators, and fuel consumption rates for generators. Consumption of grid energy was estimated using proxies for small office rates of consumption, and data on diesel fuel consumption was converted using unit energy density factors from the NSW Department of Primary Industries and Science. This data was input into the CERT to provide stationary energy use during construction.

Vegetation clearing and land use change

The CERT has the capability to calculate emissions associated with vegetation clearing and land use change. However, at the time of writing this report this data was not available and had to be omitted from carbon footprint calculations.

3.2.4 Operational carbon footprinting methodology

Calculator

TfNSW is currently developing an updated version of the CERT which will incorporate the operational carbon footprint of a project. At the time of writing this tool was not available for application on projects. To address this gap, Arup has developed an operational energy and carbon calculator for the project. Emissions factors for this calculator have been taken from the Australian National Greenhouse Accounts, updated with the most recent relevant factors for NSW. Required input data for this calculator included SaM and light rail stops energy use, light rail and operational energy use.

Data sources

Estimates of operational energy were collected through consultation with the Operations and Fleet Advisor, who provided estimates based on experience with other, similar light rail projects, as well as current planning for the PLR Stage 1. Estimates included anticipated operational energy for trams (kWh/km), the SaM (kWh/month) and the light rail stops (kWh/month). These data points were converted to mega joules (MJ) /year and input into the Arup bespoke carbon calculator, which gave an annual output of tonnes of carbon dioxide equivalent (tCO_{2e}) emissions from operational energy use.

In order to calculate lifetime operational emissions for the project, annual emissions were multiplied by 100 years. This is considered a conservative estimate of the project's lifetime carbon emissions as it fails to take into account likely ongoing reductions in the emission intensity of the electricity grid and other energy sources such as the 2015 Paris Agreement under the United Nations Framework Convention on Climate Change, emerging government policy in Australia including the recent release of the NSW Climate Change Policy Framework, and growth in low emissions technologies such as natural gas, wind power and solar power.

The operational carbon footprint includes calculations of carbon emission reductions achieved through both energy efficiency measures and on-site renewable energy generation.

Consumption rates of operational energy are not expected to change from the Base Case to Design Case, although offsets through the use of on-site generation are likely to affect the footprint of the Design Case.

3.3 Base Case and Definition Design Assumptions

The key features of the Base Case and Definition Design Case which impact on energy and carbon emissions are summarised in Table 4. These features form the Base Case and the Definition Design Case and provide the basis for estimating the project carbon footprint and energy and carbon sustainability performance.

Table 4: Key features defining the Base Case and Definition Design

Base Case	Definition Design
Construction	
<ul style="list-style-type: none"> • No substitution for cement (as per the B1 classification in ‘Roads and Maritime Services QA Specification B80 Concrete Work for Bridges’), but where specifications and supply do not limit, 20% substitute cementitious material (SCM) should be considered as BAU based on previous projects of similar nature. • Decommissioning and replacement of all existing bridges and structures (except those excluded for heritage) • Standard slab deepening at rail systems equipment • New rail used on all parts of the project. Old rail decommissioned and scrapped. Rail, sleepers and ballast to be reused regionally. • Recycled content (RAP) for DGA 14 and DGA 20 of 20%, where feasible following geotechnical and laboratory testing of alignment. • 90% Virgin coarse aggregate content for subbase and 10% recycled aggregate, where feasible following geotechnical and laboratory testing of alignment. • Reuse of clean aggregate from existing heavy rail line (Carlingford / Sandown) where feasible (unquantified) • Spoil management cut and fill, with clean spoil reused on site. Any imported fill is virgin and from existing projects nearby where possible • Vegetation cleared is chipped and taken off site for disposal • E10 unleaded vehicles used on site and 0% biodiesel for plant • 6% green power for construction • Generator power for site office unless there is an easy connection to grid • Basic sheds at construction sites with no behavioural or technological measures for energy efficiency 	<ul style="list-style-type: none"> • Cement substitution of 25% Fly Ash (FA) or 50% Blast Furnace Slag (BFS) for exposure classification B1 • Reduction in use of concrete through retention and reconditioning of existing bridges and structures • Reduction in the use of concrete through the use of fibreglass bars rather than deepening of the slab at rail systems equipment that requires steel-free areas between the rails • Use of 25% RAP for asphalt (total permissible content allowed by RMS for DGA 14 and DGA 20 asphalt). • Use of 100% recycled coarse aggregate content for sub-base • Reuse of aggregate from existing heavy rail line as capping at SaM where feasible (unquantified) • Energy efficient construction site offices • For temporary site facilities; • energy efficient lighting schemes and LED light fittings; • plug-in electrical equipment as per the GREP Equipment Energy Efficiency Program (E3) “Minimum Energy Performance Standards” with at least a five star Energy Rating Label; • high performance thermal insulation in all walls, ceilings and floors that optimise thermal performance; • natural daylighting; • natural ventilation; • water efficient fixtures, fittings and controls; • rainwater tanks for non-potable water use • air conditioning refrigerants with low or zero global warming potential; <p>Offset a minimum of 25% of the total electricity used in construction through either one or a combination of the following:</p> <ol style="list-style-type: none"> (i) purchase of Australian Carbon Offset Credits; (ii) purchase of renewable energy from an Accredited Renewable Energy Supplier; and/or (iii) generation of onsite renewable energy.

Base Case	Definition Design
Operation	
Energy efficiency measures	
<p><i>Stabling & Maintenance Facility</i></p> <p><i>Rolling stock</i> Regenerative braking of 5% recovery</p> <p><i>Workforce</i></p> <ul style="list-style-type: none"> • None identified 	<ul style="list-style-type: none"> • Stabling & Maintenance Facility • Minimum 15% improvement over a reference based on Section J • Solar hot water system • Lighting control at SaM workshop and office areas including: use of roof skylights for enhanced natural lighting, low energy lighting and CBUS/motion detection for lighting controls • Energy efficient equipment • High thermal insulation for SaM occupied building areas • Use of energy efficient maintenance vehicles • Smart and real time monitoring of power use <p>Rolling Stock</p> <ul style="list-style-type: none"> • Regenerative breaking • Passenger operated doors • Energy efficient HVAC used in rolling stock with smart temperature points, • HVAC system will be switched off during cleaning and maintenance • Smart glass and film filters to reduce solar heat gain • Smart and real time monitoring of power use • Light coloured vehicles <p>Workforce</p> <ul style="list-style-type: none"> • Energy efficient operations training to ensure the light rail is operated by an energy savvy workforce
On-site renewable energy measures	
<ul style="list-style-type: none"> • Nil 	<p>Flat mounted photovoltaic arrays</p> <ul style="list-style-type: none"> • Stabling & Maintenance Facility –panels covering the SaM roof with a generating capacity of 300 kW electricity, for a minimum of 360MWh in the first year of operation
Renewable energy off-sets	
<ul style="list-style-type: none"> • 6% green power for operational energy needs (GREP E7) 	<ul style="list-style-type: none"> • Residual power may be offset by TfNSW in greater proportions (up to 100%). Subject to further commercial and technical investigations

3.4 Base Case carbon footprint

This section provides a summary of the Base Case energy and carbon footprint estimates for the project. Table 5 provides the construction Base Case carbon footprint- an estimated 5.23MtCO₂-e (excluding emissions embodied in materials) over the 3-year construction period. Table 6 provides the operational Base Case carbon footprint estimated at 722.3MtCO₂-e over the 100-year life of the project. Table 7 provides the full life cycle carbon footprint of the project, combining both construction and operational emissions estimated at 760.72MtCO₂-e.

Table 5: Construction – Base Case carbon footprint

Activity	Scope	Calculator Used	Energy Use (MJ)- over 3years	Total GHG emissions (tCO ₂ -e) over construction period
Stationary energy use	1	CERT	14,826,240	1,036.44
<ul style="list-style-type: none"> • Portable electricity generators • Temporary office energy use 	2	CERT	16,513,920	3,831.12
Mobile energy use	1	CERT	(not available)	(not available)
<ul style="list-style-type: none"> • Heavy equipment/vehicles, • Standard vehicles 	1		(not available)	(not available)
Waste disposal transportation	3	CERT	(not available)	359.9
TOTAL (tCO₂-e)			31,340,160 MJ	5,227.46 tCO₂-e

Table 6: Operation – Base Case carbon footprint

Activity	Scope	Calculator Used	Annual Energy Use (MJ)	Total Annual GHG emissions (tCO ₂ -e)	Total Life (100 years) GHG emissions (tCO ₂ -e)
Stationary energy use <ul style="list-style-type: none"> • SaM • Stops (total) 	2	Arup Internal Calculator	2,030,400	471	47,100
	2	Arup Internal Calculator	2,707,200	628	62,800
Mobile energy use (LR operational energy)	2	Arup Internal Calculator	26,395,200	6,124	612,400
Fugitive emissions from equipment and processes			0	0	0
Wastewater treatment	*included in energy use at SaM				
TOTAL (tCO₂-e)				7,223tCO₂-e	722,300 tCO₂-e

Table 7: Base Case full life cycle carbon footprint

Project Phase	Total GHG emissions over project lifespan (tCO ₂ -e)			
	Scope 1	Scope 2	Scope 3 (incl. materials)	Total
Construction (over Construction period of 3 years)	1,036.44	3,831.12	33,551	38,418.56
Operation	-	722,300	-	722,300
TOTAL (tCO₂-e)	1,036.44	726,131.12	33,551	760,718.56 tCO₂-e

3.5 Definition Design Case carbon footprint

This section provides a summary of the Definition Design Case carbon footprint estimates for the project. Table 8 provides the construction Definition Design Case carbon footprint which is estimated at 4.01 MtCO₂-e over the 3-year construction period, excluding emissions embodied in materials, which is addressed in Section 5. Table 9 provides the operational Design Case carbon footprint estimated at 692.2MtCO₂-e over the 100-year life of the project.

Table 8: Construction – Definition Design Case carbon footprint

Activity	Scope	Calculator Used	Energy Use (MJ)- over 3 years	Total GHG emissions (tCO₂-e) over construction period
Stationary energy use	1	CERT	11,119,680	777.33
<ul style="list-style-type: none"> • Portable electricity generators • Temporary office energy use 	2	CERT	12,385,440	2,873.34
Mobile energy use	1	CERT	(not available)	(not available)
<ul style="list-style-type: none"> • Heavy equipment/vehicles, • Standard vehicles 	1		(not available)	
Waste disposal transportation	3	CERT	(not available)	359.9
TOTAL			23,505,120 MJ	4.010.57 tCO₂-e

Table 9: Operational – Definition Design Case carbon footprint

Activity	Scope	Calculator Used	Annual Energy Use (MJ)	Total Annual GHG emissions (tCO ₂ -e)	Total Life (100 years) GHG emissions (tCO ₂ -e)
Stationary energy use • SaM • Stops (total)	2	Arup bespoke calculator	1,725,840	400.35	40,035
	2	Arup bespoke calculator	2,707,200	628	62,800
Mobile energy use (LR operational energy)	2	Arup bespoke calculator	26,395,200	6,124	612,400
Fugitive emissions from equipment and processes			0	0	0
Wastewater treatment	*included in energy use at Stabling & Maintenance Facility				
Operational Emissions TOTAL				7,152.35 tCO ₂ -e	715,235 tCO ₂ -e
Energy generated by installed PV at SaM and stops		Arup Internal Calculator	-1,296,000	-301	-30,100MWh
TOTAL After Offsets				6,851.35 tCO₂-e	685,135 tCO₂-e

Table 10 provides the full life cycle carbon footprint of the project combining both construction and operational emissions estimated at 722.8 MtCO₂-e.

Table 10: Definition Design Case full life cycle carbon footprint

Project Phase	Total GHG emissions over project lifespan (tCO ₂ -e)			
	Scope 1	Scope 2	Scope 3	Total
Construction (over Construction period of 3 years)	777.33	2,873.34	26,993.6	30,644.27
Operation	-	685,135	-	685,135
TOTAL	777.33	688,008.34	26,993.6	715,779.27

3.5.1 Energy and carbon performance evaluation

The analysis shows the Definition Design provides:

- construction carbon emission reductions in the order of 7,774.29 tCO₂-e (that is approximately 20.24%), as a result of the SPR requirement to offset 25% of construction electricity and the selection of materials with low embodied emissions and reuse and recycling of available materials on-site

- operational carbon emission reductions in the order of 37,165tCO₂-e (that is 5.15%) over the lifecycle of the project as a result of generation of renewable energy on-site through photovoltaic arrays at the SaM and energy efficiency measures at the SaM
- whole of lifecycle emissions reductions of 44,939.29 tCO₂-e (that is 5.91%). Without the purchase of offsets for the project's operational emissions this reduction is attributable to construction emissions savings, including savings through offsets for construction energy, and the installation of photovoltaic panels at the SaM. And energy efficiency measures at the SaM

Based on this analysis the status of the following IS Rating Tool credits and SDG requirements at Definition Design stage is:

- Energy and carbon monitoring and reduction (ENE-1): 3.20 points (Performance Level 1) are achieved under this credit at this stage. Whilst the majority of requirements under benchmark level 1 for this credit are achieved, the GHG calculations must include land clearing which could not be addressed at this stage due to a lack of information. It is anticipated that this information will be incorporated in future analysis. The emissions reductions demonstrated at Definition Design may be sufficient to achieve performance level 3 once land clearing data is available and if operational offsets are purchased. Additional reductions may be calculated for PLR Stage 1 as a whole once modelling of SaM energy usage for base and design case is carried out.
- Use of renewable energy (ENE-2): 0.64 points (Performance level 1) are achieved. The scale of energy consumption by the project is significant relative to the scale of opportunities for installation of on-site renewable energy infrastructure. Additional points may be achieved for this credit if contractors choose to offset the 25% of construction energy required by the SPRs through the use of on-site renewables. Points can be achieved for this credit through the purchase of offsets for operational energy.
- Construction Greenhouse Gas Emissions (CR-1): No points achieved under the Definition Design as a minimum of 5% reduction in construction energy is required to reach performance level 1.
- Operational Energy (CR-2): No points achieved (reductions through use of renewable energy cannot be considered for this credit). Building energy modelling has not been undertaken at this stage in design to demonstrate compliance with this requirement. However, it is assumed that the minimum benchmark of 15% improvement in building energy performance on the Base Case can be demonstrated in line with Section J requirements for the SaM. Contractors responsible for the SaM should reflect this reduction in their footprint calculations once reduction is confirmed through modelling of building energy use. The purchase of offsets cannot contribute to this credit.

4 Water

4.1 Introduction

This section addresses the water performance of the project. Information on anticipated project water consumption, particularly potable water consumption for both construction and operation of the PLR Stage 1, was used in order to address the following IS Rating Tool and SDG credits/requirements:

- Water use monitoring and reduction (WAT-1): To meet the requirements of this credit monitoring and modelling of water use across the infrastructure lifecycle must be undertaken in order to establish a water footprint. Extra points can be obtained where the benchmark reductions in water consumption from the Base Case to Design Case are demonstrated.
- Replace potable water (WAT-2): To meet the requirements of this credit monitoring and modelling of water use across the infrastructure lifecycle must be undertaken to establish a potable water footprint. Extra points can be obtained where the benchmark reductions in potable water consumption from the Base Case to Design Case are demonstrated.
- Construction water (CR-7): To meet this requirement a project must monitor its potable construction water consumption. Extra points can be obtained by monitoring non-potable water consumption during construction and by reducing both potable and non-potable construction water consumption.
- Operational water (CR-8): To meet this requirement an operational water balance study must be conducted. Extra points can be obtained by identifying water efficiency measures and demonstrating a reduction in operational water consumption by 5% or more.

4.2 Methodology

4.2.1 Overview

This section describes the methodology for establishing the water performance of the project, including the approaches adopted to calculate the construction and operational water footprints for the ISCA Base Case and Definition Design Case.

4.2.2 Scope

Activities considered material and therefore incorporated in the water footprint calculations include:

Construction

- Construction processes (e.g. dust suppression)
- Landscape watering
- Office activities

Operations

- LRV washing
- SaM domestic water requirements
- Irrigation of landscaped areas
- Cleaning at stops

4.2.3 Calculation Methodology

Water calculator

A bespoke Arup water calculator was employed to calculate both the construction and operational water footprints for the project.

Construction

Construction demand was based on the proposed construction timeframe and all significant water-requiring construction activities, including dust suppression and landscape irrigation. Construction water demand calculations included the following landscape irrigation assumptions:

- Establishment period for planting was estimated at 20 litres per week for the first 12 weeks after planting and 5 litres/week per plant for the following 52 weeks
- Total tree planting calculated at 1,960 based on 5m spacing on both sides of street/track
- Total low shrubs calculated at 6,260 based on 1m strips at 4m²

Operations

Operational demand included water required for landscaping and LRV wash down and domestic water requirements at the SaM.

Arup undertook an operational water balance study to examine the balance between water demand and supply opportunities during operations to establish if available non-potable water supplies could meet non-potable water demand, thereby reducing the potable water footprint. The water balance study focused on the SaM to assess the potential to supply the LRV wash with harvested rainwater from the SaM roof as follows:

- Rainwater supply: The analysis used daily historical rainfall from the nearest Bureau of Meteorology recording station for a continuous 50 year period (1966 to 2015) and an assumed 90% capture from the SaM building roof catchment to calculate daily rainwater supply. Where rainwater was available, it was assumed to fill the tanks to capacity, and any excess water would be discharged to the SaM stormwater network, passing through the required treatment measures prior to discharge to the Council stormwater network.
- Rainwater demand: Demand was assumed to be drawn from the tanks on a daily basis to top up the train wash facility. Each LRV was assumed to require a total of 400L per wash. A fleet of 40 LRVs was assumed (catering

for the ultimate scenario), with each tram washed twice per week. An 80% system efficiency was assumed for the wash plant (i.e. that 80% of the water in the wash system is treated and reused within the system) therefore the average daily demand for water to top up the wash plant system is 0.91 kL/day.

- A variety of tank sizes were analysed to determine a reasonable balance between efficiency and reliability. Over the 50 year tank lifetime analysed, it was determined that 99% of the required top up water could be supplied through rainwater supply with a 20kL storage tank and a minimum roof area catchment of 2000 m² (half the currently proposed SaM roof). This top-up water will meet any residual demand for LRV wash not met by the recycled water network. Harvested rainwater will also be used to irrigate 100% of SaM Facility landscape.

Operational lifetime of the project for the purposes of this water balance study was assumed to be 100 years, in line with the lifetime estimates used for carbon and energy footprinting elsewhere in this report.

4.2.3.1 Data sources

Anticipated construction water use data was collected through consultation with the TfNSW Constructability Team and the Integrated Technical Advisory Team. Water data collected for construction includes water required for construction processes and watering amounts and establishment periods for plantings. The availability of recycled water for use during construction was also confirmed in consultation with the TfNSW Constructability Team.

Anticipated operational water demand was established through consultation with the operations and Fleet Advisor and the Infrastructure Technical Advisory Team. Water data collected for operations includes data on LRV wash down requirements and other domestic water usage at the SaM. The operational water balance study provided data for potential rainwater capture on-site and guided the sizing of rainwater tanks at the SaM for storage of harvested rainwater to use in the LRV wash down and to irrigate the landscape.

All data sources and associated assumptions are outlined in the Base Case Framework (see Appendix A).

4.3 Base Case and Definition Design Assumptions

The key features of the Base Case and Definition Design Case which impact on energy and carbon emissions are summarised in Table 11. These features form the Base Case and the Definition Design Case, and provide the basis for estimating the project water footprint and water sustainability performance.

Table 11: Key features defining the Base Case and Definition Design

Base Case	Design case
Construction	
<p>Construction water demand includes all construction related activities including site office water consumption. Includes office activities in the site office as well as construction activities such as:</p> <ul style="list-style-type: none"> • Pavement compaction • Dust suppression • Sub grade compaction including earthworks • Pavement construction material • Stabilisation including cementitious, lime, bituminous • Pavement cleaning, street sweeping • Drainage cleaning including pits, stormwater, culverts, kerb and channels • Concrete pavement construction • Cleaning bridge deck, footway, expansion points • Vehicle cleaning • Irrigation for establishment of trees/landscaping • Non-intrusive pot holing • Ablutions <p>Construction timeframe is based on a 3 year construction period</p> <p>Based on industry knowledge and standard for typical construction site in Sydney region, it is assumed 25% of water used for construction works will be sourced from a non-potable source</p> <p>Dust suppression is required on dry, windy days using water carts</p> <p>Assumption that potable water is used as business as usual for all compliance related uses</p> <p>Concrete mix uses potable water</p>	<p>All dust suppression requirements for construction works will be sourced from the recycled network supply at Camellia</p> <p>Water requirements for the office ablutions/compounds and moisture control of fills and pavements layers will be sourced from potable supply</p> <p>Demand change which sees dust suppression trucks ceased during rainy days. Based on historic data, it is assumed a maximum of 30 rainy days per year which do not require water for dust suppression</p>
Operations	
<p>Operational water demand includes LRV wash, landscape irrigation and domestic water requirements for the SaM building and cleaning of stops.</p> <p>Based on current industry standard and practice, it is assumed 100% of operational water demand is sourced from potable water for the base case scenario, except for LRV wash, where 70% recycled water will be used.</p>	<p>Based on water calculations and size of SaM roof for rainwater capture the following preliminary objectives have been set:</p> <ul style="list-style-type: none"> • harvest rainwater from the SaM facility roof and provide adequate storage • recycle a minimum of 85% of wash water from the LRV wash plant. • irrigate SaM Facility landscape using 100% recycled or rain water

Base Case	Design case
	<ul style="list-style-type: none"> harvested rainwater must meet top up water demand for the LRV wash as a primary supply. the capacity of SaM Facility rainwater harvesting system must provide at least 99% of the top up water for the LRV wash plant, modelled over a period of 50 years.

4.4 Base Case Water Footprint

This section provides a summary of the Base Case water footprint estimates for the project. Table 12 provides the construction and operational Base Case water footprint which is estimated at 35,767.5L of potable water and 11,922.5L of non-potable water over the 3-year construction period and 756,680L of potable water and 23,250L of non-potable water over the operational phase. This is equivalent to 792,447.5L of potable water and 35,172L of non-potable water over the full project lifecycle.

Table 12: Construction and Operational - Base Case water footprint

Project Phase	Potable Water Use (L)	Non-potable Water Use (L)
Construction Phase (over construction period of 2.5 years)	35,767.5	11,922.5
Operation Phase (over 100 year lifetime of asset)	756,680	23,250
TOTAL	792,447.5	35,172.5
Lifecycle total	827,620 L	

4.5 Definition Design Water Footprint

This section provides a summary of the Definition Design Case water footprint estimates for the project. Table 13 provides the construction and operational Definition Design Case water footprint which is estimated at 16,100L of potable water and 31,590L of non-potable water over a 3-year construction period, and 111,161 L of potable water and 668,769L of non-potable water over the operational phase. This is equivalent to 127,261L of potable water over the full project lifecycle and 700,359L of non-potable water over the full project lifecycle.

Table 13 Construction and Operational – Definition Design Case water footprint

Project Phase	Potable Water Use (L)	Non-potable Water Use (L)
Construction Phase (over construction period of 2.5 years)	16,100	31,590
Operation Phase	111,161	668,769
TOTAL	127,261	700,359
	872,620 L	

4.6 Water performance evaluation

The analysis shows the Definition Design provides:

- A total of 66.24% of construction water sourced from non-potable sources
- A total of 85.7% of operational water sourced from non-potable sources
- Potable water reductions of 665,186.5L over the asset lifecycle
- A total of 84.6% of water sourced from non-potable sources over the infrastructure lifecycle

Based on this analysis the status of the following IS Rating Tool credits and SDG requirements at Definition Design stage:

- Water use monitoring and reduction (WAT-1): 2.14 points (Level 1) are achieved for this credit. Whilst the design case significantly reduces the amount of potable water requirements across the infrastructure lifecycle, the amount of water required for the base case and the design cases remains the same. Points achieved for this credit are as a result of the project undertaking monitoring and modelling of water use. Water saving initiatives during both construction and operations are considered in the Base Case scenario and carried through to the Definition Design.
- Replace Potable Water (WAT-2): Based on the total water sourced from non-potable sources over the infrastructure lifecycle, 2.97 (Level 2.5) points are achieved for this credit. This is based on 85% of total water demand sourced from non-potable sources, including the recycled water network and captured rainwater from the SaM roof for project operation.
- Construction water (CR-7): Based on the use of non-potable water from the recycled network for water intensive activity including dust suppression, there is a 66% reduction in the amount of potable water required for construction water requirement. This achieves a Level 5 of the SDG benchmark targets.
- Operational water (CR-8): A performance level of P1 is achieved for this Compulsory Requirement as the minimum requirement is met- a water balance study has been undertaken. However no points are achieved for this credit. The Base Case scenario incorporates water saving initiatives which are carried through to the Definition Design, hence there are no additional water savings identified during the operational stage of the project.

5 Materials

5.1 Introduction

This section addresses the materials performance of the project. An understanding of anticipated project materials consumption for both construction and operation of the PLR Stage 1 is required to address the IS Rating Scheme credit relating to ‘Materials lifecycle impact measurement and reduction’ (MAT-1). Under this credit monitoring and modelling of the materials lifecycle impact must be undertaken in order to determine the embodied impacts associated with materials used during construction and operation. Extra points can be obtained where benchmark reductions in embodied impacts from Base Case to Design Case are demonstrated.

5.2 Methodology

5.2.1 Scope

Embodied impacts considered relevant to the project include:

- embodied GHG emissions associated with materials used in construction
- emissions from the transportation of these materials from their source to the project site

The scope of embodied emissions in materials is defined by the ISCA IS Materials Calculator, setting assumptions about materials density, extraction, processing, manufacture and transportation. These assumptions can be found in the LCI (2016) tab of the IS Materials Calculator.

5.2.2 Calculation Methodology

5.2.2.1 Materials calculator

The IS Rating Tool Materials Calculator v1.2 was used to calculate the embodied impacts of materials in the construction of the project.

Emissions factors and other data sources are listed in the calculator and are sourced from the Australian Life Cycle Inventory Database Initiative.

Using these emissions factors and input data on material quantities, transportation type and distance for materials, and mitigation and materials reduction measures, the IS Rating Tool Materials Calculator calculates the project’s embodied GHG emissions as well as the project’s IS EnviroPoints. IS EnviroPoints represent an aggregate of several environmental scores including Global Warming, Abiotic Depletion, Eutrophication, Acidification, Photochemical Smog, and Ozone Depletion.

Use of IS Materials calculator is required by IS Rating Tool credit MAT-1. Differences in input requirements and assumptions between the IS Materials

Calculator and the CERT have resulted in different GHG footprint results for both the Base Case and Definition Design Case between the two tools. These differences will require further investigation during the next stages of the project.

Data sources

- **Materials:** Quantities (tonnes or cubic metres) and types of materials used, as well as material transportation types and distances were required in order to calculate embodied energy emissions for the project's materials for both Base Case and Definition Design Case. This information was collected through consultation with the TfNSW Constructability Team and Integrated Technical Advisor (ITA) designers, who provided high level estimates of materials quantities and types, or the nearest proxy, from the lists contain in the IS Rating Tool Version 1.2 Materials Calculator, along with justification for these assumptions. These assumptions are captured in the Base Case Framework (see Appendix A). Base Case material quantities were input into the IS Rating Tool Materials Calculator, which gave a carbon emissions (tCO₂-e) measurement and IS EnviroPoints for each material.
- **Materials transportation:** TfNSW's Constructability Team also provided assumptions for construction vehicle types matched with the list of vehicles contained within the CERT, the proximity of the source of materials to the site, and the number of trips into and out of the site for each vehicle type. Using this information distance travelled and number of trips per vehicle type was calculated to transportation of materials numbers during construction.

Definition Design estimates were based on the measures designers anticipate being adopted to reduce materials use and/or to reduce the embodied impacts of materials used (e.g. through selection of industrial by-products or recycled materials). In some cases, the quantities provided were converted to the appropriate unit of measurement in order to use them in the IS Materials Calculator. Design Case material quantities, or changes in materials were input into the IS Rating Tool Materials Calculator in order to determine changes in carbon emissions and IS EnviroPoints.

Materials transportation data provided by TfNSW's Constructability Team TfNSW's Constructability Team was input to the IS Rating Tool Materials Calculator, which produced a carbon emissions and IS EnviroPoints measurement for transportation of materials. There is not expected to be a change between transportation scenarios for Base Case and Design Case. The same carbon emissions and IS EnviroPoints result for transportation is therefore use for both the Base Case and the Design Case footprints. Transportation for each material is included in the total footprint for that material provided in Table 15 and Table 16 below.

As a result of lack of data or data proxies, spoil and excavated material going to landfill have not been included in the materials calculations in this report.

5.3 Base Case and Definition Design Assumptions

The key features of the Base Case and Definition Design Case which impact on embodied impacts of materials are summarised in Table 14. These features form the Base Case and the Definition Design Case, and provided the basis for estimating the project materials footprint and materials sustainability performance.

Table 14: Key features defining the Base Case and Definition Design

Base Case	Design Case
<ul style="list-style-type: none"> • No substitution for cement (as per the B1 classification in 'Roads and Maritime Services QA Specification B80 Concrete Work for Bridges') • Decommissioning and replacement of all existing bridges and structures • New rail used on all parts of the project. Old rail decommissioned and scrapped • Recycled content (RAP) for DGA 14 and DGA 20 of 0-20% • Virgin coarse aggregate content for subbase • Disposal of aggregate from existing heavy rail line 	<ul style="list-style-type: none"> • Cement substitution of 25% Fly Ash (FA) or 50% Blast Furnace Slag (BFS) for exposure classification B1 • Reduction in use of concrete through retention and rejuvenation of existing bridges and structures • Reuse of AS60 type rail (10,000m) from Carlingford line on other parts of the project. • Use of 25% RAP for asphalt (total permissible content allowed by RMS for DGA 14 and DGA 20 asphalt). • Use of 100% recycled coarse aggregate content for subbase • Reuse of aggregate from existing heavy rail line as capping at SaM

5.4 Base Case materials footprint

This section provides a summary of the Base Case materials footprint estimates for the project. Table 15 provides the Base Case embodied carbon footprint for materials which is estimated at 33.1 MtCO₂-e.

Table 15: Construction and Operational - Base Case materials footprint

Material	Calculator Used	Quantity	Emissions Factors	Reference	tCO ₂ -e	IS EnviroPoints (Pt)
Pre-mixed concrete (32MPa)	IS Rating Scheme Materials Calculator	27,409m ³	Various	AusLCI	10,211.3	27,634.0
Steel reinforcing bar	IS Rating Scheme Materials Calculator	4,621t	1.23E+00 eq/unit 3.05E-03 Pt/unit	Worldsteel data	5,695.5	14,102.2
Galvanised steel	IS Rating Scheme Materials Calculator	885t	2.46E+00 eq/unit 6.06E-03 Pt/unit	Worldsteel	2,178.3	5,362.1
Steel rails	IS Rating Scheme Materials Calculator	6,155.9t	1.55E+0(kg CO ₂ eq/unit 3.93E-03 Pt/unit	Worldsteel data	9,522.9	24,184.4
Asphalt	IS Rating Scheme Materials Calculator	15,907t	3.90E-01 eq/unit 5.07E-03 Pt/unit	AusLCI Shadow database	4,956.8	64,555.9
Aggregates (various)	IS Rating Scheme Materials Calculator	3181.4t 16,671 m ³	5.67E-03 eq-unit 1.95E-05 Pt/unit	AusLCI Shadow database	141.7	518.6
Plastic ducting	IS Rating Scheme Materials Calculator	197.6	2.45E+00kg CO ₂ eq/unit 7.89E-03Pt/unit	AusLCI Shadow database	484.6	1,558.6
TOTAL					33,191.10	136,357.20

5.5 Definition Design Materials Footprint

This section provides a summary of the Definition Design Case materials footprint estimate for the project. Table 16 provides the Design Case embodied carbon footprint for materials, which is estimates at 26.6 MtCO₂-e.

Table 16: Construction and Operational – Definition Design Case materials footprint

Material	Calculator Used	Quantity	Emissions Factors	Reference	tCO ₂ -e	IS EnviroPoints (Pt)
Pre-mixed concrete (32MPa)	IS Rating Scheme Materials Calculator	27,409m ³	Various (including Fly Ash and BF Slag)	AusLCI	4,000.6	12,165.0
Steel reinforcing bar	IS Rating Scheme Materials Calculator	4,621t	1.23E+00 eq/unit 3.05E-03 Pt/unit	Worldsteel data	5,695.5	14,102.2
Galvanised steel	IS Rating Scheme Materials Calculator	885t	2.46E+00 eq/unit 6.06E-03 Pt.unit	Worldsteel	2,178.3	5,362.1
Steel rails	IS Rating Scheme Materials Calculator	6,155.9t	1.55E+0(kg CO ₂ eq/unit 3.93E-03 Pt/unit	Worldsteel data	9,522.9	24,184.4
Asphalt	IS Rating Scheme Materials Calculator	11,903.25t	3.90E-01 eq/unit 5.07E-03 Pt/unit	AusLCI Shadow database	4,636.5	60,384.2
Aggregates (various)	IS Rating Scheme Materials Calculator	3,976.5t 16,671m ³	5.67E-03 eq-unit 1.95E-05 Pt/unit	AusLCI Shadow database	115.3	540.7
Plastic ducting	IS Rating Scheme Materials Calculator	197.6	2.45E+00kg CO ₂ eq/unit 7.89E-03Pt/unit	AusLCI Shadow database	484.6	1558.6
TOTAL					26,633.7	118,297.2

5.6 Materials Performance Evaluation

A summary of the difference between Base Case and Design Case footprints can be found in Table 17. This analysis shows that the Definition Design provides construction GHG emission reductions in the order of 6,557.4tCO₂-e (approximately 6.2%) as a result of selection of materials with low embodied emissions and reuse and recycling of available materials on-site.

Based on this 2.99 points are achieved under IS Rating Tool credit MAT-1 ‘Materials lifecycle impact measurement and reduction’ from a performance level of 1. Monitoring and modelling of the materials lifecycle impact allows benchmark level 1 to be met and emission reductions of 6.2% using the IS Materials Calculator, give an additional performance level of 1. It is anticipated that additional information on materials use and sustainability measures will be

included in future analysis and may contribute to further improvement in the project's performance level.

Table 17: Comparison of Base Case and Design case materials footprint

Material	Base Case GHG emissions (tCO2-e)	Design Case GHG emissions (tCO2-e)	Key Assumptions for Design Case Footprint
Concrete	10,211.30	4,000.6	Replacement of Portland Cement with a mix of Fly Ash (25%) and Blast Furnace Slag (50%)
Steel reinforcing bar	5,695.5	5,695.5	No changes proposed
Galvanised steel	2,178.30	2,178.30	No changes proposed
Rail	9,522.90	9,522.90	Offsetting of emissions associated with rail through reuse of 10,000m of existing heavy rail from Carlingford Line
Asphalt	4,956.80	4,636.50	Reduction of virgin asphalt (bitumen), and substitution with 25% recycled aggregate
Aggregate	141.70	115.30	Use of 100% recycled coarse aggregate for subbase instead of virgin aggregate. Use of 25% recycled aggregate in asphalt.
PVC Pipes	484.6	484.6	No changes proposed
TOTAL	33,191.10	26,633.70	

6 Conclusion

Analysis carried out for this report with information currently available at Detailed Design indicates that the project, will meet few of the ISCA and SDG targets that have been established for the project. A summary of achievement against these targets is outlined in Table 18 below.

Table 18: Project achievement against targeted scores using footprints established in this report

Credit		Target level	Calculated Score for PLR Stage 1	Level achieved?
ISCA	Ene-1	Level 2 (10% reduction)	3.20 points Level 1	No
	Ene-2 (INF and SOM only)	Level 1	0.64 points Level 1	No
	Wat-1	Level 2 (15% reduction)	2.14 points Level 1	No
	Wat-2	Level 2 (50% non-potable water)	2.97 points Level 2.5	Yes
	Mat-1	Level 2 (15% reduction)	2.99 points Level 1	No
SDG	CR-1		0 Points (min. requirement not met)	No
	CR-2		0 Points (min. requirement not met)	No
	CR-7		66% reduction. P5	Yes
	CR-8		P1 (min requirement met, but no points achieved)	Yes

It is important to note that conservative estimates of project performance were used to establish the Design case for the PLR Stage 1 project used in this analysis. The early stage of design at which these footprinting calculations were undertaken means that some information was unavailable or incomplete, for example the SaM energy modelling had not been undertaken at the time of the calculations and therefore reductions achieved through energy efficiency measures could not be captured in this report. Contract documentations specify minimum requirements and initiatives that have to be incorporated by each works contractor. As long as these requirements are met, methods on how the above targets can be reached is up to the discretion of each Contractor, except where prescribed by the SPRs.

Points may be more easily achievable than is reflected in this report for the individual packages, as reductions will likely be calculated against a smaller base case total.

More information will become available when Contractors are engaged. Footprinting calculations will therefore be more robust, and include efficiency measures that are not captured in this report.

Appendix A

ISCA Base Case Framework

Introduction

This framework has been prepared to support the development of a Base Case proposal under the Infrastructure Sustainability (IS) rating scheme. This is relevant to Parramatta Light Rail.

The IS rating scheme is facilitated by ISCA and is a third party verified performance rating system for infrastructure. There is a 4 step process which underpins the scheme and includes a requirement for registered projects/assets to prepare a base case. To prepare a base case a proposal must be prepared and submitted to ISCA for approval and corresponding base case footprints need to be prepared which model the impact of the base case across energy, water and material use.

An important part of the base case process is to ensure that the modelled impacts align with business as usual approaches and technologies. This allows the rating teams (project/asset teams) to compare their actual performance and demonstrate a reduced impact based on a business as usual equivalent.

The base case requirement applies to the IS Rating Scheme credits ENE-1, WAT-1, WAT-2, MAT-1, and the related Sustainable Design Guideline Credits CR-1, CR-2, CR-7 and CR-8.

Purpose

This framework outlines key requirements and assumptions that need to be incorporated as part of any base case proposal for any project or package. Using this framework, a Base Case was created for Materials, Energy and Carbon and Water use on the Parramatta Light Rail project, Phase 1. A comparison between the Base Case and a Design Case for these usage categories is required to comply with several requirements from the IS Rating Scheme and the Sustainable Design Guidelines, both of which the Parramatta Light Rail project is pursuing for certification as one of the project's Sustainability Goals and Objectives.

Resource use boundary and framework

Key exclusions: The following data were not included in this footprinting exercise as they were not available at the time the analysis was undertaken:

- Landscaping and land-use change data
- Usage rates for steel pipes
- Usage rates for HDPE pipes
- Usage rates for aluminium
- Usage rates for glass
- Usage rates for ceramics
- Travel distances and vehicles for transportation of materials on-site

Key assumptions:

- The design life of the project is 100 years

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
ENERGY USE				
Stationary & off-road fuel				
1	Use of generators during construction	<p>Some (4) fixed sites during construction will use diesel generators 6 days/week for 2.5 years</p> <p>Generators providing electricity to site offices are operated at full load using 100% mineral diesel</p> <p>Fuel consumption rate of 100L diesel/day</p> <p>Energy density of 35.8 MJ/L</p> <p>Also refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations</p>	<p>Timeframe for generator use provided by Constructability team</p> <p>Rate of fuel consumption for generators provided by Constructability team</p> <p>Energy density</p>	<p>Total fuel use (kL)</p> <p>No. and capacity of generators</p>
Transport fuel				
2	Use of non-project owned vehicles for transportation of construction waste	Amount of spoil not included in calculation	<p>Calculations to change metrics given by Constructability to metrics useable within CERT tool were carried out using the following online resources:</p> <p>Slurry: http://www.aqua-calc.com/calculate/volume-to-weight)</p> <p>Concrete: http://www.traditionaloven.com/conversions_of_measures/concrete-weight.html</p>	<p>Amount of construction waste by type (concrete, slurry, mixed, sleepers, rail)</p> <p>Likely waste disposal/recycling/reuse scenario of each type of waste</p>

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
			<p>Mixed demolition waste: http://www.sustainabilityexchange.ac.uk/conversion_factors_for_calculation_of_weight_to_vo</p> <p>Sleepers: assumption that sleepers are Australian jarrah http://www.railwaysleepers.com/railway-sleepers/railway-sleeper-sizes</p> <p>Information about quantity of spoil and excavated material going to landfill is not yet available</p> <p>Amount of construction waste estimated by Constructability team</p>	
3	Use of project owned vehicles	<p>The number of project related vehicles that will be used to transport equipment and materials to and from the project site will be estimate by contractors. Early, high-level estimate of transport for project to be provided by constructability</p> <p>Fuel use for vehicles will be unleaded or diesel</p> <p>Also refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations</p>	<p>During preparation of base case information about transportation of equipment and materials can be estimated by constructability using assumptions about equipment and materials that can be procured locally (within 5km), procured from a medium distance (between 10 and 20km), can be procured and materials that can be procured locally (within 5km), procured from a medium distance (between 10 and 20km), procured from a greater distance (40km), or will be procured from overseas.</p> <p>Constructability able to estimate types of vehicles used to transport</p>	<p>Types of vehicles used for transporting each type of material</p> <p>Estimates of distance travelled for each type of vehicle based on proximity of material source to project</p>

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
			<p>each types of material based on previous experience with equivalent projects</p> <p>CERT tool assigns transport emissions factors to different types of transport: Rigid truck, Articulated truck, Rail and Shipping. All transportation types provided in estimated from Constructability were categorised into these four categories for the purposes of calculation.</p>	
Electricity				
4	Use of grid electricity for construction	<p>Some (6) fixed sites during construction will use only grid energy. Consumption for these sites will be similar to that of a small office</p> <p>Emissions factor for all purchased electricity for operation of stations is sourced from National Greenhouse Accounts Factors, August 2016</p> <p>No purchased electricity will be sourced from renewable energy sources.</p> <p>No carbon credits from electricity grids will be accounted for throughout the project.</p>	<p>Constructability provided estimates of fixed sites using grid-only energy, and comparison with small office energy use.</p> <p>Commercial Building Disclosure's 'Improving the Energy Efficiency Performance of Small Office Buildings Regulation Impact Statement' (March 2016) defines small offices as 'those with under 2000m2 of floor area'. Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, November 2012 (Council of Australian Governments National Strategy on Energy Efficiency) says that weighted average intensity of</p>	Estimate of electricity requirements for relevant construction activities.

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
			<p>offices tenancies in NYS was 488MJ/m2.</p> <p>Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016).</p> <p>Reviewing previous projects indicated that renewable energy sources (e.g. from the installation of solar panels) or the purchase of GreenPower are rarely adopted in industry due to high cost and the temporary nature of the site sheds.</p>	
5	Light Rail Operation	<p>Emissions factor for all purchased electricity for operation of stations is sourced from National Greenhouse Accounts Factors, August 2016</p> <p>45m LRVs are being used</p> <p>Electricity to run trams will be purchased from the local grid. No purchased electricity will be purchased from renewable energy sources.</p> <p>No on-site generation for BAU projects</p>	<p>Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016).</p> <p>SNC-Lavalin has recommended the use of 45m LRVs (over 32m LRVs) because of service requirements for increasing customer levels in coming years</p> <p>Renewable energy offsets are not required by TfNSW's SDGs</p> <p>On-site generation has not been used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating.</p>	<p>Energy use in kWh/km travelled for 45m LRVs</p> <p>Total km travelled annually</p>

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
6	SaM Operation	<p>Emissions factor for all purchased electricity for operation of stations is sourced from National Greenhouse Accounts Factors, August 2016</p> <p>No purchased electricity will be sourced from renewable energy sources.</p> <p>No carbon credits from electricity grids will be accounted for throughout the project.</p>	<p>Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016).</p> <p>Renewable energy offsets are not required by TfNSW's SDGs</p> <p>On-site generation has not be used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating.</p> <p>SNC-Lavalin estimate of annual SaM operational energy use based on information from similar TfNSW project</p>	Estimated kWh used annually at SaM
7	Stop Operation	<p>Emissions factor for all purchased electricity for operation of stops is sourced from National Greenhouse Accounts Factors, August 2016</p> <p>No purchased electricity will be sourced from renewable energy sources.</p> <p>No carbon credits from electricity grids will be accounted for throughout the project.</p>	<p>Government approved emission factor for calculating scope 2 GHGs for electricity as per the most recent NGA publication (August 2016).</p> <p>Renewable energy offsets are not required by TfNSW's SDGs</p> <p>On-site generation has not be used on previous projects (including Canberra and Gold Coast Light Rails), and is not required by TfNSW's SDGs or IS Rating.</p> <p>SNC-Lavalin estimate of annual station operational energy use based on information from similar TfNSW project</p>	<p>Number of stations</p> <p>Estimated kWh used annually per station</p>

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
WATER USE				
Potable and non-potable				
8	Potable and non-potable water use during construction	<p>Potable water is used for construction works in office and compound ablutions, for dust suppression and as moisture control for fills and pavement layers</p> <p>Potable water is defined as 'high quality water suitable for drinking and cooking.' Non-potable water is defined as 'lower quality water suitable for other purposes such as toilet flushing or dust suppression'.</p>	Potable and non-potable water definition is from the ISCA IS Technical Manual Version 1.2, May 2016	<p>Estimate of water use (kL/day or for entire project) for construction activities and site office use</p> <p>Type of water source e.g. Class A water, rainwater, manufacturing waste water, bore/ground water, river water, surface water (from post rain event water run-off from the work site), mains, tanker, recycled, etc.</p>
9	Potable and non-potable water use during operation	<p>Potable water is defined as 'high quality water suitable for drinking and cooking.' Non-potable water is defined as 'lower quality water suitable for other purposes such as toilet flushing or dust suppression'.</p> <p>Water use during operations includes for tram washdown</p>	Potable and non-potable water definition is from the ISCA IS Technical Manual Version 1.2, May 2016	Potable and non-potable water used for wash-down
10	Potable and non-potable water use for landscaping/planting	<p>Potable water is used for landscaping/planting including irrigation</p> <p>Potable water is defined as 'high quality water suitable for drinking</p>	Potable and non-potable water definition is from the ISCA IS Technical Manual Version 1.2, May 2016	<p>Estimated number of plants for PLR or similar project</p> <p>Non-potable water used for landscape irrigation</p>

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
		<p>and cooking.’ Non-potable water is defined as ‘lower quality water suitable for other purposes such as toilet flushing or dust suppression’.</p> <p>Establishment periods for plantings of 12 weeks and rate of watering of 20L/week, post-establishment period of 52 weeks and rate of watering of 5L/week</p>	<p>Establishment periods and post-establishment periods for planting vary for plant types and locations, but these rule-of-thumb establishment timeframes were agreed after discussion with the project’s landscape team and other landscape architecture professionals.</p>	
MATERIALS				
11	All materials listed below	<p>The current version (1.1) of the Transport for NSW Carbon Estimate and Reporting Tool (CERT) at the time of calculating the base will be used to estimate the carbon emissions from the use of materials for the project.</p>	<p>The Transport for NSW Carbon Estimate and Reporting Tool (CERT) is developed for benchmarking.</p> <p>Also refer to the ‘Formulas and background’ tab of CERT to see assumptions for carbon emissions calculations</p> <p>Also refer to assumptions for the transportation of materials to site (item #2).</p>	As noted below.
12	Asphalt and Remedial action Plan) RAP	<p>BAU is densely graded asphalt with a bitumen binder</p> <p>Asphalt types DG20 and DG14 used for used for full depth pavement widening. No RAP is used for asphalt.</p> <p>Assumed pavement is full depth at widenings, with layers consisting of: Asphalt wearing course (50mm), Asphalt base course</p>	<p>Consultation with geotechnical and pavement design engineers indicated that no RAP is required as BAU for DG20 or DG14 type asphalts.</p> <p>Consultation with geotechnical and pavement design engineers indicated that DG20 or DG14 type asphalts can use hot-mix or warm-</p>	Estimated total amount (m3) and types of asphalt used for entire project

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
		(250mm), selected material zone (300mm), and lower upper zone of formation (300mm). Detailed pavement design not available, as traffic loading and pavement materials testing data are not available.	mix. Hot mix assumed for this project. Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for Asphalt	
13	Aggregate	Coarse aggregate required for the subbase for project, including: selected material zone (300mm), and lower upper zone of formation (300mm).	Consultation with geotechnical and pavement design engineers indicated that no RAP is required as BAU for aggregate Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for aggregates	Estimated total amount (m3) and types of aggregate used for entire project
14	Concrete	Most concrete elements of project fall into category B1, which do not require any level of substitution with recycled content and are 32MPa. BAU, therefore, is assumed to be 32MPa and 0% recycled content.	Concrete mix specification from Guide to Roads and Maritime QA Specification B80 Concrete Work for Bridges Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for concrete	Estimated of total amount of concrete (m3)
15	Steel (including rails)	Estimate for 'structural steel' input in CERT tool includes the following components: Rebar-track, Stops / Structural, Bridges / Culverts / Utilities- rebar Estimate for 'galvanised steel' input in CERT includes the	Steel components from 'Material Quantities PLR Draft' provided by TfNSW Enabling Works Manager, email 6/12/16 'Structural steel' assumes the inclusion of reinforcement steel. CERT tool requires a separate	Estimated quantities of structural and galvanised steel (t) Estimated length (m) of Ri51 and S49 rail

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
		<p>following components: OLE / Subs, Fencing, Retaining Walls Rail types Ri51 and S49 nearest base case equivalent on project</p>	<p>input for 'reinforcement steel', but this information was not provided separately by TfNSW Enabling Works Manager</p> <p>From CERT tool list of defined rail types do not include type expected to be used on project (Ri59). The nearest equivalent is Ri51, which weighs slightly more, but is a rail type specifically for tram rail, and therefore has the most similar production requirements. Rail type S49 appears in the calculator and would be used on a project of this type.</p> <p>Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for rail</p>	
16	Piping	<p>Ducting used on project assumed to be heavy duty for base case Ducts required for each supply station, each stop and along length of rail</p>	<p>Constructability provided an assumption of 'heavy duty' 1400kg/m³ ducting, rather than a less dense form of ducting</p> <p>Assumptions about locations and length of ducting required provided by Constructability team</p> <p>Nominal pipe length from website of likely manufacturer (http://www.triunderground.com.au/products/conduit.html)</p>	Length (m) of ducting by type (Nominal outer Diameter)

Item #	Resource Categories	BAU Assumption	BAU Source/Justification	Data Quantities Required from Reference Design
17	Electrical cables	Copper wire types include: OLE contact wire, Helper Cable, Helper to Contacting Bonding, Positive Feeder, Negative return, Cross-bonding, Substation cabling, Lighting LV and Miscellaneous, LV connection to council and signalling and radio. Also included are non-power ethernet cables.	Assessment of cables based on designer's preliminary design and experience with previous light rail projects Refer to the 'Formulas and background' tab of CERT to see assumptions for carbon emissions calculations for electrical cables	Conductor area and type (m ²), weight (kg/100m), and length (m)

Appendix B

Base Case and Design Case Footprinting Calculations

Construction Energy Base Case

Activities	Sub-Activities	Energy Type	Monthly Consumption (MJ)	Scope	Emission factor	Reference	Carbon emissions (tCO ₂ -e) Monthly	Carbon emissions (tCO ₂ -e) Lifecycle
Stationary energy use	Portable electricity generators	Fuel	411,840	1	69.9 kgCO ₂ /GJ	NGA Factors, NSW elec, Table 3, 'Latest Estimate'	28.79	1,036.44
	Temporary office energy use	Electricity	488,000	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	133.22	3,831.12
Mobile energy use	Light rail operational energy (testing)	Electricity	Unknown	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	Unknown	Unknown
	Heavy equipment/vehicles, including materials transport	Fuel	Unknown	1	Various	NGA, 2014 (CERT)	-	7,954.4
	Standard vehicles	Fuel	Unknown	1	69.9 kgCO ₂ /GJ	NGA Factors, NSW elec, Table 3, 'Latest Estimate'	Unknown	Unknown
TOTAL							162.01	12,821.96

Construction Energy Design Case

Activities	Sub-Activities	Energy Type	Monthly Consumption (MJ)				Scope	Emission factor	Reference
Stationary energy use	Portable electricity generators	Fuel	411,840	1	69.9 kgCO2/GJ	NGA Factors, NSW elec, Table 3, 'Latest Estimate'	28.79	1,036.44	
	Temporary office energy use	Electricity	488,000	2	232 kgCO2/GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	106.42	3,831.12	
Mobile energy use	Light rail operational energy (testing)	Electricity	Unknown	2	232 kgCO2/GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'			
	Heavy equipment/vehicles, including materials transport	Fuel	Unknown	1	Various	NGA, 2014 (CERT)	-	7,954.4	
	Standard vehicles	Fuel	Unknown	1	69.9 kgCO2/GJ	NGA Factors, NSW elec, Table 3, 'Latest Estimate'	Unknown	Unknown	
TOTAL							135.21	12,821.96	

Materials Base Case

Material	Calculator Used	Quantity	Emissions Factors	Reference	tCO ₂ -e	IS EnviroPoints (Pt)
Pre-mixed concrete (32MPa)	IS Rating Scheme Materials Calculator	33,793m ³	Various	AusLCI	10,211.3	27,634.0
Steel reinforcing bar	IS Rating Scheme Materials Calculator	6013t	1.23E+00 eq/unit 3.05E-03 Pt/unit	Worldsteel data	5,695.5	14,102.2
Galvanised steel	IS Rating Scheme Materials Calculator	885t	2.46E+00 eq/unit 6.06E-03 Pt/unit	Worldsteel	2,178.3	5,362.1
Steel rails	IS Rating Scheme Materials Calculator	6,155.9t	1.55E+0(kg CO ₂ eq/unit 3.93E-03 Pt/unit	Worldsteel data	9,522.9	24,184.4
Asphalt	IS Rating Scheme Materials Calculator	13.057t	3.90E-01 eq/unit 5.07E-03 Pt/unit	AusLCI Shadow database	4,956.8	64,555.9
Aggregates	IS Rating Scheme Materials Calculator	16.671m ³	5.67E-03 eq-unit 1.95E-05 Pt/unit	AusLCI Shadow database	141.7	518.6
Plastic ducting	IS Rating Scheme Materials Calculator	197.6t	2.45E+00kg CO ₂ eq/unit 7.89E-03Pt/unit	AusLCI Shadow database	484.6	1558.6
TOTAL					33191.10	137,915.80

Materials Design Case

Material	Calculator Used	Quantity	Emissions Factors	Reference	tCO ₂ -e	IS EnviroPoints (Pt)
Pre-mixed concrete (32MPa)	IS Rating Scheme Materials Calculator	33,793m ³	Various (including Fly Ash and BF Slag)	AusLCI	4,000.6	12,165.0
Steel reinforcing bar	IS Rating Scheme Materials Calculator	6013t	1.23E+00 eq/unit 3.05E-03 Pt/unit	Worldsteel data	5,695.5	14,102.2
Galvanised steel	IS Rating Scheme Materials Calculator	885t	2.46E+00 eq/unit 6.06E-03 Pt.unit	Worldsteel	2,178.3	5,362.1
Steel rails	IS Rating Scheme Materials Calculator	4,943.9t	1.55E+0(kg CO ₂ eq/unit 3.93E-03 Pt/unit	Worldsteel data	9,522.9	24,184.4
Asphalt	IS Rating Scheme Materials Calculator	9,792.75t	3.90E-01 eq/unit 5.07E-03 Pt/unit	AusLCI Shadow database	4,636.5	60,384.2
Aggregates	IS Rating Scheme Materials Calculator	19,935.25m ³	5.67E-03 eq-unit 1.95E-05 Pt/unit	AusLCI Shadow database	115.3	540.7
Plastic ducting	IS Rating Scheme Materials Calculator	197.6t	2.45E+00kg CO ₂ eq/unit 7.89E-03Pt/unit	AusLCI Shadow database	484.6	1558.6
TOTAL					26633.70	118,297.20

Operational Energy Base Case

Activities	Sub-activities	Energy Type	Annual Consumption (MJ)	Scope	Emission factor	Reference	Carbon emissions (tCO ₂ -e) Annual	Carbon emissions (tCO ₂ -e) Lifecycle
Stationary energy use	SaM energy use	Electricity	2, 030, 400	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	471	47,100
	Energy use at all stops	Electricity	2,707,200	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	628	62,800
Wastewater treatment	None		Included in 'SaM energy use'					
Mobile energy use	Light rail operational energy	Electricity	26,395,200	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	6,124	612,400
Land use change/ land clearing	None		Number not available					
TOTAL							7,223 tCO₂-e	722,300 tCO₂-e

Operational Energy Design Case

Activities	Sub-activities	Energy Type	Annual Consumption (MJ)	Scope	Emission factor	Reference	Carbon emissions (tCO ₂ -e) Annual	Carbon emissions (tCO ₂ -e) Lifecycle
Stationary energy use	SaM energy use	Electricity	1,725,840	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	400.35	40,035
	Energy use at all stops	Electricity	2,880,000	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	660	62,800
Wastewater treatment	None		Included in 'SaM energy use'					
Mobile energy use	Light rail operational energy	Electricity	28,080,000	2	232 kgCO ₂ /GJ	NGA Factors, NSW elec, Scope 2 only, Table 41, 'Latest Estimate'	6,124	612,400
Land use change/land clearing	None		Number not available					
TOTAL							6,851.35 tCO₂-e	685,135 tCO₂-e

Water Calculator

Base Case: Construction

Activities	Total water use, for construction (kL)	Assumptions
Office ablutions/Compounds	11,400	assumed 25L/person/day + additional 1000L/compound/day
Dust suppressions	31,590	3 kL/day/km for 3 years construction period (less 30 rainy days per year)
Moisture control of fills and pavement layers	4,700	20L/m ³ to the earthworks fill quantities
TOTAL Construction water demand	47,690	kL
Non-potable water amount	11,922.5	kL*
Potable water amount	35,767.5	kL
* Note based on industry knowledge and typical construction projects in the Sydney region, it is assumed approximately 25% of water is sourced from a non-potable source as a standard base case assumption		

Design Case: Construction

Activities	Total water use, for construction (kL)	Assumptions
Office ablutions/Compounds	11,400	assumed 25L/person/day + additional 1000L/compound/day
Dust suppressions	31,590	3kL/day/km for 3 years construction period (less 30 rainy days per year)
Moisture control of fills and pavement layers	4,700	20L/m ³ to the earthworks fill quantities
TOTAL Construction water demand	47,690	kL
Non-potable water amount	31,590	kL
Potable water amount	16,100	kL
# Note water used for dust suppression will be sourced from the recycled water network at Camellia		

Base Case: Operations

	Calculated requirement (kL)	Potable requirement	Non-potable requirement	Water requirement over infrastructure lifecycle (kL)^
Landscaping requirements	6372.15	6372.15	0	6372.15
Operations water	332.15	99.645	232.505	33215
Domestic use	1095	1095	0	109500
Total	7799.3	7566.795	232.505	149087.15

^ Note infrastructure lifecycle was assumed to be 100 years

Design Case: Operations

	Calculated requirement (kL)	Potable requirement	Non-potable requirement	Water requirement over infrastructure lifecycle (kL)^
Landscaping requirements	6372.15	0	6372.15	6372.15
Operations water	332.15	16.6075	315.5425	33215
Domestic use	1095	1095	0	109500
Total	7799.3	1111.6075	6687.69	149087.15

^ Note infrastructure lifecycle was assumed to be 100 years

PLR Tree Register Requirements

Attribute	Explanatory Notes / Requirements
<i>ID No.</i>	Unique identifier
<i>Easting & Northing</i>	The centroid of the tree or patch of vegetation is to be surveyed by a registered surveyor in accordance with the requirements of the Management Requirements for Environmental Management. For patches of vegetation, the perimeter of the patch will also be surveyed and represented in GIS as a polygon.
<i>Botanical Name</i>	For tree species, the correct botanical name; for patches of vegetation, the community name.
<i>Common Name</i>	
<i>Conservation Status</i>	Under the NSW <i>Threatened Species Conservation Act 1995</i> , NSW <i>Fisheries Management Act 1994</i> , and/or Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> .
Tree Attributes:	
<i>Height (m)</i>	
<i>Spread (m)</i>	
<i>Age Class</i>	
<i>Useful Life Expectancy</i>	As per the assessment criteria in Appendix B of the Arborist Report (Eco Logical, 2017a).
<i>Health</i>	
<i>Structure</i>	
<i>Retention Value</i>	The tree retention assessment must be undertaken in accordance with the IACA (2010) <i>Significance of a Tree, Assessment Rating System (STARS)</i> .
<i>DBH (mm)</i>	Measured to nearest 50 mm.
<i>TPZ (m radius)</i>	As per AS4970-2009.
<i>SRZ (m radius)</i>	As per AS4970-2009.
<i>Other Values</i>	For example landmark tree, heritage listing or values, ecological values, tree protection order, amenity value, function as a screen or landscape feature, etc.
<i>Other Matters</i>	Other matters relevant to the site, such as surface roots.
<i>Impact</i>	None, Low, Medium or High.
Attributes for Patches of Vegetation:	
<i>Total Area (ha)</i>	
<i>Area to be Removed (ha)</i>	
<i>Overstorey Species</i>	
<i>Does the Overstorey Contain Native Species?</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Mid-canopy Species</i>	
<i>Does the Mid-canopy Contain Native Species?</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Understorey Species</i>	
<i>Does the Understorey Contain Native Species?</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Does the Patch have Connectivity to Other Vegetation?</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Overall % Native Species to be Removed</i>	As per the Offset Calculator (TfNSW, 2016b).

Attribute	Explanatory Notes / Requirements
<i>Mature Trees (DBH >300mm) Present?</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>No. of Hollow Bearing Trees Present</i>	
<i>Average No. of Hollow Bearing Trees to be Removed (per 1,000m²)</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Length of Fallen Timber >100mm in Diameter (m)</i>	
<i>Average Length of Fallen Timber to be Removed (per 1,000m²)</i>	As per the Offset Calculator (TfNSW, 2016b).
<i>Average Leaf Litter and Detritus Cover to Be Removed</i>	As per the Offset Calculator (TfNSW, 2016b).

Schedule X – Offsets Register Requirements

Attribute	Explanatory Notes / Requirements
<i>ID No.</i>	Unique identifier
<i>Easting & Northing</i>	Based on the centroid of the offset tree or other planting, rehabilitation site, as relevant. For offsets that comprise a planting other than a tree, the perimeter of the planting will also be surveyed using a differential GPS and represented in GIS as a polygon.
<i>Botanical Name (where relevant)</i>	For tree species, the correct botanical name.
<i>Date of Implementation</i>	
<i>Type of Offset</i>	Tree / Other planting / Civil Work / Education / Other
<i>Category of Offset under the Guide</i>	Group 1, Group 2, Group 3
Tree Attributes at time of Planting:	
<i>Size / height (m) of tree</i>	
<i>Soil volume (L)</i>	
<i>Maintenance Requirements</i>	
Attributes of non-tree Plantings:	
<i>Total Area (ha)</i>	
<i>Species planted</i>	
<i>Size of plantings</i>	
<i>Maintenance Requirements</i>	

Checklist for Environmental Consistency Assessment

<p>Existing Approved Project <i>Planning approval reference details (Application/Document No. (including modifications))</i></p> <p><i>Date of determination:</i></p> <p><i>Type of planning approval (Part 5.1 or Part 5):</i></p> <p><i>Description of existing approved project:</i></p> <p><i>Relevant background information (including: Part 5 – EA, REF, Submissions Reports or Part 5.1 – SEARs, PIR, DPE approvals, MCoA, any online officer’s reports on DPE website)</i></p>
<p>Description of proposed development/activity/works <i>Describe ancillary activities, duration of work, working hours, machinery, staffing levels, impacts on utilities/authorities, wastes generated or hazardous substances/dangerous goods used</i></p>
<p>Timeframe</p>
<p>Site description <i>Provide a description of the site on which the proposed works are to be carried out, including, Lot and Deposited Plan details where available.</i></p>

Site Environmental Characteristics

Describe the environment (i.e., vegetation, nearby waterways, land use, surrounding land use), identify likely presence of protected flora/fauna and sensitive areas

Justification for the proposed works

Address the need for the proposed works, whether there are alternatives to the proposed works (and why these are not appropriate), and the consequences with not proceeding with the proposed works

Environmental Benefit

Identify whether there are environmental benefits associated with the proposed works. If so, provide details.

Control Measures

*Will a project and site specific EMP be prepared?
EMP?*

Are appropriate control measures already identified in an existing

Climate Change Impacts

Is the site likely to be adversely affected by the impacts of climate change? If yes, what adaptation/mitigation measures will be incorporated into the design?

Impact Assessment – Construction

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures	Minimal Impact Y/N	Endorsed [for Planning and Environment Services use only]	
				Y/N	Comments
Flora and fauna					
Water					
Air quality					
Noise vibration					
Indigenous heritage					
Non-indigenous heritage					
Community					
Traffic					
Waste					
Social					
Economic					

Aspect	Nature and extent of impacts (negative and positive) during construction (if control measures implemented) of the proposed/activity, relative to the Approved Project	Proposed Control Measures	Minimal Impact Y/N	Endorsed [for Planning and Environment Services use only]	
				Y/N	Comments
Visual					
Urban design					
Geotechnical					
Land use					
Climate Change					
Risk					
Other					
Management and mitigation measures					

Impact Assessment - Operation

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures	Minimal Impact Y/N	Endorsed [for Planning and Environment Services use only]	
				Y/N	Comments
Flora and fauna					
Water					
Air quality					
Noise vibration					
Indigenous heritage					
Non-indigenous heritage					
Community					
Traffic					
Waste					
Social					
Economic					
Visual					
Urban design					

Aspect	Nature and extent of impacts (negative and positive) during operation (if control measures implemented) of the proposed activity/works, relative to the Approved Project	Proposed Control Measures	Minimal Impact Y/N	Endorsed [for Planning and Environment Services use only]	
				Y/N	Comments
Geotechnical					
Land use					
Climate Change					
Risk					
Other					
Management and mitigation measures					

Consistency with the Approved Project

Based on a review and understanding of the existing Approved Project and the proposed modifications, is there is a transformation of the Project?	
Is the project as modified consistent with the objectives and functions of the Approved Project as a whole?	
Is the project as modified consistent with the objectives and functions of elements of the Approved Project?	
Are there any new environmental impacts as a result of the proposed works/modifications?	
Is the project as modified consistent with the conditions of approval?	
Are the impacts of the proposed activity/works known and understood?	
Are the impacts of the proposed activity/works able to be managed so as not to have an adverse impact?	

<p>I certify that to the best of my knowledge this Consistency Checklist:</p> <ul style="list-style-type: none"> • examines and takes into account also the fullest extent possible all matters affecting or likely to affect the environment as a result of activities associated with the project; and • examines the consistency of the proposed activity/modification with the Approved Project; • is accurate in all material respects and does not omit any material information. 		
Name	Signature	Date
Title		

To be signed by person preparing checklist

THIS SECTION FOR PLANNING & ENVIRONMENT SERVICES USE ONLY

Application supported and submitted by:			
Name		Signature	Date
Title	Environment and Planning Manager		

Project Approvals

Planning Approvals (Refer to the Guide to Planning and Environmental Approvals)

Based on the above assessment, are the impacts and scope of the proposed activity/modification consistent with the existing Approved Project?

- Yes The proposed activity/works can be endorsed by the Associate Director, Sustainability, Planning and Development or Associate Director Environmental Impact Assessment or Senior Manager Planning
- No The proposed works/activity is not consistent with the Approved Project. A modification or a new activity approval/development consent is required. Advise Project Manager of appropriate alternative planning approvals pathway to be undertaken.

Environmental Approvals (Refer to the Guide to Planning and Environmental Approvals)

Identify all other approvals required for the project:

Tick appropriate box

No further assessment required.		Further Assessment is required	
---------------------------------	--	--------------------------------	--

Comments	Endorsed by	* Conditions of endorsement
	Associate Director, Sustainability, Planning and Development / Associate Director, Environmental Impact Assessment/ Senior Manager Planning	1. Works are to be undertaken in accordance with requirements of the existing planning approval, as amended by the proposed scope of works and associated control measures identified in this Checklist for Environmental Consistency Assessment



Construction Noise and Vibration Strategy

7TP-ST-157/4.0

Standard – Applicable to Infrastructure and Services

Quality Management System

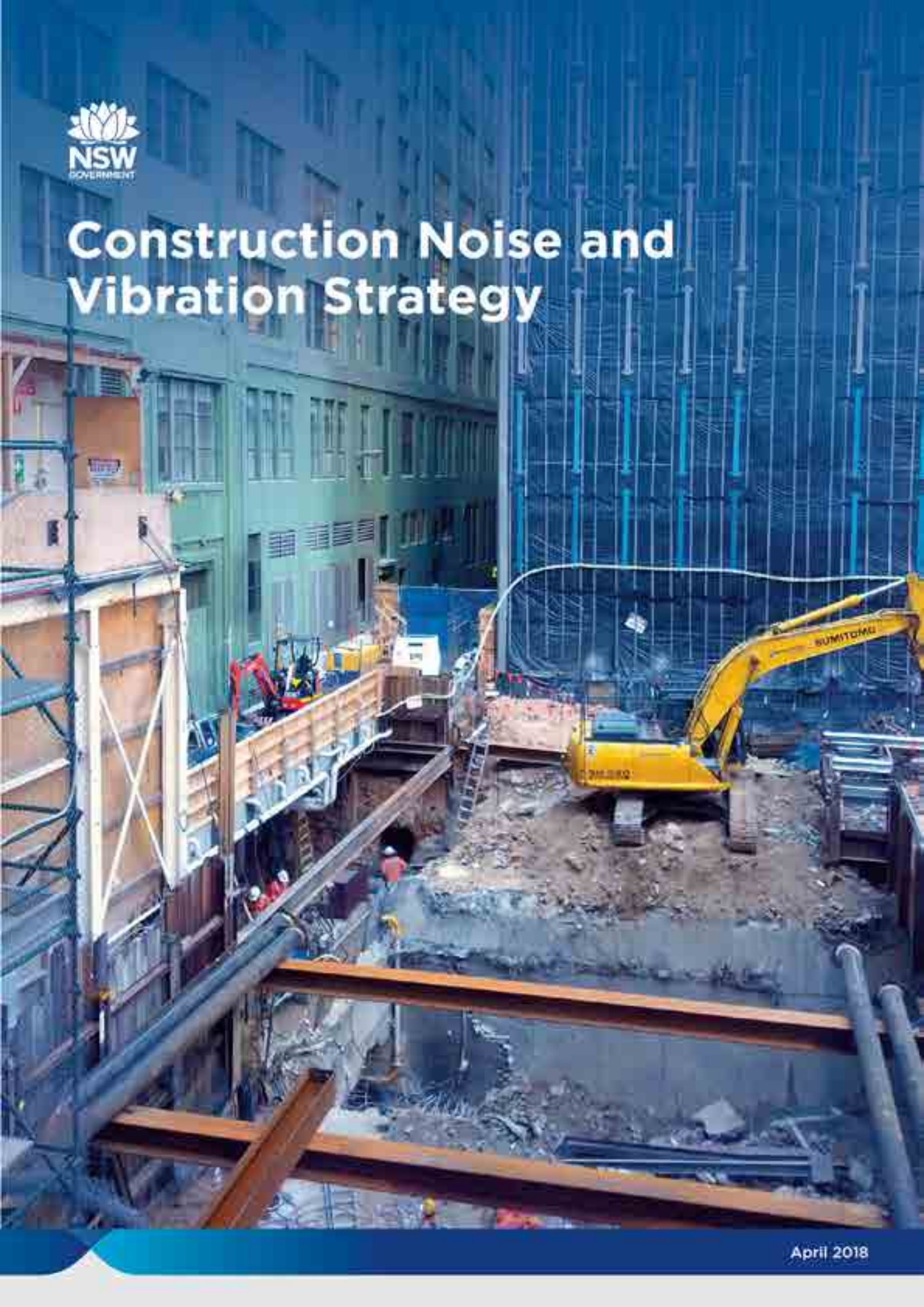
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1.0	13 Sept 11	912549	To provide practical guidance on how to minimise noises generated during the construction of projects.
2.0	11 Nov 11	912549	Updated to reflect Transport Projects Transition.
3.0	21 June 2016	1416544_10	Updated to current industry standards and to reflect transition from Transport Projects to Infrastructure & Services.
4.0	1 May 2018		Document is updated to: <ol style="list-style-type: none"> 1. Increase focus on the management of vibration impact 2. Update Management Principles 3. Define I&S preferred working hours hierarchy 4. Include community engagement methods 5. Include noise monitoring/verification record.



Construction Noise and Vibration Strategy





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Cover image: Building demolition at Wynyard for the Wynyard Walk project.

Image above: Sheet piling at Broadmeadow Station

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1. Overview



1.1. Context & Commitment

Transport for NSW Infrastructure and Services Division (I&S) leads the procurement and delivery of public transport infrastructure in NSW. The construction noise and vibration emissions associated with I&S projects can often cause disturbance to commuters, pedestrians, adjacent communities and other stakeholders. This Construction Noise and Vibration Strategy (CNVS) outlines the approach to be taken to mitigate and manage construction noise and vibration from I&S projects.

Guidance and principal requirements with regard to the management of noise and vibration from construction in NSW are contained in the:

- Interim Construction Noise Guideline (ICNG, Department of Environment and Climate Change 2009)
- Assessing Vibration: A technical guideline (AVTG, Department of Environment and Conservation 2006)

The ICNG and AVTG focus on applying a range of mitigation measures to minimise noise and vibration impact from construction rather than on achieving numerical objectives. These guidelines recognise that some construction noise and vibration is inevitable, and that it should be managed through the application of reasonable and feasible mitigation measures. The ICNG encourages organisations involved with construction, maintenance or upgrading works to develop their own best-practice techniques for managing construction noise and vibration.

Transport for NSW (TfNSW) is committed to avoiding or minimising noise and vibration impacts from all construction projects under its control. The CNVS provides the methodology by which noise and vibration from I&S construction projects can be assessed and mitigation measures identified and applied.

For many I&S projects, construction works occur close to residences or other sensitive receivers. In addition, due to the impact of such works on infrastructure and services they are often required to be undertaken outside standard construction hours to minimise or avoid disruption to commuter services and/or road traffic on major roads, for example at night or over the weekend. Adverse community reaction to noise and vibration impact can often be managed by informing stakeholders of the potential impacts, the time periods over which these will occur and the proposed mitigation measures that will be employed to minimise the impacts.

I&S is committed to engaging with the community affected by our projects through effective consultation and the provision of information regarding the noise and vibration impacts of our projects.

In preparing this strategy, consideration has also been given to guidance contained in the *Australian Standard AS 2436:2010 - Guide to noise and vibration control on construction, demolition and maintenance sites* and the *Roads & Maritime Services Construction Noise and Vibration Guideline (April 2016)*.

1.2. Scope

This strategy is applicable to all I&S projects including urban centres, multimodal transport hubs and interchanges, and infrastructure installation and upgrades for buses, trains, light/heavy rail and ferries.

Typical construction projects covered by this strategy include (but are not limited to):

- Station upgrades - commuter car parks, easy access, transport interchanges
- Light rail infrastructure
- Bus priority infrastructure

- Heavy rail infrastructure
- Ferry fleet and infrastructure upgrades

The document may be used in the development of, or referred to, in:

- Environmental Impact Assessment (EIA) documents
- Design and construction environmental management documents
- Contract documents
- Approvals and licences (subject to the agreement of the relevant regulatory authority)

This document does not take precedence over approval or licence conditions and will be reviewed as required in response to the release of relevant guidelines, standards and policies dealing with construction noise.

This strategy shall be considered by all personnel involved in the delivery of I&S projects when assessing and managing noise and vibration impacts and is most relevant for:

- Project managers
- Environmental staff
- Delivery Partners to TfNSW
- Acoustical consultants

1.2.1. Work health and safety considerations

In addition to potential noise and vibration impacts on stakeholders and structures, construction noise and vibration can also have an adverse impact upon the health of workers.

It is advised that this document does not address occupational noise exposure. This is administered through the Work Health and Safety Act 2011 and Work Health and Safety Regulation 2017.



1.3. Objectives

The key objectives of this strategy are to:

1. Provide a consistent process for evaluating the construction noise and vibration impacts from I&S projects by providing simple and detailed assessment methods, with a clear pathway to identifying the best approach for each project
2. To provide clarity on level of assessment required for construction noise and vibration before and during construction activities
3. Encourage organisations to undertake construction works during standard construction hours where feasible and reasonable to do so. Where out of hours works (OOHW) are required, providing a hierarchy of preferred working hours and procedure for mitigating and managing impacts from these works
4. Ensure proactive consultation with the community and other stakeholders, to facilitate effective project delivery with balanced stakeholder impacts
5. Implement reasonable and feasible noise and vibration mitigation measures on all projects that take into consideration the time of works and the likely extent and duration of impact
6. Verify noise assessments undertaken during the EIA stage prior to construction commencing to ensure that any changes to the project's design, scope, construction method or the mitigation measures proposed in the EIA are re-evaluated and any additional (or changes to the) mitigation measures are identified
7. Monitor the implementation and effectiveness of the project's noise and vibration mitigation measures

1.4. Construction hours

Construction activities (including the delivery of plant and equipment) should be limited to the Standard Hours described in Table 1 below wherever feasible and reasonable. This helps reduce noise and vibration impacts by limiting potentially noisy and vibration causing construction activities to the day time, when background noise levels are higher, and by providing respite from construction noise and vibration during the evening, overnight and on weekends.

Table 1: Construction Hours^{1,2}

Hour commencing	12 AM	1 AM	2 AM	3 AM	4 AM	5 AM	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	12 PM	1 PM	2 PM	3 PM	4 PM	5 PM	6 PM	7 PM	8 PM	9 PM	10 PM	11 PM
Monday	OOHW Period 2							Standard Hours							OOHW Period 1									
Tuesday	OOHW Period 2							Standard Hours							OOHW Period 1									
Wednesday	OOHW Period 2							Standard Hours							OOHW Period 1									
Thursday	OOHW Period 2							Standard Hours							OOHW Period 1									
Friday	OOHW Period 2							Standard Hours							OOHW Period 1									
Saturday	OOHW Period 2							OOHW Period 1 Day							OOHW Period 2									
Sunday	OOHW Period 2							OOHW Period 1 Day							OOHW Period 2									
Public Holiday	OOHW Period 2							OOHW Period 1 Day							OOHW Period 2									

¹ Standard construction hours are defined as: Monday to Friday 7:00am to 6:00pm and Saturdays from 8:00am to 1:00pm.

² Work outside of standard construction hours is defined as Out-of-Hours Work (OOHW) and can be divided into 2 periods of sensitivity. OOHW Period 1 is defined as Monday to Saturday 6:00pm to 10:00pm (evenings), Saturday 7:00am to 8:00am and 1:00pm to 10:00pm (day & evening) and Sunday and public holidays 8:00am to 6:00pm (days). OOHW Period 2 is defined as Monday to Saturday 10:00pm to 7:00am (nights) and Sundays and public holidays 6:00pm to 8:00am (nights).

In addition to the above,

- Construction activities with special audible characteristics (high noise impact, intensive vibration, impulsive or tonal noise emissions) should be limited to standard hours, starting no earlier than 8am; and to continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block, unless otherwise approved by TfNSW (see Section 6.1.1 and Additional Mitigation Measure Duration Reduction in Table 8)
- Blasting, where required, should be limited to between 9am and 5pm Monday to Friday and 9am and 1pm Saturday. There should be no blasting on Sundays or public holidays

Standard construction hours are typically set out in the approval conditions and/or Environment Protection Licence (EPL), if applicable, for each project, and may differ from those above where the impact has been assessed and approved as part of the EIA. The hours of construction stipulated in the EIA or EPL (if applicable) shall be implemented as a first preference.

Work outside these hours should only be conducted when it is not feasible or reasonable to work within standard hours. Any decisions to work outside of these hours shall be documented and assessed in the OOHW Application to justify this requirement.

Blasting and construction activities generating noise with special audible characteristics may be completed outside of the listed time restrictions if endorsed by the Associate Director Community Engagement (or nominated delegate) and approved by the Associate Director Environmental Management (or nominated delegate) or relevant authority. Note that strong justification would be required to support these activities being completed outside the recommended hours.

1.5. Operational noise

This strategy does not address operational noise from the site once construction is complete. Guidance for operational noise should be taken from:

- EPA (2013) Rail infrastructure noise guideline, NSW Environment Protection Authority
- EPA (2017) NSW Noise Policy for Industry, NSW Environment Protection Authority
- DECCW (2011) Road noise policy, NSW Department of Environment, Climate Change and Water
- Relevant EIA, Planning Approval Conditions and Technical Specifications and/or Standards for specific requirements regarding operational noise

2. Abbreviations and definitions



All terminology in this Standard is taken to mean the generally accepted or dictionary definition except for the following terms which have a specifically defined meaning:

Assessment location	An identified residence or other sensitive land use
a_{rms}	“Weighted Root Mean Squared Acceleration”, a vibration parameter used to assess human response to continuous or intermittent vibration
Attenuation	The reduction in the level of noise or vibration
Assessment period	The time period in which an assessment is made, for example standard hours 7am-6pm
AS1055	Australian Standard, <i>AS1055:1997 - Acoustics - Description and measurement of environmental noise</i>
AS2436	Australian Standard, <i>AS2436:2010 - Guide to noise and vibration control on construction, demolition and maintenance sites</i>
AVTG	NSW Department of Climate Change <i>Assessing Vibration - a technical guideline</i> , (OEH, 2006)
A-weighting	An adjustment made to the sound level measurement to approximate the response of the human ear
Background noise	The underlying level of noise present in the ambient noise, when extraneous noise is removed and in the absence of the noise under investigation. This is described using the LA90 descriptor, see Rating background level definition
BS5228	British Standard, <i>BS5228-1:2009 Code of practice for noise and vibration control on construction and open sites</i>
BS7385	British Standard, <i>BS7385-2:1993 Evaluation and measurement for vibration in buildings</i>
CNVIA	Construction Noise & Vibration Impact Assessment, a supporting assessment to the Environmental Impact Assessment required under the <i>Environmental Planning & Assessment Act 1979</i>
CNVIS	Construction Noise & Vibration Impact Statement, an assessment prepared during the project delivery phase to confirm noise and/or vibration management
CNVMP	Construction Noise & Vibration Management Plan, a supporting management plan to the Construction Environmental Management Plan required during the project delivery phase for all I&S projects
Construction	Includes the erection, installation, alteration, repair, maintenance, cleaning, painting, renewal, removal, excavation, dismantling or demolition of, or addition to, any building or structure, or any work in connection with any of these activities, that is done at or adjacent to the place where the building or structure is located. Construction works occur on a site for a limited time period only and may include pre-construction or enabling works for Projects
dB(A)	A measure of A-weighted sound levels.
DIN4150	German Institute for Standardisation, <i>DIN4150-3:1999-02 Structural vibration - Effects of vibration on structures</i>
Emergency works	Unforeseen works immediately needed to prevent the loss of life, damage to property or environmental harm

EMR	Environmental Management Representative. The EMR is appointed to a Project by the I&S Associate Director, Environmental Management to provide advice in relation to the environmental compliance and performance of the Project
ENMM	NSW Roads & Traffic Authority, <i>Environmental Noise Management Manual</i> (December, 2001)
Environmental impact assessment (EIA)	A broad term that covers the range of assessments required under the Environmental Planning and Assessment Act 1979 and any related amendments to the Act.
EPA	NSW Environment Protection Authority
EPL	Environmental Protection Licence required by the <i>Protection of the Environment Operations Act 1997</i>
Extraneous noise	Noise resulting from activities that are not typical of the area. Atypical activities include traffic generated by holiday periods and special events such as concerts or sporting events. Normal daily traffic/transport noise is not considered to be extraneous
Feasible	<p>A mitigation measure that can be engineered and is practical to build and/or implement, given project constraints such as safety, maintenance and reliability requirements. When determining if a mitigation measure or work practice is feasible, consideration should be weighted towards engineering and safety constraints rather than cost-benefit of noise mitigation which is more appropriately assessed under the reasonableness test</p> <p>Implementing noise mitigation at the source is always the preferred method of noise control as it reduces the impact on the surrounding area. Control of noise in the path between the source and the receiver, or mitigation at the receiver usually requires measures to block the transmission of noise by means of barriers or architectural treatments to building façades. As the benefit from these measures only apply to a limited area, they should only be considered after exhausting all feasible options to control noise at the source³</p>
Ground-borne noise	Noise heard within a building that is generated by vibration transmitted through the ground into the structure from construction works, sometimes referred to as 'regenerated noise' or 'structure-borne noise'. Ground-borne noise can be more noticeable than airborne noise for underground works such as tunnelling. The ground-borne noise levels are only applicable when ground-borne noise levels are higher than airborne noise levels
Heavy Vehicle	A truck, transporter or other vehicle with a gross weight above a specified level (for example: over 8 tonnes)
Internal noise level	Applies at the centre of the room in use that is most exposed to the construction noise, and can include both airborne and ground-borne noise
I&S	Infrastructure & Services division of TfNSW
ICNG	NSW Department of Environment and Climate Change <i>Interim Construction Noise Guideline</i> , published July 2009
NPfI	NSW Environment Protection Authority, <i>NSW Noise Policy for Industry</i> , (EPA, 2017)
LA1(1minute)	The A-weighted sound pressure level that is exceeded for 1% of the 1 minute measurement period
L_{Amax}	The "Maximum Noise Level" for an event, used in the assessment of potential sleep disturbance during night-time periods. The subscript "A" indicates that the noise levels are filtered to match normal human hearing characteristics (i.e. A-weighted)

³ Draft Construction Noise Guideline (NSW EPA, June 2017).

LAeq	The A-weighted equivalent continuous (energy average) sound pressure level of the construction works under consideration over a defined period (such as 15-minutes, shown as LAeq(15 minute)) Other descriptors may be used providing they can be justified as representing the characteristics of the construction noise. Note that during verification monitoring the LAeq should exclude other sources such as from industry, road, rail and the community
LA90	The “Background Noise Level” in the absence of construction activities. This parameter represents the average minimum noise level during the daytime, evening and night-time periods respectively. The LAeq(15 minute) construction noise objectives are based on an allowance margin above the LA90 background noise levels, see Rating background noise level definition
Mandatory	Required by legislation. The Guideline specifies noise management levels that guide the need to apply work practices to minimise noise impacts, but the legislation does not make it compulsory, that is not mandatory, to meet these noise levels. However, the Guideline will be used when setting statutory (legally enforceable) conditions in a licence or consent
Most affected location(s)	Location(s) that experience (or will likely experience) the highest noise level from the construction works under consideration. In determining these locations, existing background noise levels, noise source location(s), distance and any shielding between the construction works (or proposed works) and the residences and other sensitive land uses need to be considered
NML	Noise Management Level as defined by the NSW EPA and in compliance with the ICNG, see APPENDIX A. NMLs may be referred to as noise objectives in this document
NVSR	Noise and Vibration Sensitive Receiver
OOHW	“Out-of-Hours Work” referring to construction activities outside of the Standard Construction Hours (see page 8 or Section 1.4)
PPV	“Peak Particle Velocity” evaluated at the building footings and used to assess the risk of damage to structures
Proponent	The developer of the construction works under consideration
Rating background level (RBL)	The overall single-figure background noise level for each assessment period. Determination of the rating background level is by the method described in the <i>NSW Noise Policy for Industry</i> (EPA, 2017). This approach aims to result in the noise management level being met for at least 90% of the time periods (15 minutes each) over which reactions of annoyance can occur
Reasonable	Selected from those mitigation measures that are feasible. Involves judging whether the overall noise benefits provide significant social, economic or environmental benefits. Factors to be considered include: <ol style="list-style-type: none"> 1. Likely noise impact, including: <ul style="list-style-type: none"> • existing and future noise levels and projected changes in noise levels; • the number of people likely to be affected; and • any noise criteria specified by appropriate regulatory authorities through licences, consents or conditions. 2. Noise mitigation benefits, including: <ul style="list-style-type: none"> • the cumulative noise reduction from the proposed work practices or noise abatement measures;

- likelihood of the work practices or noise abatement measures to reduce noise during the construction stage, and preferably also the operational stage of the project; and
 - consideration of the total number of noise sensitive receivers benefiting from noise mitigation.
3. Effectiveness and cost-benefit of noise mitigation, including:
 - total cost of mitigation measures, considering the physical attributes of the site, such as topography and geology, and the financial cost to project given benefit expected;
 - noise mitigation costs compared with total project costs allowing for capital and maintenance;
 - impact of disruption to essential transport and utility networks, for example main roads, railways, water, gas and electricity supply; and
 - risk to worker safety, including during live traffic (road or rail) conditions.
 4. Community views, including:
 - engagement on the aesthetics and any other impact associated with work practices and abatement measures;
 - preferences for work scheduling and respite periods for work outside recommended standard hours; and
 - establishing which practices or measures have support from the affected community⁴.

RING	NSW Environment Protection Authority, <i>Rail infrastructure noise guideline</i> , (NSW EPA, 2013)
RNP	NSW Department of Environment, Climate Change and Water <i>Road noise policy</i> , (DECCW, 2011)
Rough Sleeper	Rough sleepers are persons with no shelter or who are living in non-conventional accommodation. Non-conventional accommodation includes: living on the streets, sleeping in parks, squatting, staying in cars or railway carriages, or living in improvised dwellings
Sensitive Receiver	A sensitive receiver may refer to persons, facilities, structures or organisms that can be impacted by noise and/or vibration such as residents, students, specialist medical equipment, heritage structures and marine mammals etc. Further detail on receivers other than residential receivers is provided in Section 8.3.1 and Appendix A
Short-term maintenance works	Maintenance or repair of infrastructure, where the works are not likely to affect an individual or sensitive land use for more than three weeks in total
Special audible characteristics	Refers to noise with characteristics that can cause annoyance and disturbance, containing noticeable factors such as tonality, low frequency noise, impulsive or intermittent noise events. These characteristics may not be considered noisy in quantitative sense. Refer to APPENDIX C, Table 19 for specific plant and equipment identified as having special audible characteristics
SPL	Sound Pressure Level
SWL	Sound Power Level
TfNSW	Transport for New South Wales
Vibration	The term for the perception of continuous, impulsive or intermittent shaking, pulsing or trembling caused by construction activities. Vibration to be measured and assessed as outlined in Appendix A of this strategy

⁴ Draft Construction Noise Guideline (NSW EPA, June 2017).

3. Applying the Construction Noise & Vibration Strategy



The CNVS may be applied at any stage of project assessment and delivery, but will primarily be applicable during the EIA, development of the construction noise and vibration management plan and when assessing OOHV. Figure 1 below presents a quick reference diagram for each section of the CNVS.

Figure 1: Application of the CNVS

Environmental Impact Assessment	<ul style="list-style-type: none"> • To determine noise environments, noise & vibration impacts and construction noise objectives in the EIA Phase, see Section 4 • Identify Construction Noise & Vibration Impact Assessment (CNVIA) assessment method - Section 7 • Identify standard and additional mitigation measures for the Delivery Phase - Section 8
Management in the Delivery Phase	<ul style="list-style-type: none"> • Verifying and managing noise & vibration impact in the Project Delivery Phase, See Section 5 • Prepare Construction Noise & Vibration Management Plan including OOHV Protocol - Sections 5, 6, 7 & 8 • Confirm standard and additional mitigation measures for the Delivery Phase - Section 8
OOHV in the Delivery Phase	<ul style="list-style-type: none"> • Out-of-Hours Working justification, assessment and approval processes in the Delivery Phase, See Section 6 • Determine Construction Noise & Vibration Impact Statement (CNVIS) assessment method - Section 7 • Determine and implement standard and additional mitigation measures for the Delivery Phase - Section 8
Impact Assessment Method	<ul style="list-style-type: none"> • Approach to Construction Noise & Vibration Impact Statements (CNVIS), See Section 7 • Simple CNVIS, See Section 7.1 • Detailed CNVIS, See Section 7.2
Mitigation	<ul style="list-style-type: none"> • Determining mitigation measures in the EIA and Delivery Phases • Standard mitigation measures, See Section 8.1 • Additional mitigation measures and their application, See Section 8.2

4. Environmental impact assessment



As part of the EIA process, the impacts on nearby receivers of airborne noise, ground-borne noise and ground-borne vibration generated during the construction of a project are evaluated. This assessment shall be undertaken by an acoustic consultant or suitably experienced environmental representative (for low risk projects in agreement with TfNSW). The assessment shall form part of the EIA documentation (e.g. Review of Environmental Factors) that is considered by the approval authorities. The noise and vibration construction assessment:

- Is based on an initial design, scope and construction methodology for the project
- Identifies sensitive receivers, the existing background noise levels and construction noise and vibration objectives (see APPENDIX A)
- Identifies the feasible and reasonable noise and vibration mitigation measures (including any project specific measures⁵) that are required to mitigate any predicted exceedance of the construction noise and vibration objectives

A noise and vibration assessment should be included in the project documentation placed on public display. This will include the construction noise and vibration objectives for the project and any accompanying mitigation measures. Comments received from stakeholders on the proposed mitigation measures for the project shall be considered and if deemed necessary, changes shall be made to the proposed mitigation plan, prior to the project being approved or licensed. APPENDIX A describes in detail the construction noise and vibration assessment process.

4.1. Impact Assessment Method

A Construction Noise and Vibration Impact Assessment (CNVIA) known as a 'quantitative assessment' may be undertaken as part of the EIA process. A CNVIA must be prepared in accordance with the requirements of APPENDIX A.

The level of detail for a CNVIA/S will vary depending on the scale of the works and the likely noise and vibration impacts. The assessment may be conducted as a simple or detailed assessment, as outlined below:

- **Simple assessment:** Where noise and vibration objectives are unlikely to be exceeded. For example, the construction of a chain wire safety fence as part of preparatory works during the daytime or evening period. See Section 7.1
- **Detailed assessment:** Larger projects, where noise and vibration objectives will likely be exceeded will require more detailed assessment of the potential noise and vibration impacts. The construction of a new bridge outside standard construction hours over a period of 4 weeks would require a detailed assessment of the potential noise and vibration impacts. See Section 7.2

Risk factor principles are provided in the notes of Figure 3, page 26.

⁵ For example: physical structures such as construction noise barriers, acoustic sheds, dwelling treatments, acoustic barriers around noisy plant, operational noise barriers erected early, etc. or special construction methods such as penetrating cone fracture or controlled blasting in place of conventional rock breaking, etc.

5. Management in the Delivery Phase



The EIA documentation is generally based on an initial ‘concept’ design and construction methodology. Typically, as the design of a project is further developed following its approval, the construction methodology and staging is altered, triggering further assessment.

To ensure the adequacy of the noise and vibration mitigation measures for the final design and construction method, a Construction Noise and Vibration Impact Statement (CNVIS) will be undertaken. This process is outlined in Figure 2. The CNVIS should be used as the basis on which to develop the Construction Noise & Vibration Management Plan (CNVMP)⁶ for the project. The CNVIS may be updated or a separate CNVIS prepared for each major stage of works or activity and the CNVMP revised as required. The CNVMP must form part of the Construction Environmental Management Plan (CEMP) for all I&S projects.

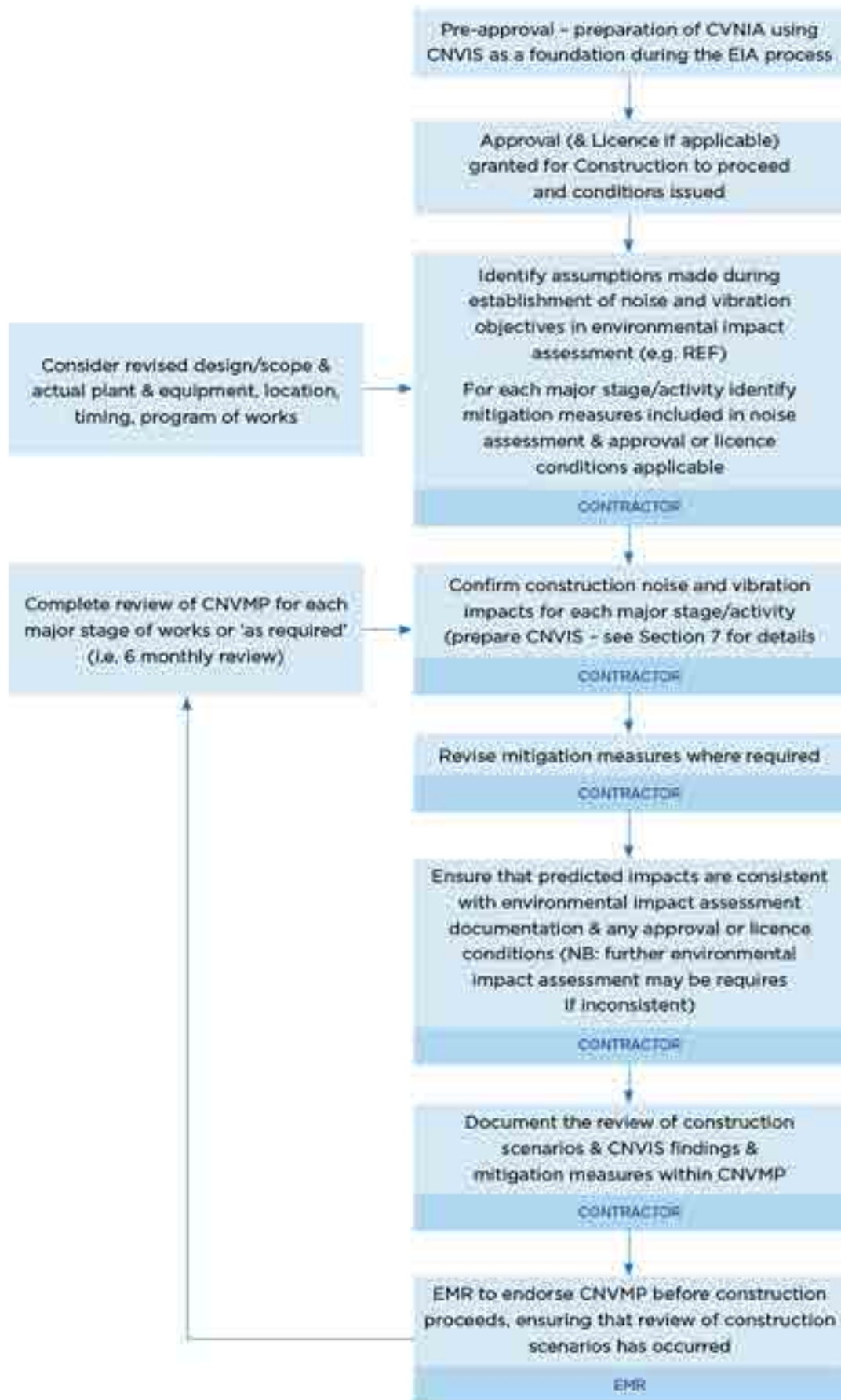
The level of detail for a quantitative CNVIS will vary depending on the scale of the works and the likely noise and vibration impacts. The assessment may be conducted as a simple or detailed assessment, as outlined in Section 7.

The CNVMP assessment process outlined in Figure 2 will need to be approved by the Environmental Management Representative (if applicable). The noise and vibration impact assessments should be undertaken in accordance with the guidance provided in this strategy and the relevant Environment Protection Licence conditions (if applicable). More detail on the assessment process is provided in Section 7.



⁶ NB: Any changes to the project must be consistent with the environmental assessment documentation and project approval and cannot cause significant additional impacts on the environment or stakeholders.

Figure 2: Construction noise and vibration assessment review procedure⁷



⁷ If considered necessary (i.e. noise measurements are more than 5 years old), RBL measurements may be confirmed through the implementation of this procedure.

6.00HW assessment



Construction work may need to be completed outside the recommended standard construction hours where required to maintain a safe work environment and avoid or minimise impacts to operational transport infrastructure and services or to utilities networks, including limiting disruption to pedestrians, commuters, traffic or utilities. For example construction activities within operational rail corridors often need to be undertaken during track possessions that are scheduled by the railway network operator, typically during periods of lower commuter use (overnight, weekends and holiday periods).

Box 1 on the following page contains a **sample** of typical practices under which OOHW may be permitted.

The procedure for assessing and approving / rejecting proposals for OOHW is set out in Figure 3. The key features of the procedure include:

- All applications for out of hours work must be made on the approved form and accompanied by the required information
- The approval pathway will be determined on a risk-based approach on a case-by-case basis to ensure that OOHW are approved by the appropriate delegate. Low risk activities may include work that is no more than 5dBALeq(15minutes) above RBL during any period, with no sleep disturbance potential and occurring for no longer than 6-weeks in the same Noise Catchment Area (NCA). High risk activities may include work with high impact noise, or during more sensitive times, where receivers will be significantly affected by construction noise
- Out of hours work with low risk factors (see Figure 3) may be approved by the Environmental Management Representative (EMR) for the project unless otherwise specified by an approval or licence condition. If there is no EMR assigned to the project, approval must be given by the I&S Senior Manager Environment (SME)
- Out of hours work with medium or high risk factors (see Figure 3) may be approved by the SME for the project unless otherwise specified by an approval or licence condition
- Applications for approval of out of hours work with medium or high risk factors (including those requiring the EPA's approval) must be supported by a CNVIS or other acoustic assessment prepared in accordance with the guidance in Section 7 and relevant licence conditions
- Out of hours work with a high factor can only be approved by the SME, Associate Director Environmental Management or the Department of Planning & Environment (whichever is applicable) following endorsement by the EMR

Note that OOHW for activities covered by an EPL may be subject to a separate approval process and is the responsibility of the licence holder (see footnote⁸).

⁸ This form is not used for applications for out of hours work covered by an EPL. The licence holder will have their own procedure covering such applications.

Box 1: Works permitted outside of standard construction hours

- any works which do not cause noise emissions to be more than 5dBA higher than the Rating Background Level (RBL) at any nearby residential property and/or do not exceed the noise objectives of other noise sensitive receivers, and subject to approval under the OOHWP Protocol (OOHWP)
- out of hours work identified and assessed in the EIA or the approved out of hours work protocol (OOHWP)
- the delivery of plant, equipment and materials which is required outside these hours as requested by police or other authorities for safety reasons and with suitable notification to stakeholders as agreed by the Senior Manager Environment (SME) or Associate Director Environmental Management (ADEM)/Department of Planning & Environment (whichever is applicable)⁹
- emergency work to avoid loss of life, damage to external property, damage to utilities and infrastructure, prevent immediate harm to the environment, prevent contamination of land or damage to a heritage (indigenous or non-indigenous) item¹⁰
- any other work as agreed by the SME/Department of Planning & Environment and considered essential to the Project, or as approved by EPA (where an EPL is in effect) subject to:
 - works which include works with special audible characteristics including sheet piling, pile driving, rock hammering/breaking must be agreed to by the Associate Director Environmental Management/Department of Planning & Environment (whichever is applicable) or as approved by EPA (where relevant to the issuing of an EPL).
 - notification of stakeholders no less than 7 days prior to such activities being undertaken or other period as agreed to by the Director Community Engagement (or nominated delegate) or as approved by EPA (where relevant to the issuing of an EPL). The notification shall include likely times and duration of works.
 - Implementation of the Additional Management Measure: Duration Reduction for extended hours requested for the sole purpose of reducing the duration of construction on public infrastructure projects (see Table 8).

⁹ Depending on whether the project is determined by TfNSW – Infrastructure & Services or approved by the Minister for Planning & Environment.

¹⁰ Works that have continued beyond the approved hours as a result of poor planning or scheduling, delays or unforeseen circumstances are not considered emergency works unless they also satisfy the criteria for emergency works. Any emergency OOHWP must be recorded as an incident in compliance with I&S procedures.

6.1.1. Preferred Working Hours

6.1.1.1. Standard Construction Hours

As a general principle, work shall be completed during standard construction hours wherever reasonable and feasible. However there may be instances where the community may consider work during standard hours as unreasonable, for example, examination periods at educational institutions or during services at places of worship. In these cases it is recommended that Delivery Partners negotiate suitable working times with Other Sensitive Receivers (see Section 8.3.1).

It is also a requirement of this strategy that Construction activities with special audible characteristics (high noise impact, impulsive or tonal noise emissions) should be limited to standard hours, starting no earlier than 8am; and to continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block, unless otherwise approved by TfNSW. Approval may be in the form of Request for Information (RFI) correspondence or OOHW Approvals.

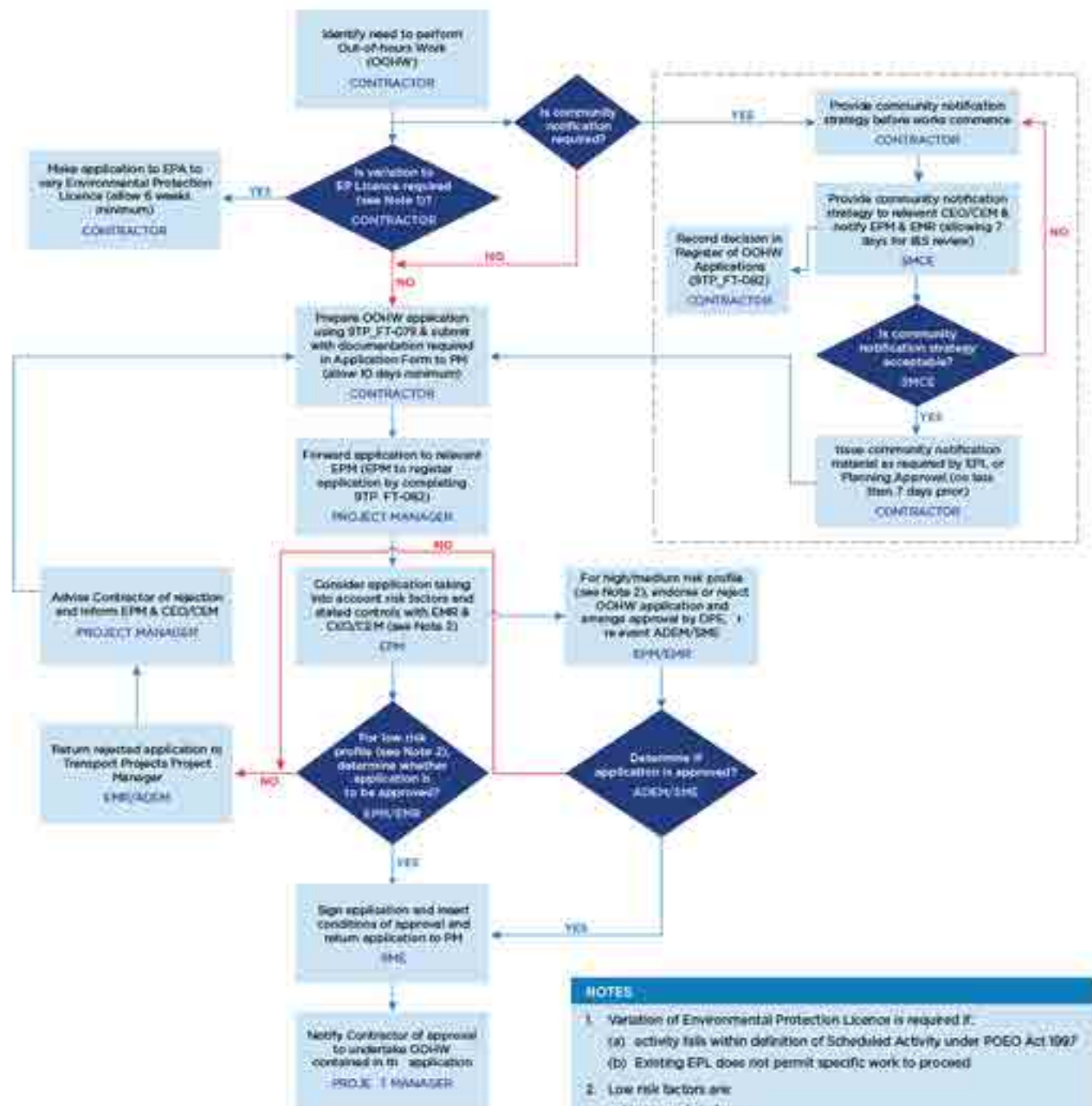
6.1.1.2. OOHW hierarchy

Where OOHW is required, the following hierarchy of working hours must be considered to minimise impacts. The hierarchy does not prohibit work where there is reasonable justification to complete OOHW during restricted timeframes such as Rail Possessions. However, impact of all OOHW activities may be reduced by scheduling work and activities with greater impact during preferred periods when receivers are less sensitive to noise and vibration.

1. Saturday afternoon periods between 1pm and 6pm (Period 1 Day)
2. Sunday and public holiday day periods between 8am and 6pm (Period 1 Day)
3. Weekday evening periods between 6pm and 10pm (Period 1 Evening)
4. Weekend evening periods between 6pm and 10pm (Saturdays Period 1 Evening/Sundays Period 2)
5. Weekend night periods between 10pm and 8am (Period 2)
6. Work during the weekday evening and night and scheduling the noisiest work first (between 6pm and 10pm) to minimise sleep disturbance impacts in the night period between 10pm and 7am) (Period 1 Evening & Period 2)
7. All other times outside recommended standard hours

Note: The hierarchy listed above shall be subject to feedback from affected sensitive receivers and be revised on a case-by-case basis, as required.

Figure 3: Out-of-hours work assessment and approval procedure



- NOTES**
- Variation of Environmental Protection Licence is required if:
 - activity falls within definition of Scheduled Activity under POEO Act 1997
 - Existing EPL does not permit specific work to proceed
 - Low risk factors are:
 - No sleep disturbance
 - 1800 – 2200 weekdays
 - 1500 – 2200 Saturdays
 - 0800 – 1800 Sunday & Public Holiday
 - 1 or 2 occurrences
 - No impulsive or tonal noise/vibration.
- Medium risk factors are:
- Sleep disturbance risk
 - 2200 – 0700 weekday nights
 - 2200 – 0600 Saturday nights
 - 1800 – 0700 Sunday & Public Holidays nights
- High risk factors are:
- Prolonged work (ie > 1 week)
 - Sleep disturbance possible
 - Impulsive noise or vibration likely (eg vibratory rolling or rock breaking)
- Contractor to allow extra time with second level of approval.
 (NOTE: for low & medium risk factors, complete Noise Estimator.
 For high risk factors, acoustic assessments are required)

LEGEND

ADEM	Associate Director Environmental Management
CEM	Community Engagement Manager
CEO	Community Engagement Officer
DPE	Department of Planning and Environment
EMR	Environmental Management Representative
EPA	Environment Protection Authority
EPM	Environment & Planning Manager
OOHW	Out-of-hours Work
PM	Infrastructure & Services Project Manager
POEO	Protection of Environment Operations Act
SME	Senior Manager Environment
SMCE	Senior Manager Community Engagement

7. Assessing construction noise and vibration impact



Construction noise and vibration impact should be assessed for all construction works. The assessment identifies the potential impact of airborne noise, ground-borne noise and/or ground-borne vibration on nearby receivers. Appropriate mitigation measures can then be determined depending on the level of impact, the duration of the works and the time at which the noise or vibration activity occurs.

The assessment aims to minimise the inconvenience to affected receivers by limiting the level of construction noise and vibration. The assessment reviews whether identified noise and vibration mitigation measures are reasonable and feasible, and provides alternative management measures whenever this is not the case.

Initially, this should be completed as part of the EIA phase. The assessment should be reviewed prior to the construction phase to confirm if it is still applicable. If elements have changed, a revised assessment is needed.

There are two types of noise and vibration assessment that can be completed under this strategy:

- Simple noise and vibration assessment
- Detailed noise and vibration assessment

A simple assessment should be completed where noise and vibration objectives are unlikely to be exceeded. The assessment can be completed by the construction contractor using the Construction Noise and Vibration Impact Estimator Tool, as outlined in Section 7.1 and APPENDIX E. The only applicable qualitative noise assessment endorsed under this strategy is where it can be demonstrated that no noise generating activities will occur and therefore no quantitative noise assessment can be completed, such as inspections that do not require noise generating equipment or tools.

A detailed assessment is required where noise and vibration objectives will be exceeded, and will follow the quantitative process as outlined in Section 7.2.

Table 2: Simple or detailed assessment?

Is a detailed assessment required?	
Yes	<ul style="list-style-type: none"> • Go to Section 7.2 Detailed Assessment
No	<ul style="list-style-type: none"> • Go to Section 7.1 Simple noise and vibration assessment • Complete the assessment using the Construction Noise Estimator Tool
Unsure	<ul style="list-style-type: none"> • Go to Section 7.1 Simple noise and vibration assessment • Use the Construction Noise Estimator Tool to: <ul style="list-style-type: none"> • Use the Construction Noise Estimator Tool complete the assessment and • confirm if Detailed Assessment is required

7.1. Simple noise and vibration assessment

Simple construction noise and vibration assessments can be completed using the TfNSW Construction Noise Impact Estimator Tool (APPENDIX E). The tool will either:

- Provide an adequate assessment of noise impacts and identify appropriate mitigation measures, or
- Provide a screening test to determine that a more detailed assessment is required (Section 7.2 outlines detailed assessment)

The following sections outline the steps taken to complete the simple noise and vibration assessment procedure.

7.1.1. When will the construction works to be carried out?

Confirm whether works will be completed in:

- Standard construction hours
- OOHW Period 1
- OOHW Period 2

Section 1.4 defines the relevant construction periods.

7.1.2. How long will it take to complete the construction activity?

Less than 6 weeks →	use the Construction Noise Estimator Tool
More than 6 weeks →	go to Section 7.2 Detailed Assessment

7.1.3. What are the construction works to be assessed?

- Establish a representative range of construction stages/ scenarios to be assessed
- Identify list of plant and equipment for each construction stage/scenario

7.1.4. Confirm the study area by identifying noise and vibration sensitive receivers

- Determine construction noise study area by identifying noise sensitive receivers, including other sensitive receiver types discussed in APPENDIX A
- Determine construction vibration study area by running a further screening test

1. Are there receivers within the minimum working distances for Cosmetic Damage to buildings (see APPENDIX D)?	
YES	Go to Section 7.2 Detailed Assessment
NO	Go to item 2 below

2. Are the works within the minimum working distances for human disturbance?	
YES	Go to Section 7.2 below and assess vibration impact
NO	Simple vibration assessment complete. The risk of vibration impact is assessed as low. A clear statement to this effect should be included in the report

The answers provided to the questions in the Sections 7.1.1 to 7.1.5 above will determine whether the construction noise estimator tool is adequate or a detailed assessment is required.

7.1.5. Determine noise and vibration management objectives

- Determine construction noise objectives

Noise monitoring is not essential for a simple noise assessment, although it is not excluded. Construction noise objectives may be determined by:

1. Estimating background noise levels from AS1055¹¹ – see Section B.1.1 or RBL/s determined from monitoring, where reasonable and feasible
2. Establishing Noise Management Levels based on ICNG – see Section A.1

¹¹ Unless otherwise specified by EPA or EPL approval requirements for establishing background noise levels.

3. Identifying sleep disturbance objectives during the 10pm to 7am night period (if applicable) – see Section A.1

- Determine construction vibration objectives

Vibration assessment may be required if construction activities will generate vibration. Will vibration intensive activities be implemented (see APPENDIX D)?

YES	confirm relevant vibration objectives based on receiver types (see Section 7.2.4)
NO	further vibration assessment is not required. The risk of vibration impact is assessed as low to negligible. A clear statement to this effect should be included in the CNVIA/S

Vibration assessment may be required, depending on the proximity of receivers to the work area. Are there vibration sensitive receivers within 100m of work area (see Table 20, APPENDIX D)?

YES	confirm relevant vibration objectives based on receiver types (see Section 7.2.4) The Construction Noise Estimator Tool cannot be used
NO	further vibration assessment is not required. The risk of vibration impact is assessed as low to negligible. A clear statement to this effect should be included in the CNVIA/S

- Determine construction traffic noise objectives (qualitative assessment may be used)

Will the construction traffic noise exceed the “without construction” scenario noise level by 2dBA?

YES	confirm construction traffic noise impact (See Section A.4). The Construction Noise Estimator Tool cannot be used
NO	further construction traffic noise assessment is not required. A clear statement to this effect should be included in the CNVIA/S

Will sleep disturbance objectives be triggered (if applicable – only required for construction traffic movement during the 10pm to 7am night period, see Section A.4)

YES	confirm construction traffic sleep disturbance impact. The Construction Noise Estimator Tool cannot be used
NO	further construction traffic noise assessment is not required. A clear statement to this effect should be included in the CNVIA/S

7.1.6. Assess construction impact using the construction noise estimator tool

- Determine construction noise impact:
 1. Calculate the noise levels at the worst affected (representative) receiver/s
 2. Document the background noise level (RBL), Noise Management Level/s and predicted noise level/s
 3. Identify and implement standard mitigation measures (see Section 8.1) and, where appropriate, adjust the predicted noise level to account for the mitigation adopted
 4. Review the additional mitigation measures determined by the Construction Noise Estimator Tool and commence notifications as required
 5. Confirm suitable noise monitoring locations for verification noise monitoring, as required

7.1.7. Construction noise and vibration impact assessment or statements

The Construction Noise and Vibration Impact Assessment/Statement (CNVIA/S) will need to include the following as a minimum:

- Justification for using a simple assessment including endorsement by Environmental Management Representative
- Duration of the construction works and time periods over which works will be undertaken
- Equipment likely to be used (during noisiest/ vibration significant operations)
- Identification and description of nearest sensitive receivers potentially impacted by the proposed construction works
- Details of mitigation and management measures that will be employed to minimise the potential noise impacts, including:
 - Standard mitigation and management measures (see Section 8.1)
 - Additional mitigation and management measures (see Section 8.2)
- Documented complaints management process including a strategy for identifying any additional mitigation measures that may be required

7.2. Detailed noise and vibration assessment

A detailed assessment should be completed where noise and vibration objectives will be triggered. A detailed assessment shall be prepared by an appropriately qualified and experienced person (such as a qualified acoustic consultant). Detailed assessments are likely to be required where one or more of the following occurs or is predicted to occur:

- Noise impacts with special audible characteristics
- Longer duration work (works that may impact receivers for more than 6 weeks)
- Moderate to large number of impacted receivers including moderate to high-density residential or commercial buildings
- Exceedance of Construction Traffic Noise Objectives
- Exceedance of Sleep Disturbance Objectives

Detailed assessment reports will need to address the same minimum requirements as the simple assessment procedure. More information will need to be provided, including source noise levels, a description of the existing acoustic environment, appropriate noise and vibration management objectives, relevant construction scenarios and predicted noise and vibration to sensitive receivers. The report will need to demonstrate how noise and vibration impact on sensitive receivers will be minimised using feasible and reasonable mitigation and management measures.

Some activities or work stages within a large project may require only a simple assessment, for example utilities investigation works, to identify the location of services prior to the commencement of construction works. Construction Noise and Vibration Management Plans identify the structure for assessing impacts from construction works on larger projects.

The detailed assessment procedure steps are as follows:

7.2.1. What is the purpose of the noise and vibration assessment?

The detailed noise and vibration assessment may be required to support the preparation of:

- EIA documentation (e.g. REF, EIS)
- Detailed construction noise and vibration impact statements during pre-construction or delivery

Table 3: Purpose of supporting documentation

Environmental Impact Statement/ Environmental Assessment	Delivery / Pre-construction Impact Statements
<p>Assessment defined by concept design and construction scenarios for the project, based on potential construction methodologies known at the time.</p> <p>Assessment inputs usually prepared by a technical advisor and/or planning consultant.</p>	<p>Assessment defined by detailed design and actual construction scenario. Assessment inputs usually prepared by the design and/or construction contractors. These are expected to include finalised construction scenarios and equipment lists, itemising the realistic worst-case plant proposed to be used at any one time.</p>
	<p>Where detail about construction activities or timing of works near specific receivers was insufficient or not available during the environmental assessment an additional Construction Noise and Vibration Impact Statement (CNVIS) may be required for each major construction stage or key activity.</p>
	<p>Additional detail will be included or referenced in the Construction Noise and Vibration Management Plan (CNVMP). The CNVIS should be used as the basis on which to develop or implement the CNVMP for that activity.</p>

7.2.2. When will the construction works be carried out?

Confirm whether works will be completed in:

- Standard construction hours
- OOHW Period 1
- OOHW Period 2

Section 1.4 defines the relevant construction periods.

In addition to the above, confirm the total duration of the construction works, including the duration of any OOHW.

7.2.3. What are the construction works to be assessed?

- Establish a representative range of construction stages/ scenarios to be assessed
- Identify list of plant and equipment for each construction stage/scenario
- Determine the source noise levels (SWLs) of each plant item proposed as part of the construction scenario. Note that the noise levels (SWLs) of each plant or equipment item should be less than the maximum allowable levels in APPENDIX C
- If the noise from a particular plant item has special audible characteristics a 5 dBA penalty should be added to the noise source sound power level (SWL), refer to APPENDIX E – Step 2 for further detail.

7.2.4. Determine noise and vibration management objectives

- Identify all noise and/or vibration sensitive receivers which may be affected by the project
- Determine construction noise management levels

Noise monitoring at representative locations to determine the rating background level should be conducted for a detailed noise assessment, unless there is a suitable justification to not complete it (endorsed by the EMR). Construction noise management levels are determined by:

1. Estimating background noise levels from noise monitoring – see Section B.1.2
2. Establishing Noise Management Levels based on ICNG – see Section A.1
3. Identifying sleep disturbance objectives (if applicable) – see Section A.1

- Determine construction vibration management levels

Vibration assessment may be required, depending on the proximity of receivers to the work area. Are there vibration sensitive receivers within 100m of work area (see Table 20, APPENDIX D)?

YES	confirm relevant vibration objectives based on receiver types (see Section A.3)
NO	further vibration assessment is not required. The risk of vibration impact is assessed as low to negligible. A clear statement to this effect should be included in the report

- Determine construction traffic noise objectives
 - Confirm the road type used by construction vehicles and establish relevant noise objectives – see Section A.4
 - Identify sleep disturbance objectives (if applicable – only required for construction traffic movement during the 10pm to 7am night period)

7.2.5. Assess construction noise and vibration impact

Table 4: Impact assessment procedures

Impact to assess	Assessment procedure
Airborne noise	<ul style="list-style-type: none"> • Determine the location of each plant or equipment item in relation to each receiver • Develop a construction noise model and include: <ul style="list-style-type: none"> • All relevant standard mitigation measures (Section 8.1) • Noise shielding provided by site offices, noise barriers or natural topographic features • Noise reflections and ground attenuation • Determine whether a 5dBA SWL correction factor is required for activities with special audible characteristics • Calculate the $L_{Aeq(15minute)}$ noise levels from the proposed construction activities at each receiver and compare these with the airborne construction noise management levels • For night-time activities, calculate the maximum (L_{Amax}) noise levels and compare with the sleep disturbance screening objectives. Other factors to consider when assessing the extent of impact on sleep include <ul style="list-style-type: none"> • How often noisy events occur at night • Predicted maximum noise levels at night

Airborne noise <i>continued</i>	<ul style="list-style-type: none"> • Whether there are times when there is a clear change in the noise environment (such as during early morning shoulder periods) and • The degree of maximum noise levels above the background noise level at night <p>Notes</p> <p>The number of receivers would be dependent on the size of the construction site, the time at which the construction noise occurs and the level of potential noise impact. Calculations would normally be undertaken at locations considered to be representative of a group of receivers with a similar level of exposure to the construction works.</p> <p>For night-time construction works or large construction sites with many nearby receivers, it may be more appropriate to provide noise contour plots in order to illustrate the degree to which each receiver or group of receivers are impacted by the construction works.</p>
Ground-borne noise	<ul style="list-style-type: none"> • Determine the location of each plant or equipment item in relation to each receiver • Determine the level of ground-borne noise at each building location. For highly sensitive building occupancies, the assessment may need to incorporate the acoustic properties of the building space and the structural response of the building <p>Include the effect of all relevant standard mitigation measures as part of the construction scenario.</p> <p>Calculate the $L_{Aeq(15\text{minute})}$ noise levels from the proposed construction activities at each receiver and compare these with the ground-borne construction noise objectives.</p>
Vibration	<ul style="list-style-type: none"> • Determine the location of each plant or equipment item in relation to each receiver • Determine the likely of ground-borne vibration at each building location. For highly sensitive equipment, the assessment may need to incorporate the structural response of the building and sensitivities of the equipment • Incorporate all relevant standard mitigation measures as part of the construction scenario • Calculate the continuous, intermittent and impulsive vibration levels from the proposed construction activities at each receiver and compare these with the ground-borne construction vibration objectives
Traffic noise	<ul style="list-style-type: none"> • On roads immediately adjacent to I&S construction sites, stakeholders may be impacted by heavy vehicle movements associated with the project works. Construction traffic movements on public roads shall aim to minimise any sleep disturbance impacts for example by minimising use of any engine brake noise. All feasible and reasonable noise mitigation and management measures shall be implemented
Blasting	<p>Potential vibration and air blast overpressure impacts generated through blasting will be managed primarily through a Blast Management Strategy prepared specifically for the blast activity associated with the I&S project. The Blast Management Strategy will address:</p> <ul style="list-style-type: none"> • Blasting noise and vibration objectives • Details of blasting to be performed, including location, method and justification of the need to blast • Identification of any potentially affected noise and vibration sensitive sites including heritage buildings and utilities

- Establishment of appropriate management levels for blast overpressure and ground vibration levels at each category of noise sensitive site
- Details of the storage and handling arrangements for explosive materials and the proposed transport of those materials to the construction site
- Identification of hazardous situations that may arise from the storage and handling of explosives, the blasting process and recovery of the blast site after detonation of the explosives
- Determination of potential noise and vibration and risk impacts from blasting and appropriate monitoring and best management practices to minimise and manage any blasting impacts and assess compliance with the blasting noise and vibration management levels and
- Stakeholder consultation procedures

A series of initial test blasts at reduced scale will be carried out prior to the commencement of full scale blasting. Air blast overpressure and vibration will be measured from test blasts to establish appropriate propagation characteristics for the site and increase the accuracy of blasting predictions. This information will be used to define allowable blast sizes to meet the air blast overpressure and ground vibration management levels

7.2.6. Determining additional management measures required

Additional Management Measures outlined in Section 8.2 apply when predicted noise and vibration levels exceed the management objectives. Refer to Section 8.2 to determine if Additional Management Measures apply.

7.3. Cumulative noise & vibration impact

When assessing construction noise and vibration, it may be necessary to consider cumulative construction impacts, for example where construction projects occur/will occur in the same Noise Catchment Area (NCA). Key stakeholders from the adjacent construction project/s may be engaged to determine cumulative noise and vibration impact and agree to revised management measures, where reasonable and feasible. It may be beneficial for projects working in the same NCA to coordinate their activities including the management of work with special audible characteristics and community engagement methods.

This approach will be assessed on a case-by-case basis, and may not be appropriate for all I&S projects. However, it is recommended that all applicable mitigation and management measures within this strategy be implemented on I&S projects with cumulative noise and vibration impacts.

8. Mitigation and management of construction noise and vibration



This section provides guidance in relation to standard monitoring and survey requirements that are expected for construction projects, in addition to a range of mitigation measures to be applied.

Additional information is provided in relation to satisfactory operating distances to ensure that construction related vibration levels are acceptable. The TfNSW Community Engagement team shall be involved in the process and consulted with in terms of intended mitigation measures to be applied.

8.1. Standard mitigation and management measures

This section sets out the standard measures for mitigating and managing construction noise and vibration to be implemented on all I&S projects and delivered via relevant procedures, systems, EIA, construction environmental management and all relevant contract documentation.

For all I&S construction projects, the standard mitigation measures shall be applied to mitigate noise and vibration impacts of the project where reasonable and feasible.

Table 5 below outlines actions that can be applied to manage the potential for noise and vibration to impact on sensitive receivers near the works.

Table 5: Standard management measures to reduce construction noise and vibration

Action required	Applies to	Details
Implementation of any project specific mitigation measures required	Airborne noise Ground-borne noise & vibration	In addition to the measures set out in this table, any project specific mitigation measures identified in the EIA documentation (e.g. REF, submissions or representations report) or approval or licence conditions must be implemented.
Implement stakeholder consultation measures (refer to Sections 8.2.1 and 8.3 for further details of community consultation measures)	Airborne noise Ground-borne noise & vibration	<p>Periodic notification (monthly letterbox drop and website notification) detailing all upcoming construction activities delivered to sensitive receivers at least 7 days prior to commencement of relevant works.</p> <p>In addition to Periodic Notification, the following strategies may be adopted on a case-by-case basis:</p> <ul style="list-style-type: none"> • Project Specific Website • Project Infoline • Construction Response Line • Email Distribution List • Web-based Surveys • Social Media • Community and Stakeholder Meetings and • Community Based Forums (if required by approval conditions).

Action required	Applies to	Details
Register of noise and vibration sensitive receivers	Airborne noise Ground-borne noise & vibration	<p>A register of most affected noise and vibration sensitive receivers (NVSRs) would be kept on site. The register would include the following details for each NVSR:</p> <ul style="list-style-type: none"> • Address of receiver • Category of receiver (e.g. Residential, Commercial etc.) • Contact name and phone number. <p>The register may be included as part of the Project's Community Liaison Plan or similar document and maintained in accordance with the requirements of this plan.</p>
Construction hours and scheduling	Airborne noise Ground-borne noise & vibration	<p>Where feasible and reasonable, construction should be carried out during the standard daytime working hours. Work generating noise with special audible characteristics and/or vibration levels should be scheduled during less sensitive time periods.</p>
Construction respite period	Ground-borne noise & vibration Airborne noise	<p>Noise with special audible characteristics and vibration generating activities (including jack and rock hammering, sheet and pile driving, rock breaking and vibratory rolling) may only be carried out in continuous blocks, not exceeding 3 hours each, with a minimum respite period of one hour between each block.</p> <p>'Continuous' includes any period during which there is less than a 1 hour respite between ceasing and recommencing any of the work.</p> <p>No more than two consecutive nights of noise with special audible characteristics and/or vibration generating work may be undertaken in the same NCA over any 7-day period, unless otherwise approved by the relevant authority.</p>
Site inductions	Airborne noise Ground-borne noise & vibration	<p>All employees, contractors and subcontractors are to receive an environmental induction. The induction must at least include:</p> <ul style="list-style-type: none"> • All relevant project specific and standard noise and vibration mitigation measures • Relevant licence and approval conditions • Permissible hours of work • Any limitations on noise generating activities with special audible characteristics

Action required	Applies to	Details
Site inductions <i>continued</i>		<ul style="list-style-type: none"> • Location of nearest sensitive receivers • Construction employee parking areas • Designated loading/unloading areas and procedures • Site opening/closing times (including deliveries) • Environmental incident procedures.
Behavioural practices	Airborne noise	<p>No swearing or unnecessary shouting or loud stereos/radios on site.</p> <p>No dropping of materials from height, throwing of metal items and slamming of doors.</p> <p>No excessive revving of plant and vehicle engines.</p> <p>Controlled release of compressed air.</p>
Monitoring	Airborne noise Ground-borne noise & vibration	A noise monitoring program should be carried out for the duration of works in accordance with the Construction Noise and Vibration Management Plan and any approval and licence conditions.
Attended vibration measurements	Ground-borne vibration	Attended vibration measurements shall be undertaken at all buildings within 25 m of vibration generating activities when these activities commence to confirm that vibration levels are within the acceptable range to prevent cosmetic building damage.
Update Construction Environmental Management Plans	Airborne noise Ground-borne noise & vibration	The CEMP must be regularly updated to account for changes in noise and vibration management issues and strategies.
Building condition surveys	Vibration Blasting	Undertake building dilapidation surveys on all buildings located within the buffer zone prior to major project construction activities with the potential to cause property damage.

8.1.1. Standard source mitigation measures

Table 6 below outlines the standard mitigation measures that should be applied “at the source” i.e. directly applied to plant and equipment to reduce noise and/or vibration from the work site.

Table 6: Standard source mitigation measures to reduce construction noise and vibration

Action required	Applies to	Details
Plan worksites and activities to minimise noise and vibration	Airborne noise Ground-borne vibration	Plan traffic flow, parking and loading/unloading areas to minimise reversing movements within the site.
Equipment selection	Airborne noise Ground-borne noise & vibration	Use quieter and less vibration emitting construction methods where feasible and reasonable, see APPENDIX C. For example, when piling is required, bored piles rather than impact-driven piles will minimise noise and vibration impacts. Similarly, diaphragm wall construction techniques, in lieu of sheet piling, will have significant noise and vibration benefits.
Maximum noise levels	Airborne-noise	The noise levels of plant and equipment must have operating Sound Power or Sound Pressure Levels compliant with the allowable noise levels in APPENDIX C.
Rental plant and equipment	Airborne-noise	The noise levels of plant and equipment items are to be considered in rental decisions and in any case cannot be used on site unless compliant with the allowable noise levels in APPENDIX C.
Use and siting of plant	Airborne-noise	Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. The offset distance between noisy plant and adjacent sensitive receivers is to be maximised. Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers.
Non-tonal reversing alarms	Airborne noise	Non-tonal reversing beepers (or an equivalent mechanism) must be fitted and used on all construction vehicles and mobile plant regularly used on site and for any out of hours work, including delivery vehicles.
Minimise disturbance arising from delivery of goods to construction sites	Airborne noise	Loading and unloading of materials/deliveries is to occur <i>as far as possible</i> from sensitive receivers.

Action required	Applies to	Details
Minimise disturbance arising from delivery of goods to construction sites <i>continued</i>		<p>Select site access points and roads as far as possible away from sensitive receivers.</p> <p>Dedicated loading/unloading areas to be shielded if close to sensitive receivers.</p> <p>Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible.</p>
Construction Related Traffic	Airborne noise	<p>Schedule and route vehicle movements away from sensitive receivers and during less sensitive times.</p> <p>Limit the speed of vehicles and avoid the use of engine compression brakes.</p> <p>Maximise on-site storage capacity to reduce the need for truck movements during sensitive times.</p>
Silencers on Mobile Plant	Airborne noise	<p>Where possible reduce noise from mobile plant through additional fittings including:</p> <p>Residential grade mufflers</p> <p>Damped hammers such as “City” Model Rammer Hammers</p> <p>Air Parking brake engagement is silenced.</p>
Prefabrication of materials off-site	Airborne noise	<p>Where practicable, pre-fabricate and/or prepare materials off-site to reduce noise with special audible characteristics occurring on site. Materials can then be delivered to site for installation.</p>
Engine compression brakes	Airborne noise	<p>Limit the use of engine compression brakes at night and in residential areas.</p> <p>Ensure vehicles are fitted with a maintained original equipment manufacturer exhaust silencer or a silencer that complies with the National Transport Commission’s ‘In-service test procedure’ and standard.</p>

8.1.2. Standard path mitigation measures

Table 7 below outlines the standard mitigation measures that should be in the path between the source and the receiver to reduce noise and/or vibration from the work site.

Table 7: Standard path mitigation measures to reduce construction noise and vibration

Action required	Applies to	Details
Shield stationary noise sources such as pumps, compressors, fans etc	Airborne noise	Stationary noise sources should be enclosed or shielded whilst ensuring that the occupational health and safety of workers is maintained. Appendix F of AS 2436: 1981 lists materials suitable for shielding.
Shield sensitive receivers from noisy activities	Airborne noise	Use structures to shield residential receivers from noise such as site shed placement; earth bunds; fencing; erection of operational stage noise barriers (where practicable) and consideration of site topography when siting plant.



8.2. Managing residual impacts

8.2.1. Applying additional management measures

As part of the EIA process and preparation of the CNVMP (refer Section 4 and 5), it is necessary to identify feasible and reasonable mitigation measures to minimise noise and vibration levels at the nearest receivers. In accordance with Section 4 of this strategy, these measures are to be implemented as part of the standard mitigation measures (in Section 8.1).

The implementation of the standard mitigation measures, compliance with maximum sound power levels for plant and equipment, construction hour management and standard stakeholder consultation measures in this strategy should significantly reduce the noise and vibration impacts on nearby sensitive receivers.

Nevertheless, due to the highly variable nature of construction activities and the likelihood of work needing to be undertaken outside the standard construction hours on I&S projects, exceedances of a project's construction noise and vibration objectives are likely to occur.

Where construction noise and vibration levels are still predicted to exceed the noise or vibration objectives after the application of the standard mitigation measures the Additional Mitigation Measures Matrices (AMMM) shall be used to determine the additional measures and implementation where reasonable and feasible, and in consultation with TfNSW communications representatives.

Using the relevant AMMM, the following steps need to be carried out to determine the additional mitigation measures:

1. Determine the time period when the work will be undertaken
2. Determine the level of exceedance
3. From the relevant additional mitigation measures matrix, identify the additional mitigation measures to be implemented. Provide justification for mitigation measures determined not to be feasible or reasonable

The additional management measures to be applied are outlined in the table below.

Table 8: Additional management measures

Measure	Description	Abbreviation
Periodic Notification	<p>For each I&S project, a notification entitled 'Project Update' or 'Construction Update' is produced and distributed to stakeholders via letterbox drop and distributed to the project postal and/or email mailing lists. The same information will be published on the TfNSW website (www.transport.nsw.gov.au).</p> <p>Periodic notifications provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage, inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on stakeholders. The approval conditions for projects specify requirements for notification to sensitive receivers where works may impact on them.</p> <p>Content and length is determined on a project-by-project basis and must be approved by TfNSW prior to distribution.</p> <p>Most projects distribute notifications on a monthly basis. Each notification is graphically designed within a branded template.</p>	PN

Measure	Description	Abbreviation
Periodic Notification <i>continued</i>	<p>In certain circumstances media advertising may also be used to supplement Periodic Notifications, where considered effective.</p> <p>Periodic Notification may be advised by the I&S Community Engagement Team in cases where AMMM are not triggered as shown in Tables 9 to 11, for example where community impacts extend beyond noise and vibration (traffic, light spill, parking etc). In these circumstances the I&S Community Engagement Team will determine the community engagement strategy on a case-by-case basis.</p>	
Verification Monitoring	<p>Verification monitoring of noise and/or vibration during construction may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver has been identified). Monitoring can be in the form of either unattended logging (i.e. for vibration provided there is an immediate feedback mechanism such as SMS capabilities) or operator attended surveys (i.e. for specific periods of construction noise).</p> <p>The purpose of monitoring is to confirm that:</p> <ul style="list-style-type: none"> • construction noise and vibration from the project are consistent with the predictions in the noise assessment • mitigation and management of construction noise and vibration is appropriate for receivers affected by the works <p>Where noise monitoring finds that the actual noise levels exceed those predicted in the noise assessment then immediate refinement of mitigation measures may be required and the CNVIS amended. Refer to Section 8.4 for more details.</p>	V
Specific Notification	<p>Specific notifications are in the form of a personalised letter or phone call to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. Alternatively (or in addition to), communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities and provide an individual briefing.</p> <ul style="list-style-type: none"> • Letters may be letterbox dropped or hand distributed • Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and their specific needs • Individual briefings are used to inform stakeholders about the impacts of noisy activities and mitigation measures that will be implemented. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project 	SN

Measure	Description	Abbreviation
Specific Notification <i>continued</i>	Specific notifications are used to support periodic notifications, or to advertise unscheduled works and must be approved by TfNSW prior to implementation/distribution.	
Respite Offer	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise or vibration respite from an ongoing impact. The offer could comprise pre-purchased movie tickets, bowling activities, meal vouchers or similar offer. This measure is determined on a case-by-case basis, and may not be applicable to all I&S projects.	RO
Alternative Accommodation	Alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts. Alternative accommodation will be determined on a case-by-case basis and should provide a like-for-like replacement for permanent residents, including provisions for pets, where reasonable and feasible.	AA
Alternative construction methodology	Where the vibration assessment identifies that the proposed construction method has a high risk of causing structural damage to buildings near the works, the proponent will need to consider alternative construction options that achieve compliance with the VMLs for building damage. For example, replace large rock breaker with smaller rock breakers or rock saws.	AC
Respite Period	OOHW during evening and night periods will be restricted so that receivers are impacted for no more than 3 consecutive evenings and no more than 2 consecutive nights in the same NCA in any one week. A minimum respite period of 4 evenings/5 nights shall be implemented between periods of consecutive evening and/or night works. Strong justification must be provided where it is not reasonable and feasible to implement these period restrictions (e.g. to minimise impacts to rail operations), and approval must be given by TfNSW through the OOHW Approval Protocol (Section 6). Note; this management measure does not apply to OOHW Period 1 – Days (See Table 1).	RP
Duration Reduction	Where Respite Periods (see management measure above) are considered to be counterproductive to reducing noise and vibration impacts to the community it may be beneficial to increase the number of consecutive evenings and/or nights through Duration Reduction to minimise the duration of the activity. This measure is determined on a project-by-project basis, and may not be applicable to all I&S projects. Impacted receivers must be consulted and evidence of community support for the Duration Reduction must be provided as justification for the Duration Reduction. A community engagement strategy must be agreed with and implemented in consultation with I&S Community Engagement Representatives.	DR

8.2.2. Additional Mitigation Measure Matrices

8.2.2.1. Additional airborne noise management measures

Table 9 on the following page shows additional measures to be implemented for each receiver depending on how far the predicted airborne noise level is above the background noise level (RBL) or airborne noise management level (ANML). These measures are most appropriate for shorter term works.

Table 9: How to implement additional airborne noise management measures

Construction hours	Receiver perception	dB(A) above RBL*	dB(A) above ANML	Additional management measures
Standard Hours Monday-Friday (7am-6pm) Saturday (8am-1pm)	Noticeable	5 to 10	0	-
	Clearly Audible	> 10 to 20	< 10	-
	Moderately intrusive	> 20 to 30	> 10 to 20	PN, V
	Highly intrusive	> 30	> 20	PN, V
	75dBA or greater	N/A	N/A	PN, V, SN
OOHW Period 1 Monday-Friday 6pm-10pm Saturday (7am-8am, 1pm-10pm) Sunday/PH (8am-6pm)	Noticeable	5 to 10	< 5	-
	Clearly Audible	> 10 to 20	5 to 15	PN
	Moderately intrusive	> 20 to 30	> 15 to 25	PN, V, SN, RO
	Highly intrusive	> 30	> 25	PN, V, SN, RO, RP [†] , DR [†]
OOHW Period 2 Monday-Saturday (12am-7am, 10pm-12am) Sunday/PH (12am-8am, 6pm-12am)	Noticeable	0 to 10	< 5	PN
	Clearly Audible	> 10 to 20	5 to 15	PN, V
	Moderately intrusive	> 20 to 30	> 15 to 25	PN, V, SN, RP, DR
	Highly intrusive	> 30	> 25	PN, V, SN, AA, RP, DR

Notes: PN = Project notification SN = Specific notification, individual briefings, or phone call
 V = Verification monitoring DR = Duration Reduction
 RP = Respite Period RO = Project specific respite offer
 AA = Alternative accommodation

* SWLs used for the purpose of estimating noise impact shall be increased by 5dBA where works will include: power saws for the cutting of timber, masonry & steel; grinding of metal, concrete or masonry; rock/line drilling; bitumen milling & profiling; jack hammering, rock hammering & rock breaking; or impact piling as a correction factor for noise with special audible characteristics. It is noted that this correction factor is automatically calculated under Step 2 of the Construction Noise Estimator Tool (see APPENDIX E).

† Respite periods and duration reduction are not applicable when works are carried out during OOHW Period 1 Day only (i.e. Saturday 6am-7am & 1pm-6pm, Sundays / Public Holidays 8am-6pm)

The additional management measures in Table 9 may become less effective over time. At-receiver noise mitigation may be considered where feasible and reasonable, where all options for at-source noise mitigation and management measures have been exhausted. At-receiver mitigation may include temporary window and door screens, temporary localised shielding or permanent forms of mitigation.

Feasible and reasonable considerations for providing at-receiver treatments should include:

- Time of day where construction noise exceeds the ANML
- Time of use of affected receivers
- Amount construction noise exceeds the ANML
- How long the mitigation will provide benefit to the receiver during the project
- Optimal design of acoustic sheds and noise barriers/hoardings

8.2.2.2. Additional ground-borne noise management measures

Table 10 below shows additional measures to be implemented for each receiver depending on how far the predicted ground-borne noise level is above the ground-borne noise management level (GNML).

Table 10: How to implement additional ground-borne noise management measures

Construction hours	Receiver perception	dB(A) above GNML	Additional management measures
Standard Hours Monday-Friday (7am-6pm) Saturday (8am-1pm)	Clearly Audible	< 10	PN
	Moderately intrusive	> 10 to 20	PN
	Highly intrusive	> 20	PN, V, SN
OOHW Period 1 Monday-Friday 6pm-10pm Saturday (7am-8am, 1pm-10pm) Sunday/PH (8am-6pm)	Clearly Audible	< 10	PN
	Moderately intrusive	> 10 to 20	PN, V, RO, SN
	Highly intrusive	> 20	PN, V, SN, RO, RP*, DR*
OOHW Period 2 Monday-Saturday (12am-7am, 10pm-12am) Sunday/PH (12am-6am, 6pm-12am)	Clearly Audible	< 10	PN, V, SN
	Moderately intrusive	> 10 to 20	PN, V, SN, AA, RP, DR
	Highly intrusive	> 20	PN, V, SN, AA, RP, DR

Notes: PN = Project notification
V = Verification of monitoring
RP = Respite Period
DR = Duration Reduction
AA = Alternative accommodation
SN = Specific notification, individual briefings, or phone call
RO = Project specific respite offer

* Respite periods and duration reduction are not applicable when works are carried out during OOHW Period 1 Day only (i.e. Saturday 6am-7am & 1pm-6pm, Sundays / Public Holidays 8am-6pm)

8.2.2.3. Additional vibration management measures

Table 11 on the following page shows additional measures to be implemented for each receiver depending on whether the predicted vibration is above the vibration management level for human disturbance (HVML), or the vibration management level for cosmetic damage to buildings or structures (DVML).

Where the VML for human disturbance is exceeded, the management measures reflect the need to manage the extent of disturbance. If the VML for building damage is exceeded, vibration monitoring should be conducted to determine site specific minimum working distances. Alternative construction methodologies may need to be considered where it is not possible to complete the works within the DVML.

Table 11: How to implement additional vibration management measures

Construction hours	Receiver perception	above VML	Additional management measures
Standard Hours Monday-Friday (7am-6pm) Saturday (8am-1pm)	Human disturbance	> HVML	PN, V, RO
	Building damage	> DVML	V, AC
OOHW Period 1 Monday-Friday (6pm-10pm) Saturday (7am-8am, 1pm-10pm) Sunday/PH (8am-6pm)	Human disturbance	> HVML	PN, V, SN, RO, RP, DR
	Building damage	> DVML	V, AC
OOHW Period 2 Monday-Saturday (12am-7am, 10pm-12am) Sunday/PH (12am-8am 6pm-12am)	Human disturbance	> HVML	PN, V, SN, RO, AA, RP, DR
	Building damage	> DVML	V, AC

Notes: PN = Project notification
V = Verification of monitoring
DR = Duration Reduction
RP = Respite Period
SN = Specific notification, individual briefings, or phone call
AA = Alternative accommodation
RO = Project specific respite offer
AC = Alternative construction methodology

8.2.3. Duration of OOHW Impact

All reasonable and feasible mitigation must be explored for a work activity prior to commencing a negotiated agreement. Reasonable measures to ameliorate noise and/ or vibration impact will need to be considered based on the level of impact and duration of the works, including:

- Short term residual impacts where a specific phase of the construction work generates noise or vibration that exceeds the management levels, but are not in highly sensitive night period and occur over a shorter timeframe (e.g. 1 to 2 weeks). Consideration should be given to offering respite in the form of movie tickets, coffee/meal vouchers or similar
- Short term residual impacts where a specific phase of the construction work generates noise or vibration that exceeds the management levels inside the highly sensitive night period, consideration should be given to offering alternative accommodation for the duration of the noise or vibration impact

8.3. Further community engagement strategies

8.3.1. Other sensitive receiver types

The management of residual impacts as noted in Section 8.2 may not be reasonable or feasible for sensitive receivers other than residential receivers, such as: educational or medical facilities, places of worship, recreation areas, community centres, and commercial or industrial premises. In these cases, Delivery Partners shall consult with the Community Engagement Representative to define and implement suitable management measures appropriate to the receiver type, including but not limited to the strategies listed in Section 8.3.2.

Community consultation will be required during the assessment and planning phase of a project (prior to construction) to confirm the location of other sensitive receivers including collecting information on specialised requirements for each receiver (for example education or community facilities that provide Autism-specific services or identifying to location of vibration sensitive equipment in medical facilities). This may be achieved by completing a door-knock exercise or completing specific notifications prior to construction.

In areas where there are few residential sensitive receivers it may be the expectation of the local community that works are completed after operating hours of other sensitive receiver types to minimise noise and vibration impacts on staff, students, patients or clients/customers. In these instances the Delivery Partner shall consult with I&S including the Associate Director Community Engagement and Associate Director Environmental Management (or delegate).

8.3.2. Additional community engagement strategies

8.3.2.1. Website

The TfNSW website (www.transport.nsw.gov.au/projects) is a key resource for stakeholders to seek further information on projects, noise and vibration management plans, current and upcoming construction activities. It serves to inform on a 24-hour basis and provides a constant and additional layer of information over-and-above the periodic notifications.

The website is reviewed and updated monthly or in line with construction works.

As the website is a public forum, all information to be uploaded is approved by I&S Associate Director Community Engagement. The aim is to provide a visually appealing, easy-to-navigate tool for members of the public. Information is provided in plain English with use of illustrative graphics and photos and a minimum of jargon.

8.3.2.2. Project Infoline and 24-hour Construction Response Line

The 24-hour Construction Response Line and Project Infoline are mandatory on all I&S projects to provide a contact point for interested stakeholders. I&S has established two 24 hour free-call telephone numbers:

- Construction Response Line, 1800 775 465 – providing a dedicated 24-hour contact point for any complaints regarding construction works
- Project Infoline, 1800 684 490 – providing a dedicated contact point for any project enquiries

These lines are managed via a professional answering service and are the key mechanism for the receipt of enquiries/complaints to I&S Community Engagement Team for all projects. These numbers are listed with Telstra and are advertised in all project-related communications materials.

Complaints

All complaints require a verbal response within 2 hours. All enquiries require a verbal response within 24 hours during standard construction hours, or on the next working day during out-of-hours work (unless the enquirer agrees otherwise).

The answering service immediately directs any complaints to an on-duty Transport Projects representative via a pager system. Communications team members are scheduled on the pager roster and are on-call 24-hours per day during this period. This ensures that complaints are managed by experienced personnel to facilitate swift resolution.

As a standard response, complaints regarding construction noise shall be responded to by verifying noise levels are within noise predictions as soon as reasonably practical (see Section 8.4).

8.3.2.3. Email distribution list

Email distribution lists are used on all I&S projects to disseminate project information to interested stakeholders and can be used wherever a periodic notification is triggered. Advanced warning of audible activities can assist to reduce the impact of projects experienced by stakeholders.

I&S and its contractors maintain mailing lists of stakeholders interested in receiving project information via email.

8.3.2.4. Signage

Signage is used on all I&S projects to disseminate project information. Signage is provided at each I&S project to notify stakeholders of project details, and project emergency and enquiry contact information. Where possible and when appropriate, the full stakeholder notification, detailing likely audible construction noise will be on display at the work site.

8.3.2.5. Social media

Social media can be used on all I&S projects to disseminate project information. Social media is not standard practice for communicating noise and vibration impacts, however if it is necessary to highlight potential impacts to a wider audience such as Major Projects in CBD areas or activities requiring closure of major transport corridors, social media may be considered.

Further information regarding social media can be sourced from the I&S Community Engagement Representative.

8.3.2.6. Emergency Works

In the event that emergency works including emergency works requiring OOHW (as described in Box 1) occur, it may be suitable to commence an immediate community notification strategy. The strategy may include door-knock visits to impacted sensitive receivers, distribution of project contact cards and post-emergency specific notifications (as detailed in Table 8). The I&S Community Engagement Team must be consulted regarding the emergency's specific community notification strategy as soon as practicable after becoming aware of the emergency situation.

8.4. Noise and vibration verification

Compliance with the approved construction noise and vibration objectives is to be audited at the commencement of works and least every three months, where reasonable and feasible. This will involve the measurement of equipment noise levels (on site) and noise and vibration monitoring at the nearest sensitive receivers. A summary of the measurement requirements is provided below and in APPENDIX A.

The objective of noise and vibration verification monitoring is to ensure that construction equipment used on I&S sites have low noise emissions at the commencement of construction works. Auditing plant and equipment noise periodically will ensure that they are adequately maintained and will continue to meet expectations with regard to noise and vibration.

The attended measurements shall be carried out by an appropriately trained person in the measurement and assessment of construction noise and vibration, familiar with applicable standards and procedures.

8.4.1. Noise and vibration measurements

Attended measurements are to be undertaken within a period of 14 days from the commencement of construction activities (or as agreed with the EMR/TfNSW) to confirm that the noise and vibration levels at receiver locations are consistent with the predictions in the CNVIS¹³, approval and/or licence conditions.

The attended measurements must be undertaken at the potentially most impacted receivers. Attended noise verification records must be in the format of the template provided in APPENDIX F, to comply with relevant standards, see below.

Noise measurements shall be undertaken consistent with the procedures documented in AS1055.1-1997 *Acoustics - Description and Measurement of Environmental Noise - General Procedures*. Vibration measurements shall be undertaken in accordance with the procedures documented in the EPA's *Assessing Vibration - a technical guideline* (2006) and BS7385 Part 2-1993 *Evaluation and measurement for vibration in buildings*.

For projects with a duration greater than three months, the attended measurements are to be repeated on a three-monthly basis, where reasonable and feasible, as part of the audit cycle to ensure that noise and vibration levels in the receiver locations remain consistent with the predicted levels in the CNVIS, approval and/or licence conditions. Where out of hours works are required, the attended measurements must be undertaken at the time intervals described in the CNVIS, out of hours assessment, approval and/or licence conditions.

Noise monitoring should be implemented on all projects where specified by the Additional Management Measures outlined in this document (Section 8.2) or as an on-going management measure during critical periods, such as when noise emissions are expected to be at their highest including piling and hammering activities.



¹³ Or other relevant acoustic assessment

9. Documentation



I&S shall maintain a record of all noise and vibration records including, complaints received and the subsequent action taken, in accordance with the approval and licence conditions.

Contractors are to retain records of the following:

- Complaints records (i.e. time and nature of complaint)
- Complaints responses and close out actions
- Correspondence
- Monitoring/verification results
- Mitigation measures
- Construction Environmental Management Plans and associated sub-plans

10. Related Documents and References



Related Documents and References

Environmental Management System Manual - 1TP-ST-052

Out-of-Hours Assessment - 3TP-PR-065

Out-of-Hours Work Application Form (EPL Variation NOT Required) - 9TP-FT-079

www.transport.nsw.gov.au

NSW Department of Climate Change, *Interim Construction Noise Guideline*, (July 2009)

NSW Department of Climate Change, *Assessing Vibration - a technical guideline*, (OEH, 2006)

NSW Environment Protection Authority, *Rail infrastructure noise guideline*, (NSW EPA, 2013)

NSW Environment Protection Authority, *NSW industrial noise policy*, (NSW EPA, 2000)

NSW Department of Environment, Climate Change and Water, *Road noise policy*, (DECCW, 2011)

Australian Standard, *AS2436:2010 - Guide to noise and vibration control on construction, demolition and maintenance sites*

Australian Standard, *AS1055:1997 - Acoustics - Description and measurement of environmental noise*

British Standard, *BS5228-1:2009 Code of practice for noise and vibration control on construction and open sites*

British Standard, *BS7385-2:1993 Evaluation and measurement for vibration in buildings*

Department for Environment, Food & Rural Affairs (DEFRA), *Update of noise database for prediction of noise on construction and open sites - Phase 3: Noise measurement data for construction plan used on quarries* (July, 2006)

German Institute for Standardisation, *DIN4150-3:1999-02 Structural vibration - Effects of vibration on structures*

Government of South Australia - Department of Planning, Transport & Infrastructure, *Underwater Piling Noise Guidelines* (November, 2012)

NSW Roads & Maritime Services, *Construction Noise & Vibration Guideline* (April, 2016)

NSW Roads & Traffic Authority, *Environmental Noise Management Manual* (December, 2001)

Appendices



APPENDIX A

Overview of construction noise and vibration objectives

This appendix provides a brief overview of construction noise and vibration and its potential effects on people, buildings and their contents. It also provides guidance on how to establish construction noise and vibration objectives during the environmental assessment phase.

A.1 Construction airborne noise objectives

A.1.1 Airborne noise management levels

Where a quantitative noise assessment is to be undertaken, the construction airborne noise objectives are based on the EPA's *Interim Construction Noise Guideline* (2009).

The ICNG contains *noise management* levels for sensitive land uses including commercial and industrial receivers. These are provided in Table 12 and Table 13. At locations where the predicted construction noise levels exceed the noise management levels, the proponent should apply all feasible and reasonable work practices, document these within the EIA and implement the proposed work practices as part of the standard mitigation measures (refer to Section 8.1).

Where the predicted construction noise levels remain above the noise management levels after implementation of all feasible and reasonable work practices, the relevant Additional Mitigation Measures Matrix (AMMM) is to be implemented (refer Section 8.2), based on the predicted $L_{Aeq(15\text{minute})}$ noise levels. These are primarily aimed at pro-active engagement with affected sensitive receivers. When communicating with sensitive receivers impacted by the construction works, the guidelines in the "how to apply" column should be followed.

Table 12: Airborne noise objectives at stakeholders using quantitative assessment

Time of Day	Noise Management Level $L_{Aeq(15\text{minute})}$	How to apply
Recommended standard hours: Monday to Friday 7am to 6pm Saturday 8am to 1pm No work on Sundays or public holidays	Noise affected RBL + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise. Where the predicted or measured $L_{Aeq(15\text{minute})}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to minimise noise. The proponent should also inform all potentially impacted residents and stakeholders of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.

<p>Recommended standard hours <i>continued</i></p>	<p>Highly noise affected 75 dBA</p>	<p>The highly noise affected level represents the point above which there may be strong community reaction to noise.</p> <p>Where noise is above this level, the proponent should consider very carefully if there is any other feasible and reasonable way to reduce noise to below this level.</p> <p>If no quieter work method is feasible and reasonable, and the works proceed, the proponent should communicate with the impacted residents by clearly explaining the duration and noise level of the works, and by describing any respite periods that will be provided.</p>
<p>Outside recommended standard hours</p>	<p>Noise affected RBL + 5 dBA</p>	<p>A strong justification would typically be required for works outside the recommended standard hours.</p> <p>The proponent should apply all feasible and reasonable work practices to meet the noise affected level.</p> <p>Where all feasible and reasonable practices have been applied and noise is more than 5 dBA above the noise affected level, the proponent should consult with the community.</p> <p>For guidance on negotiating agreements see Section 7.2.2 of the <i>Interim Construction Noise Guideline</i>.</p>

The L_{A90} Rating Background Levels (RBL's) should be determined using the “tenth percentile method” described in the OEH’s *NSW Industrial Noise Policy* during the relevant assessment periods (daytime, evening or night-time).

Table 13: Airborne noise objectives at sensitive land uses (other than residential) using quantitative assessment

Land Use	Management Level, L_{Aeq} (Applies When Land Use is being Utilised)
Classrooms at schools and other educational institutions	Internal noise level 45 dBA
Hospital wards and operating theatres	Internal noise level 45 dBA
Places of Worship	Internal noise level 45 dBA
Active recreation areas (characterised by sporting activities and activities which generate their own noise or focus for participants, making them less sensitive to external noise intrusion)	External noise level 65 dBA
Passive recreation areas (characterised by contemplative activities that generate little noise and where benefits are compromised by external noise intrusion, for example, reading, meditation)	External noise level 60 dBA
Community Centres	Depends on the intended use of the centre. Refer to the recommended ‘maximum’ internal levels in AS2107 for specific uses.

Due to the broad range of sensitivities that commercial or industrial land can have to noise from construction, the process of defining management levels is separated into three categories. The external noise levels should be assessed at the most-affected occupied point of the premises:

- Industrial premises: external L_{Aeq} (15 minute) 75 dBA
- Offices, retail outlets: external L_{Aeq} (15 minute) 70 dBA
- Other businesses that may be very sensitive to noise, where the noise level is project specific as discussed below

Examples of other noise-sensitive businesses are theatres and child care centres. The proponent should undertake a special investigation to determine suitable noise levels on a project-by-project basis; the recommended 'maximum' internal noise levels in AS 2107 *Acoustics – Recommended design sound levels and reverberation times for building interiors* may assist in determining relevant noise levels.

The proponent should assess construction noise levels for the project, and consult with occupants of commercial and industrial premises prior to lodging an application where required. During construction, the proponent should regularly update the occupants of the commercial and industrial premises regarding noise levels and hours of work.

In addition to the above, the proponent should consider the impact of OOHW construction noise on Rough Sleepers that may occupy the area surrounding the project. The proponent should notify Rough Sleepers when OOHW are to be carried out, the duration of the works and the noise levels anticipated during the work. Where appropriate it may be suitable to seek advice from the NSW Department of Family & Community Services when considering the well-being of rough sleepers as sensitive receivers.

Mitigation offered to Rough Sleepers would generally be limited to Project Notifications and Specific Notifications where it has been identified during project planning/development that the project locality provides shelter to rough sleepers on a regular basis.

A.1.2 Sleep disturbance

The ICNG recommends that where construction works are planned to extend over two or more consecutive nights, the Project should consider maximum noise levels and the extent and frequency of maximum noise level events exceeding the RBL. The potential for both sleep disturbance and awakenings should be considered in the assessment.

The NSW EPA's sleep disturbance screening level for industrial noise based on the LAF1, (1 minute) level (equivalent to the L_{Amax}) of a noise event which should not exceed the ambient LA90 noise level by more than 15 dB is not applied to traffic noise.

Where sleep disturbance criteria exceedance for more than 2 consecutive nights cannot be avoided due to reasonable and feasible justification (see Box 1), the Delivery Partner must consult with the community and consider further mitigation prescribed under Table 8: Additional Management Measures such as Duration Reduction or Alternative Accommodation.

A.2 Ground-borne noise objectives

Construction ground-borne noise objectives are based on the EPA's *Interim Construction Noise Guideline* (2009).

Ground-borne construction noise is usually present on tunnelling projects when equipment such as tunnel boring machines, road headers, rock hammers and drilling rigs are operated underground. The ground-borne noise inside buildings initially propagates as ground-borne vibration, before entering the building, which causes floors, walls and ceilings to gently vibrate and hence radiate noise. Sometimes the vibration may be perceptible within the building. For some critical spaces such as recording studios and cinemas, which are designed to reduce airborne noise intrusion, an assessment of ground-borne construction noise for surface construction may also be required.

Ground-borne noise is usually not a significant disturbance to building occupants during daytime periods due to higher ambient levels which mask the audibility of ground-borne noise emissions. During night-time periods however, when ambient noise levels are often much lower, ground-borne noise is more prominent and may result in adverse comment from building occupants. Table 14 provides a summary of the ground-borne construction noise objectives.

Table 14: Ground-borne noise objectives at residences

Time of Day	Ground-borne noise objectives L_{Aeq} (15minute)
Daytime 7.00am to 6.00pm	Human comfort vibration objectives only
Evening 6.00pm to 10.00pm	40 dBA - Internal
Night-time 10.00pm to 7.00am	35 dBA - Internal

A.3 Construction vibration objectives

The effects of vibration in buildings can be divided into three main categories; those in which the occupants or users of the building are inconvenienced or possibly disturbed, those where the building contents may be affected and those in which the integrity of the building or the structure itself may be prejudiced.

A.3.1 Human perception of vibration

Guidance in relation to acceptable vibration levels for human comfort are provided in EPA's *Assessing Vibration: a technical guideline* (February 2006). This document is based on the guidelines contained in BS 6472-1992.

The EPA guideline provides three assessment methods, depending on whether the vibration is continuous, impulsive or intermittent. The preferred and maximum values are provided in Table 15.

- **Continuous vibration** would normally be generated by fixed plant items such as generators, fans and the like where the vibration emissions continue uninterrupted (usually throughout the daytime or night-time period)
- **Impulsive vibration** would normally be generated by short duration (i.e. less than two second) events with no more than three occurrences in an assessment period. A typical example would be ground compaction by dropping a large mass. Higher levels are allowed for impulsive vibration, however if more than three impulsive vibration events occur during the assessment period, the more stringent intermittent objectives are applied
- **Intermittent vibration** can be defined as interrupted periods of continuous vibration (e.g. vibratory rolling, heavy truck passbys or rock breaking) or continuous periods of impulsive vibration (e.g. impact pile driving). Higher vibration levels are allowed for intermittent vibration compared with continuous vibration on the basis that the higher levels occur over a shorter time period. Hence, for intermittent vibration, human comfort vibration levels are assessed on the basis of the Vibration Dose Value, based on the level and the duration of the vibration events

Table 15: Preferred and maximum vibration levels for human comfort

Location	Assessment period	Preferred values		Maximum values	
		z axis	x and y axes	z axis	x and y axes
Continuous vibration					
Critical areas	Day- or night-time	0.005 m/s ²	0.0036 m/s ²	0.010 m/s ²	0.0072 m/s ²
Residences	Daytime	0.010 m/s ²	0.0071 m/s ²	0.020 m/s ²	0.014 m/s ²
	Night-time	0.007 m/s ²	0.005 m/s ²	0.014 m/s ²	0.010 m/s ²
Offices, schools, educational institutions and places of worship	Day- or night-time	0.020 m/s ²	0.014 m/s ²	0.040 m/s ²	0.028 m/s ²
Workshops	Day- or night-time	0.040 m/s ²	0.029 m/s ²	0.080 m/s ²	0.058 m/s ²
Impulsive vibration					
Critical areas	Day- or night-time	0.005 m/s ²	0.0036 m/s ²	0.010 m/s ²	0.0072 m/s ²
Residences	Daytime	0.30 m/s ²	0.21 m/s ²	0.60 m/s ²	0.42 m/s ²
	Night-time	0.10 m/s ²	0.071 m/s ²	0.20 m/s ²	0.14 m/s ²
Offices, schools, educational institutions and places of worship	Day- or night-time	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Workshops	Day- or night-time	0.64 m/s ²	0.46 m/s ²	1.28 m/s ²	0.92 m/s ²
Intermittent vibration					
		x, y and z axes		x, y and z axes	
Critical Areas	Day- or night-time	0.10 m/s ^{1.75}		0.20 m/s ^{1.75}	
Residences	Daytime	0.20 m/s ^{1.75}		0.40 m/s ^{1.75}	
	Night-time	0.13 m/s ^{1.75}		0.26 m/s ^{1.75}	
Offices, schools, educational institutions and places of worship	Day- or night-time	0.40 m/s ^{1.75}		0.80 m/s ^{1.75}	
Workshops	Day- or night-time	0.80 m/s ^{1.75}		1.60 m/s ^{1.75}	

Notes: For continuous and intermittent vibration, the preferred and maximum values are weighted acceleration values (Wg for z axis and Wd for x and y axes).

For intermittent vibration, the preferred and maximum values are Vibration Dose Values (VDVs), based on the weighted acceleration values.

A.3.2 Effects on building contents

People can perceive floor vibration at levels well below those likely to cause damage to building contents or affect their operation. For most receivers, the controlling vibration criterion is therefore the human comfort criterion and separate objectives are not normally required in relation to the effect of construction vibration on building contents.

Some recording studios, high technology facilities and buildings with scientific equipment (e.g. electron microscopes and microelectronics manufacturing equipment) can require more stringent objectives than those applicable to human comfort. Where appropriate, objectives for the satisfactory operation of critical instruments or manufacturing processes should be sourced from manufacturer’s data and/or other published objectives.

A.3.3 Effects of vibration on structures

The levels of vibration required to cause cosmetic damage to buildings tend to be at least an order of magnitude (10 times) higher than those at which people may consider the vibration to be intrusive.

In terms of the most recent relevant vibration damage objectives, Australian Standard AS 2187: Part 2-2006 *Explosives – Storage and Use – Part 2: Use of Explosives* recommends the frequency dependent guideline values and assessment methods given in BS 7385 Part 2-1993 *Evaluation and measurement for vibration in buildings Part 2* as they “are applicable to Australian conditions” BS7385.

The British Standard sets guide values for building vibration based on the lowest vibration levels above which damage has been credibly demonstrated. These levels are judged to give a minimum risk of vibration induced damage, where minimal risk for a named effect is usually taken as a 95% probability of no effect.

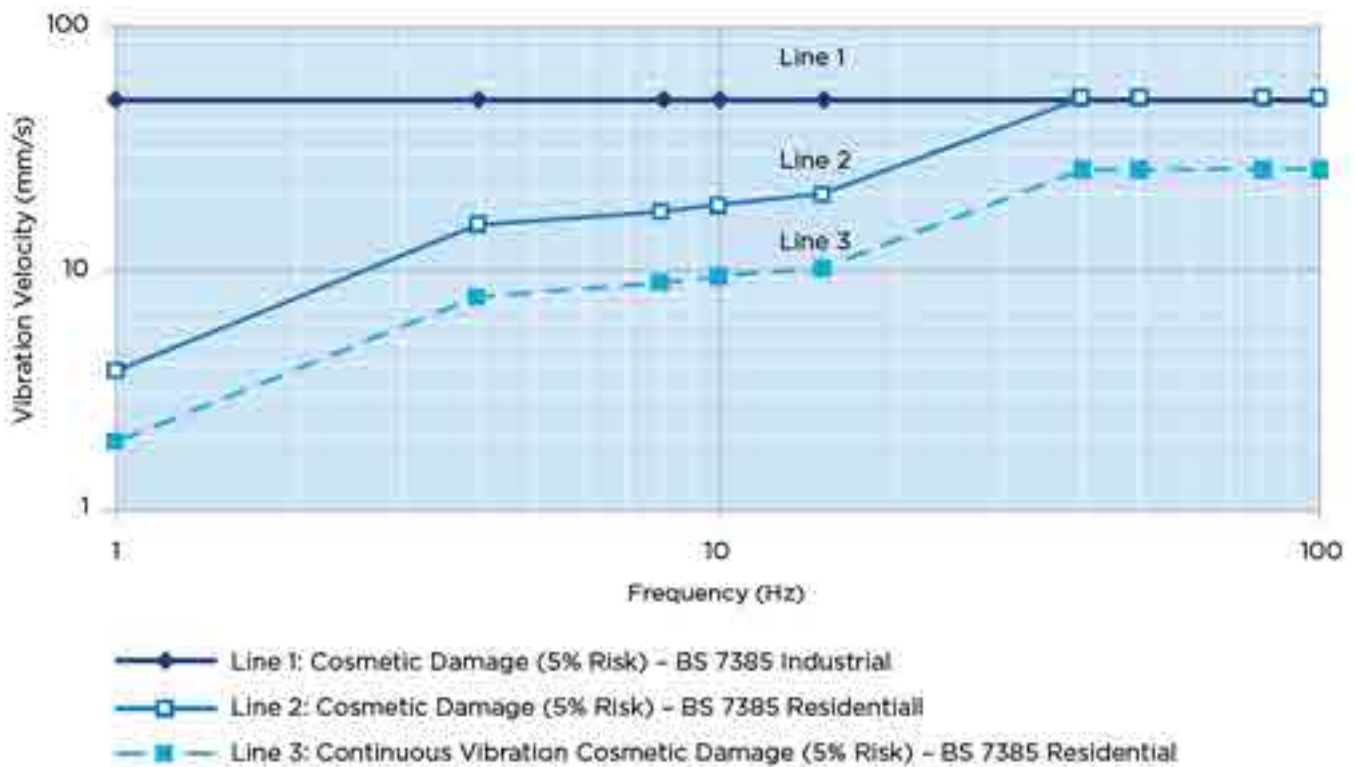
The recommended limits (guide values) from BS7385 for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented numerically in Table 16 and graphically in Figure 4.

Table 16: Transient vibration guide values – minimal risk of cosmetic damage

Line	Type of building	Peak component particle velocity in frequency range of predominant pulse	
		4 Hz to 15 Hz	15 Hz and above
1	Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s at 4 Hz and above	
2	Unreinforced or light framed structures Residential or light commercial type buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

The standard states that the guide values in Table 16 relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings. Where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table 16 may need to be reduced by up to 50% (as shown by Line 3 of Figure 4: Graph of Transient Vibration Guide Values for Cosmetic Damage for Residential Buildings).

Figure 4: Graph of Transient Vibration Guide Values for Cosmetic Damage



In the lower frequency region where strains associated with a given vibration velocity magnitude are higher, the guide values for building types corresponding to Line 2 are reduced. Below a frequency of 4 Hz where a high displacement is associated with the relatively low peak component particle velocity value, a maximum displacement of 0.6 mm (zero to peak) is recommended. This displacement is equivalent to a vibration velocity of 3.7 mm/s at 1 Hz.

The standard goes on to state that minor damage is possible at vibration magnitudes which are greater than twice those given in Table 16 and major damage to a building structure may occur at values greater than four (4) times the tabulated values.

Fatigue considerations are also addressed in the standard and it is concluded that unless calculation indicates that the magnitude and number of load reversals is significant (in respect of the fatigue life of building materials) then the guide values in Table 16 should not be reduced for fatigue considerations.

It is noteworthy that, extra to the guide values nominated in Table 16, the standard states that:

"Some data suggests that the probability of damage tends towards zero at 12.5 mm/s peak component particle velocity. This is not inconsistent with an extensive review of the case history information available in the UK."

Also that:

"A building of historical value should not (unless it is structurally unsound) be assumed to be more sensitive."

A.3.4 General vibration screening criterion

The British Standard states that the guide values in Table 16: Transient vibration guide values – minimal risk of cosmetic damage relate predominantly to transient vibration which does not give rise to resonant responses in structures and low-rise buildings.

Where the dynamic loading caused by continuous vibration may give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table 16 may need to be reduced by up to 50%. Note: rock breaking/hammering and sheet piling activities are considered to have the potential to cause dynamic loading in some structures (e.g. residences) and it may therefore be appropriate to reduce the transient values by 50%.

Therefore, for most construction activities involving intermittent vibration sources such as rock breakers, piling rigs, vibratory rollers, excavators and the like, the predominant vibration energy occurs at frequencies greater than 4 Hz (and usually in the 10 Hz to 100 Hz range). On this basis, a conservative vibration damage screening level per receiver type is given below:

- Reinforced or framed structures: 25.0 mm/s
- Unreinforced or light framed structures: 7.5 mm/s

At locations where the predicted and/or measured vibration levels are greater than shown above (peak component particle velocity), a more detailed analysis of the building structure, vibration source, dominant frequencies and dynamic characteristics of the structure would be required to determine the applicable safe vibration level.

A.3.5 Guidelines for vibration sensitive and special structures

Heritage

Heritage buildings and structures would be assessed as per the screening criteria in Section A.3.4 as they should not be assumed to be more sensitive to vibration unless they are found to be structurally unsound. If a heritage building or structure is found to be structurally unsound (following inspection) a more conservative cosmetic damage objectives of 2.5 mm/s peak component particle velocity (from DIN 4150) would be considered.

Sensitive Scientific and Medical Equipment

Some scientific equipment (e.g. electron microscopes and microelectronics manufacturing equipment) can require more stringent objectives than those applicable to human comfort.

Where it has been identified that vibration sensitive scientific and/or medical instruments are likely to be in use inside the premises of an identified vibration sensitive receiver, objectives for the satisfactory operation of the instrument would be sourced from manufacturer's data. Where manufacturer's data is not available, generic vibration criterion (VC) curves as published by the Society of Photo-Optical Instrumentation Engineers (Colin G. Gordon – 28 September 1999) may be adopted as vibration objectives. These generic VC curves are presented below in Table 17: and Figure 5.

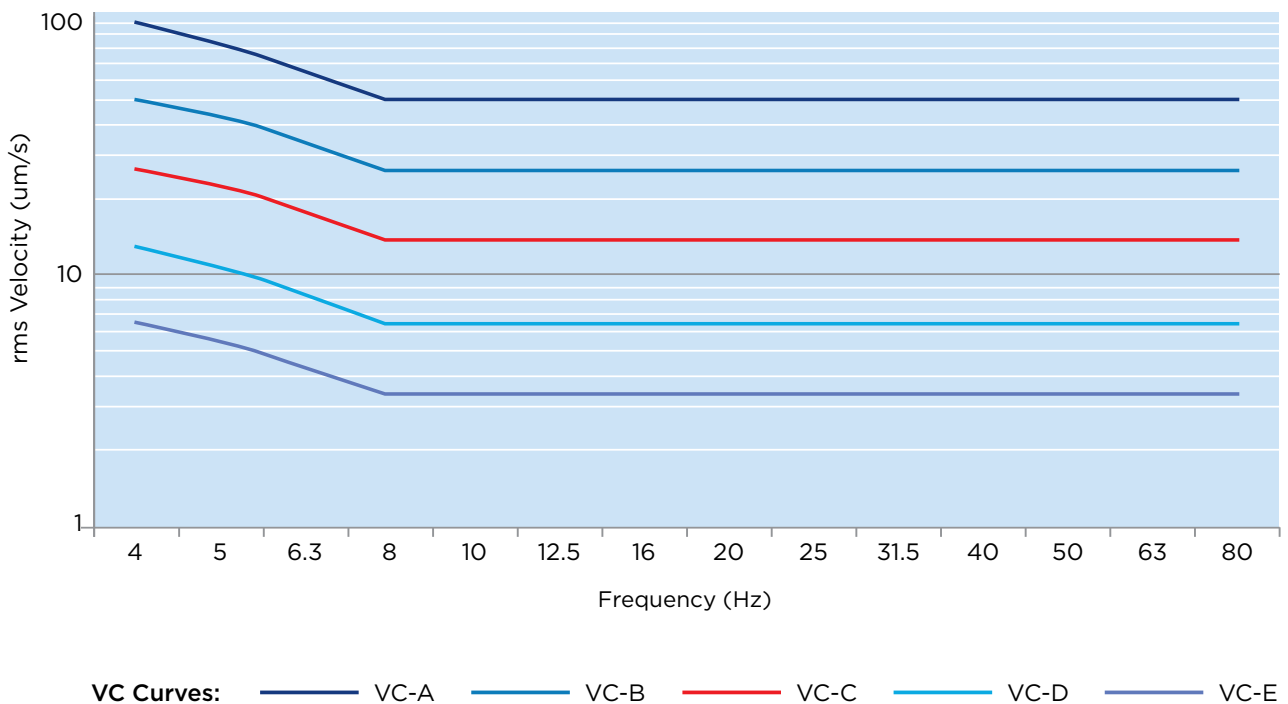
Table 17: Application and interpretation of the generic Vibration Criterion (VC) curves

Criterion Curve	Max Level (µm/sec, rms) ¹	Detail Size (microns) ²	Description of Use
VC-A	50	8	Adequate in most instances for optical microscopes to 400X, microbalances, optical balances, proximity and projection aligners, etc.
VC-B	25	3	An appropriate standard for optical microscopes to 1000X, inspection and lithography equipment (including steppers) to 3 micron line widths.
VC-C	12.5	1	A good standard for most lithography and inspection equipment to 1 micron detail size.
VC-D	6	0.3	Suitable in most instances for the most demanding equipment including electron microscopes (TEMs and SEMs) and E-Beam systems, operating to the limits of their capability.
VC-E	3	0.1	A difficult criterion to achieve in most instances. Assumed to be adequate for the most demanding of sensitive systems including long path, laser-based, small target systems and other systems requiring extraordinary dynamic stability.

Note 1: As measured in one-third octave bands of frequency over the frequency range 8 to 100 Hz.

Note 2: The detail size refers to the line widths for microelectronics fabrication, the particle (cell) size for medical and pharmaceutical research, etc. The values given take into account the observation requirements of many items depend upon the detail size of the process.

Figure 5: Vibration Criterion (VC) Curves



Buried pipework and services

The British Standard BS 7385-2:1993 'Evaluation and measurement for vibration in buildings – Part 2: Guide to damage levels from ground-borne vibration' notes that structures below ground are known to sustain higher levels of vibration and are very resistant to damage unless in very poor condition (British Standard BS 7385-2:1993, p5).

Further guidance is taken from the German Standard DIN 4150: Part 3-1999.02 'Structural vibration in buildings – Effects on Structures'. Section 5.3 of DIN 4150: Part 3 sets out guideline values for vibration velocity to be used when evaluating the effects of vibration on buried pipework. These values are reproduced and presented in Table 18, below.

Table 18: DIN 4150-3 Guideline values for vibration velocity to be used when evaluating the effects of short-term vibration on buried pipework

Line	Pipe Material	Guideline values for vibration velocity measured on the pipe
1	Steel (including welded pipes)	100 mm/s
2	Clay, concrete, reinforced concrete, pre-stressed concrete, metal (with or without flange)	80 mm/s
3	Masonry, plastic	50 mm/s

Note: rock breaking/hammering and sheet piling activities are considered to have the potential to cause dynamic loading in some structures and it may therefore be appropriate to reduce the transient values by 50%.

Other Vibration Sensitive Structures and Utilities

Some structures and utilities located a project may be particularly sensitive to vibration. A vibration goal which is more stringent than structural damage objectives presented in Section A3.5 may need to be adopted. Examples of such structures and utilities include:

- Tunnels
- Gas pipelines
- Fibre optic cables

Specific vibration objectives should be determined on a case-by-case basis. An acoustic consultant should be engaged by the construction contractor to liaise with the structure or utility's owner to determine acceptable vibration levels.

A.4 Construction-related traffic noise objectives

On roads immediately adjacent to construction sites, stakeholders may associate heavy vehicle movements with the project. Once the heavy vehicles move further from construction sites onto major collector or arterial roads however, the noise may be perceived as part of the general road traffic.

In most situations, it may be sufficient to undertake a qualitative assessment of the potential noise impacts associated with heavy vehicle movements. This assessment should take into consideration the number of heavy vehicle movements per hour or shift, the proximity of sensitive receivers, the duration of the construction works and the time of day. Where a qualitative assessment is being undertaken, this will need to be approved by the EMR.

If a quantitative assessment is required, construction-related traffic noise objectives should be based on the guidance contained in the NSW Road Noise Policy (RNP, NSW Department of Environment, Climate Change and Water 2011).

The RNP states that in assessing feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person. For existing residences and other sensitive land uses affected by *additional traffic on existing roads generated by land use developments* (in this case the construction area), any increase in the total traffic noise level should be limited to 2 dB above that of the corresponding 'without construction' scenario.

If the heavy vehicle movements occur during the 10pm to 7am night-time period, guidance on assessing the potential for sleep disturbance is taken from the RNP, which refers to Practice Note 3 of the 'Environmental Noise Management Manual' (ENMM) (Roads and Traffic Authority of NSW, 2001). The ENMM Practice Note 3 outlines the following protocol for assessing and reporting on existing maximum noise levels and to assist in assessing the potential for sleep disturbance of a road project:

1. Determine the number of L_{Amax} noise levels greater than 65dB(A) where $L_{Amax} - L_{Aeq}$ exceeds 15dB;
2. The number and distribution should be determined on an hourly basis between 10pm and 7am;
3. Evaluate whether the number of maximum noise impacts will reduce or increase as a result of the project; and,
4. Based on this evaluation, take account of maximum noise levels when prioritising, selecting and designing noise control measures.

Whilst this protocol applies specifically to road projects, it is appropriate to use in the assessment of noise from construction traffic on existing roads associated with the project.

A.5 Construction noise and vibration effects on aquatic life

Where projects are in or potentially impact on aquatic areas (for example ferry wharves), the Proponent will need to consider the potential noise and vibration impacts from construction activity on aquatic life. Prior to the commencement of construction, approval from the EMR will be required and to confirm that adequate assessment has been undertaken.

Where impacts to aquatic life are anticipated, such as whenever works will occur in close proximity to marine areas (construction of ferry wharves) or other areas of aquatic life (large commercial aquariums), the noise and vibration impact assessment should include advice from a Marine Ecologist/Biologist to determine if aquatic life is likely to be affected by vibration and how to best manage this impact. Further advice on piling activities can be sourced from the Government of South Australia – Department of Planning, Transport & Infrastructure publication, *Underwater Piling Noise Guidelines* (November, 2012).

A.6 Multi-level receivers

Individual occupancies should be considered and treated the same as 1-2 storey dwellings in terms of assessing, mitigating and managing noise and vibration. Note that it may not be reasonable (cost-effective) to offer respite or alternative accommodation to multiple receivers in multi-storey buildings.

APPENDIX B

Quantifying existing acoustic environment

This appendix provides a brief overview of construction noise and vibration and its potential effects on people, buildings and their contents. It also provides guidance on how to establish construction noise and vibration objectives during the environmental assessment phase.

B.1 Quantifying existing acoustic environment

Prior to commencing the assessment, the existing acoustic environment for receivers surrounding the construction project should be quantified.

B.1.1 Estimated

Assumed background noise levels based on Australian Standard AS1055 may be used as an estimate for simple noise assessments. Note that existing data from other projects or short term attended measurements should be used to assist in establishing noise management levels where possible.

Table A1: Typical background noise levels for different areas surrounding I&S projects

Area type	Description of area surrounding I&S project	RBL Day	RBL Evening	RBL Night
Rural	Areas with negligible transportation	40	35	30
Suburban/Urban	Areas with low density transportation	45	40	35
Urban	Areas with medium density transportation OR some commerce or industry	50	45	40
Urban/Industrial	Areas with dense transportation OR with some commerce or industry	55	50	45

B.1.2 Measured

1. Use of rating background level (RBL) based on measured noise levels. The RBL is the overall single-figure background noise level measured in each relevant assessment period (during or outside the recommended standard hours). The term RBL is described in detail in the *NSW Noise Policy for Industry* (EPA 2017).

APPENDIX C

Maximum noise levels for plant and equipment

All plant and equipment used for construction must have operating Sound Power or Sound Pressure Levels below or equal to the allowable noise levels in Table 19. Equipment not listed in Table 19, shall achieve compliance to the most applicable equipment listed in Australian Standard AS 2436-2010 *Guide to noise and vibration control on construction, demolition and maintenance sites*, British Standard BS 5228-1 *Code of practice for noise and vibration control on construction and open sites* or DEFRA noise database¹⁴ (2006).

The noise levels in Table 19 can also be used as a guide in the prediction of $L_{Aeq}(15\text{minute})$ construction noise. In doing so, the predicted $L_{Aeq}(15\text{minute})$ noise levels will be dependent on several factors including, but not limited to the duration of the construction activities, the number of plant items and their location on site in relation to the nearest receivers.

Attended measurements shall be undertaken within 14 days of equipment arriving on site to confirm that the operating noise levels of all plant items comply with the maximum levels in Table 19. Measurements are to be repeated on a three-monthly basis to ensure that noise from individual plant items are still within the acceptable noise range.

Table 19: Maximum allowable noise levels for construction equipment

Equipment	Approx. Size/ Weight/ Model	Highest Permissible Sound Power Level (dBA) - $L_{Aeq}^{1,2,3}$	Highest Permissible Sound Pressure Level (dBA) - L_{Aeq} at 7 m
Asphalt - Truck & Sprayer		106	81
Backhoe		111	86
Chainsaw - petrol ¹⁴	4-5hp	114	89
Compactor		106	81
Compressor		109	84
Crane - Fixed		113	88
Crane - Franna	20 tonne	98	73
Crane - Mobile		113	88
Crane - Truck mounted	20 to 60 tonne	108	83
Crusher - Rock ¹⁴		118	93
Dozer	CAT D9	116	91
Dozer	CAT D10	121	96
Elevated work platform - scissor lift		98	73

¹⁴ DEFRA - Department for Environment Food and Rural Affairs (United Kingdom). Update of noise database for prediction of noise on construction and open sites - Phase 3: Noise measurement data for construction plant used on quarries, July 2006.

Elevated work platform		97	77
Excavator - tracked	3 tonne	90	65
Excavator - tracked	6 tonne	95	70
As above + hydraulic hammer ⁴		115	90
Excavator - tracked	10 tonne	100	75
As above + hydraulic hammer ⁴		118	93
Excavator - tracked	20 tonne	105	80
Excavator - tracked	30 tonne	110	85
As above + hydraulic hammer ⁴		122	97
Excavator - tracked	40 tonne	115	90
Grader		113	88
Generator - diesel/ petrol	6kW	103	78
Generator - attenuated	30kW	92	67
Grinder ⁴		105	80
Jackhammer		113	88
Lighting Tower		80	55
Lighting - Daymakers		98	73
Light Vehicle - 4WD		103	78
Line Marking Truck		108	83
Loader - Front-end (wheeled)	23 tonne	112	87
Loader - Skidsteer	1/2 tonne	107	82
Loaders - Skidsteer	1 tonne	110	85
Loader - Tracked	0 to 50 kW	115	90
Loaders - Tracked	200 to 300 kW	121	96
Pavement Laying Machine		114	89
Pavement Profiler		117	92
Pile Driver - Vibratory ⁴		121	96
Piling Rig - Bored		112	87
Piling Rig - Impact ⁴		134	109
Pump - Concrete		109	84
Rattle gun (hand held)		104	79
Roller - smooth drum		107	82
Roller - large pad foot		109	84

Roller - Vibratory ⁴	10 tonne	109	84
Saw - Concrete ⁴		118	93
Scraper		113	88
Truck - Concrete		109	84
Truck - Dump	15 tonne	110	85
Truck - Medium rigid	20 tonne	103	78
Truck - road truck/ truck & dog	30 tonne	108	83
Truck - Vacuum (NDD or non-destructive digger)		109	84
Tub Grinder/Mulcher	40-50hp	116	91
Vibrator - Concrete ⁴		113	88
Water Cart		107	82
Welding equipment		110	85
Wrench - Impact		111	86

Notes:

1. The Sound Power Level (SWL) represents the total noise output of the plant or equipment. The SWL is normally used in computer noise models to predict the Sound Pressure Levels (SPLs) at nearby receivers. When undertaking site compliance measurements, it is normally the SPL that is measured at a specified distance (typically 7m) from the plant or equipment.
2. The SWLs presented in the above table have been compiled from a selection of field measurements conducted by Heggies Pty Ltd between 2004 and 2006 of plant and equipment operating on construction projects throughout NSW, as well as various TNSW noise & vibration impact assessments and the RMS Construction Noise & Vibration Guideline (August, 2016).
3. Plant and equipment with SWLs higher than those presented in the table would be deemed to be emitting an excessive level of noise and should not be permitted to operate on construction sites.
4. Equipment with special audible characteristics.

APPENDIX D

Minimum working distances for vibration intensive activities

As a guide, minimum working distances for typical items of vibration intensive plant are listed in Table 20. The minimum working distances are quoted for both "cosmetic" damage (refer BS 7385) and human comfort (refer OEH's *Assessing Vibration – a technical guideline*). The minimum working distances for cosmetic damage must be complied with at all times, unless otherwise approved by the relevant authority.

Table 20: Recommended minimum working distances from vibration intensive plant

Plant Item	Approx. Size/ Weight/ Model	Minimum Distance – Cosmetic Damage (BS 7385)	Minimum Distance – Human Response (OE&H Vibration Guideline)
Vibratory Roller	1-2 tonne	5 m	15 m to 20 m
	2-4 tonne	6 m	20 m
	4-6 tonne	12 m	40 m
	7-13 tonne	15 m	100 m
	13-18 tonne	20 m	100 m
	> 18 tonne	25 m	100 m
Small Hydraulic Hammer	300 kg (5 to 12t excavator)	2 m	7 m
Medium Hydraulic Hammer	900 kg (12 to 18t excavator)	7 m	23 m
Large Hydraulic Hammer	1600 kg (18 to 34t excavator)	22 m	73 m
Pile Driver - Vibratory	Sheet piles	2 m to 20 m	20 m
Piling Rig - Bored	≤ 800 mm	2 m (nominal)	N/A
Piling Rig - Hammer	12 t down force	15 m	50 m
Jackhammer	Hand held	1 m (nominal)	Avoid contact with structure

Note: More stringent conditions may apply to heritage or other sensitive structures

The minimum working distances presented in Table 20 are indicative and will vary depending on the particular item of plant and local geotechnical conditions. They apply to cosmetic damage of typical buildings under typical geotechnical conditions. Vibration monitoring is recommended to confirm the minimum working distances at specific sites.

For highly sensitive receivers (e.g. high technology facilities, recording studios and cinemas), specific assessment is required to ensure satisfactory operation of the facility and determine if any mitigation or management measures are required to minimise the potential impacts.

In relation to human comfort (response), the minimum working distances in Table 20 relate to continuous vibration. For most construction activities, vibration emissions are intermittent in nature and for this reason, higher vibration levels, occurring over shorter periods are allowed (see APPENDIX A). Where the predicted vibration levels exceed the human comfort objectives, the procedures in Section 8 are to be followed in order to mitigate the potential impacts at sensitive receivers.

D.1 Works within minimum working distance

If the predicted ground-borne vibration levels exceed the cosmetic damage objectives in APPENDIX A, a different construction method with lower source vibration levels must be used where feasible and reasonable. Otherwise construction works should not proceed unless attended vibration measurements are undertaken at the commencement of the works to determine if there is risk of exceeding of the cosmetic damage objective, a permanent vibration monitoring system should be installed, to warn plant operators (for example via flashing light, audible alarm, SMS) when vibration levels are approaching the cosmetic damage objective.

APPENDIX E

Construction noise estimator tool

The Construction Noise Estimator Tool 7TP FT-412 is available via the TfNSW I&S Divisional Management System (DMS) (internal intranet) or the Project Delivery Requirements on the TfNSW website.

The TfNSW Construction Noise Estimator Tool is only suitable for simple noise assessment as detailed in Section 4.1 of the TfNSW Construction Noise & Vibration Strategy. To determine if the tool can be used, complete the questions below:

-	Description of construction site locality	
-	Brief description of construction scenario to be assessed	
-	User Name and Company	
-	Assessment Date	

	Question	User Input
1	When will work be completed?	OOHW Period/s
2	How long will it take to complete the construction works?	Less than 6-weeks
3a	Is vibration intensive equipment to be used within 100m of sensitive receivers? (Section 5.3)	No
3b	Continue to Question 4	
4	Will the work exceed construction traffic noise objectives (increase traffic noise by 2dBA over 'without construction' levels) and/or sleep disturbance objectives (Activities with LA _{max} in exceedance of 15dBA over RBL in Period 2 at the nearest receiver)?	No

Feedback/Instructions
Yes, the Construction Noise Estimator Tool can be used.
Yes, the Construction Noise Estimator Tool can be used.
Continue to Question 4; the Construction Noise Estimator can be used.
The Construction Noise Estimator Tool can be used.

	User Input
	Calculated Value
	High Noise Plant/Equipment



This spreadsheet is used to calculate the cumulative sound power level when multiple plants/equipment are used. Equipment that generates noise with special audible characteristics (including intensive vibration) are highlighted in orange.

Note: The predictions provided by this Noise Estimator Tool will generate the worst case scenario for construction activities. For more accurate predictions it may be suitable to divide each work stage or work shift into separate estimates or engage a suitably qualified person such as an acoustic consultant to prepare a Detailed Assessment.

Total number of plant/equipment to be used	2
Cumulative Sound Power Level, SWL (dBA)	113
SWL with Special Audible Characteristics Correction (dBA)	118

Use whole numbers only. Include all equipment that will be used for a minimum of 15-minutes.

Plant / Equipment	SWL, LA _{eq} (dBA)	No. of plant / equipment to be used	Sound 'energy' level	Plant Cum. SWL (dBA)
Air Compressor	102			0
Asphalt Truck & Sprayer	106			0
Auger/Drill Rig	105			0
Angle grinder (small - up to 7 inch)	109	1	79432823472	109
Backhoe 108 dBA	111	1	1.25893E+11	111
Chainsaw 96	114			0
Compressor	109			0
Concrete Pump 106	109			0
Concrete saw/corer 115	118			0
Concrete Truck / Agitator 106	109			0
Concrete Vibrator 102	113			0
D9 Dozer 118 dBA	116			0
D10 Dozer	121			0
Daymakers (4 Aspects) 77	98			0
Elevated Work Platform 97	95			0
Excavator (3 tonne) 84	90			0
Excavator (6 tonne) 92	95			0
Excavator (10 tonne) 94	100			0
Excavator (20 tonne) 105	105			0
Excavator (30 tonne) 110	110			0
Excavator (40 tonne) 115	115			0
Excavator (large) + rock breaker 121	122			0
Excavator hammer 10 T 112	118			0
Flatbed truck 100	108			0
Flood Lights	90			0
Franna - Crane	98			0
Generator - Diesel /Petrol	103			0
Generator - Attenuated	92			0
Grader/Scraper	113			0
Grinder	109			0
Hammer Drill 108	116			0
Hand Tools (powered)	102			0
Impact drill	116			0
Impact wrench	111			0
Jackhammer	113			0
Line Marking Plant 104	108			0
Loader - Front End/Telehandler	112			0
Mobile Crane (20 tonne) 99	108			0
Mobile Crane (60 tonne) 100	108			0
Mobile crane (all terrain)	110			0
Mobile crane truck / HIAB (12 tonne) 98	108			0
Mobile Crane (Franna) 98	98			0
Pad Foot Roller 109	109			0
Pavement Profiler	117			0
Paving machine (Asphalt) 104	114			0
Pile Driver (Vibratory)	121			0
Piling Rig (Bored) 108	112			0
Piling Rig (Impact)	134			0
Rail Regulator/Temper	98			0
Rail Saw	107			0
Roller (non vibratory) 110 dBA	110			0
Semi trailer 106	103			0
Scissor Lift	98			0
Skidsteer Loader 1/2 T	107			0
Skidsteer Loader 1 T	110			0
Sucker Truck/Road Sweeper	109			0
Tipper truck (Single) 97	108			0
Tipper truck with dog 97	108			0
Truck (10 tonne)	103			0
Truck (Semi trailer) 106	103			0
Dump truck	110			0
Tub Grinder/Mulcher	116			0
Tunnel boring machine 111 dBA	111			0
Ute/4WD 98 dBA	103			0
Vacuum Truck/Sweeper	109			0
Vibratory Roller 114 dBA	109			0
Wacker rammer 106	106			0
Water Tanker (8000 litre) 98	107			0
Welding Equipment (Thermit)	110			0
Other				0



This spreadsheet is used to calculate the cumulative sound power level when multiple plants/equipment are used. Equipment that generates noise with special audible characteristics (including intensive vibration) are highlighted in orange.

Note: The predictions provided by this Noise Estimator Tool will generate the worst case scenario for construction activities. For more accurate predictions it may be suitable to divide each work stage or work shift into separate estimates or engage a suitably qualified person such as an acoustic consultant to prepare a Detailed Assessment.

Total number of plant/equipment to be used	2
Cumulative Sound Power Level, SWL (dBA)	113
SWL with Special Audible Characteristics Correction (dBA)	118

Use whole numbers only. Include all equipment that will be used for a minimum of 15-minutes.

Plant / Equipment	SWL, LA _{eq} (dBA)	No. of plant / equipment to be used	Sound 'energy' level	Plant Cum. SWL (dBA)
Other				0
Other				0

Noise Estimate Results

Sound Power Level (dBA)	Distance (m)	Sound Pressure Level (dBA)	Air Attenuation (dBA) Day and Evening	Air Attenuation (dBA) Night	Additional Attenuation (dBA) ¹	Predicted Noise level (SPL dBA) (LAeq) Day and Evening	Predicted Noise level (SPL dBA) (LAeq) Night
118	10	74.6	9.24	9.25		74.62	74.93

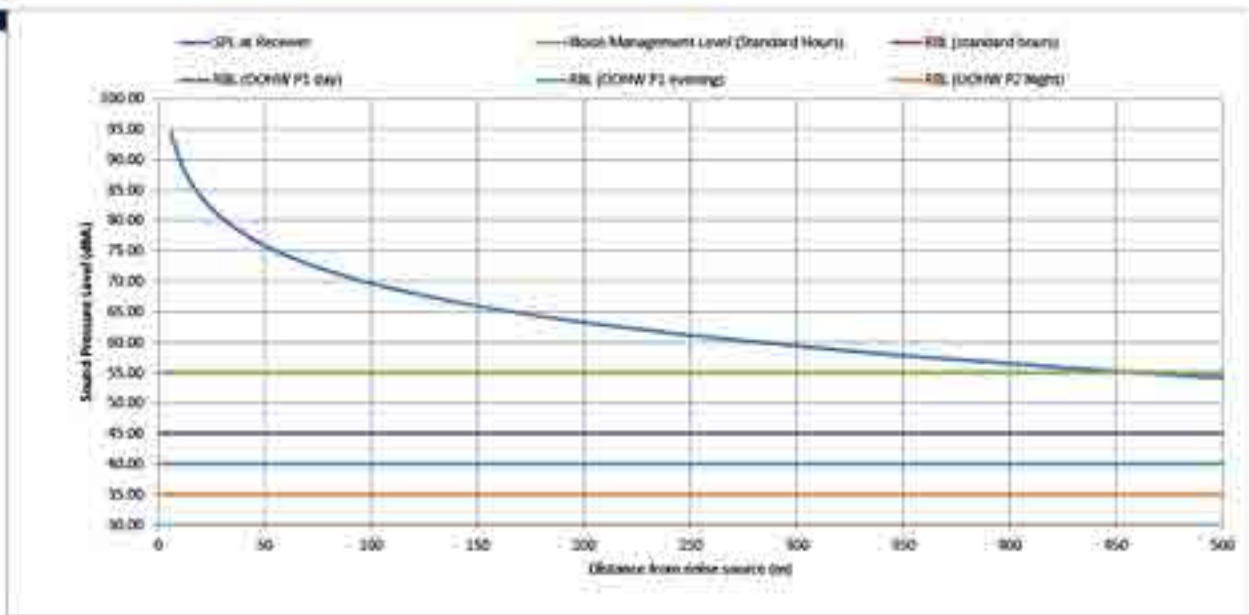
Rating Background Level (RBL)

RBL Exceedance

Noise Management Level (NML)

Standard Hours	OORW P1 Day	OORW P1 Evening	OORW P2 Night
40	40	41	41
35	35	35	35
55	55	55	45

May to Sep



Notes

- When the SPL line intersects with the RBL line in the graph above demonstrates the total radius (m) of impacted receivers
- SPL = SWL (point) - 20log (r) - 8 - Additional Attenuation
- Sound Power Level includes +5dBA adjustment for noise with special audible characteristics (if required)
- ¹ Continuous, long solid barrier within the project boundary, that breaks line of sight between work area and receiver = 5dBA reduction
- Enclosed, solid structure around work area/equipment = 10dBA reduction

The required mitigation measures for your activity are:

	Exceedance of RBL (dBA)															
	Standard Hours				OOHW Period 1 - Day				OOHW Period 1 - Evening				OOHW Period 2 - Night			
	0-20	20-30	>30	>75dBA*	5-10	10-20	20-30	>30	0-10	10-20	20-30	>30	0-10	10-20	20-30	>30
Standard Mitigation Measures (TfNSW CNVS Appendix C)			Yes					Yes				Yes				Yes
Additional Mitigation Measures (TfNSW CNVS Appendix D)																
Periodic notification			Yes					Yes				Yes				Yes
Verification monitoring			Yes					Yes				Yes				Yes
Specific Notification												Yes				Yes
Respite Offer												Yes				
Respite Period												Yes				Yes
Duration Reduction												Yes				Yes
Alternative Accommodation																Yes

* Any work above 75dBA regardless of RBL exceedance

Assessment Summary

Site Locality	0
Construction Scenario	0
User Name and Company	0
Number of Sources and SWL	2 Sources with overall SWL of 118 dBA including 5 dBA penalty for high impact noise
Receiver Distance	58 m
Barrier/enclosure attenuation	0 dBA
Assessment Date	0 January 1900

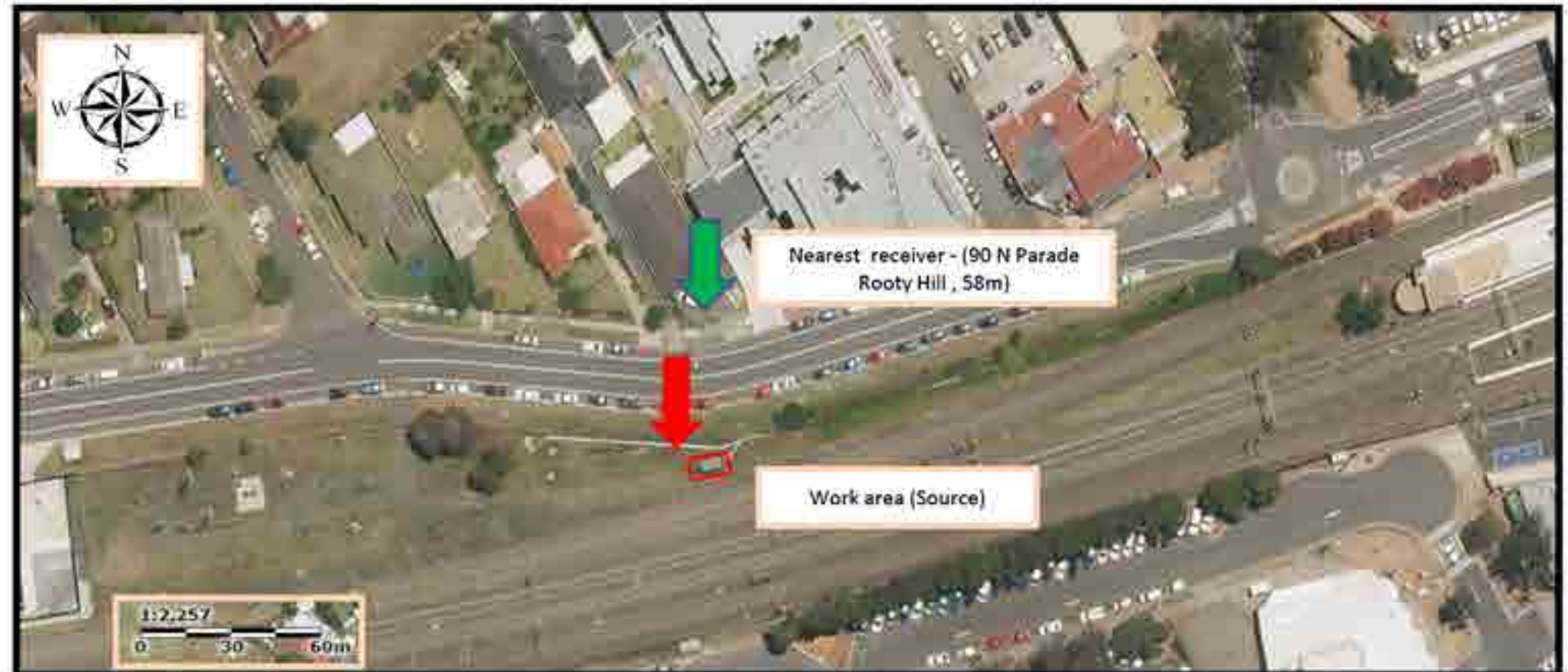
Predicted Noise Level 75 dBA 75 dBA

Period	RBL	NML	+ RBL
Standard Hours	45	55	30
OOHW Period 1 - Day	45	50	30
OOHW Period 1 - Evening	40	45	35
OOHW Period 2 - Night	35	40	40

A map showing the location of the proposed work area (source), nearest sensitive receiver, map scale and north arrow should be included into the noise estimator tool. The map should be clear with all required elements clearly visible and not cluttered with information.

List of minimum required elements

- Landscape
- Location of source
- Location of receiver
- Map scale
- North arrow



APPENDIX F

Noise verification record sheet

NOISE VERIFICATION RECORD

DETAILS					
LOCATION OF CONSTRUCTION ACTIVITY:			MONITORING LOCATION:		
DATE & TIME OF TEST:			TEST CONDUCTED BY:		
CONSTRUCTION ACTIVITY:			DISTANCE FROM NOISE SOURCE:		
METEROLOGICAL CONDITIONS ¹ :					
WIND SPEED:	None	Light	Moderate	Strong	WIND DIRECTION:
NOISE ENVIRONMENT ² :					
SOUND METER RECORD					
SOUND LEVEL METER:	Serial #:	Make:	Model:		
FIELD CALIBRATION (external):	Start:	End:			
TEST PROCEDURE:	AS 1055.1:1997 and AS 2859.2:1983				
NOISE CATCHMENT AREA No:					
NOISE LEVELS					
Day RBL/NML	Evening RBL/NML		Night RBL/NML		
/	/		/		
PREDICTED NOISE LEVELS					
$L_{Aeq15min}$			NOISE ESTIMATE REFERENCE:		
RESULTS					
SUBJECTIVE ASSESSMENT (mark all that apply)					
Construction noise inaudible <input type="checkbox"/>		Construction noise sometimes audible <input type="checkbox"/>		Construction noise audible at most times <input type="checkbox"/>	
Construction noise clearly audible <input type="checkbox"/>			Construction noise is dominant noise source <input type="checkbox"/>		
Impulsive Construction noise audible (e.g. rock-breaker) <input type="checkbox"/>			Tonal Construction noise audible (e.g. cutting steel) <input type="checkbox"/>		
Estimated noise level ³ :	dBA				
SOUND METER ASSESSMENT					
Start time: (24hr clock)	End time: (24hr clock)				
Select time weighting "Fast" not slow			Select frequency weighting "A" not C or Flat		
L_{Amax} :	dBA	$L_{Aeq15min}$:	dBA	L_{A90} :	dBA
Exceedance of NML:	$L_{Aeq15min}$		Difference to prediction:	$L_{Aeq15min}$	

¹ i.e. temperature, humidity, cloud cover

² e.g. hard/soft groundcover, built or natural solid barrier

³ At the nearest receiver, listen to the ambient and construction noise, without using any noise monitoring equipment take note of how loud you perceive the construction noise to be e.g. breathing 10dBA/freight train passing 80dBA/thunder 120dBA



Exceedance of RBL ⁴ :	$L_{Aeq10min}$	Difference to prediction:	$L_{Aeq10min}$
SITE ACTIVITIES / MONITORING COMMENTS:			
5			

SITE DIAGRAM
6

⁴ RBL Exceedance shall be completed for all OOHW activities to confirm compliance with the Construction Noise & Vibration Strategy

⁵ Site Activities, monitoring comments, typical $L_{Aeq10min}$ noise levels of construction activities / other sources, recommended changes to construction activities

⁶ show monitoring location, buildings, construction activity other noise sources, distances, north

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Earned Value Management using Primavera P6

4TP-WI-005/1.0

Work Instructions – Applicable to Infrastructure & Services Integrated Management System

Status:	Approved
Version:	1.0
Branch:	PMO
Business unit:	Project Controls
Date of issue:	09 January 2017
Review date:	09 January 2017
Audience:	Branch Wide
Asset classes:	<input checked="" type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input checked="" type="checkbox"/> Multi Sites; <input checked="" type="checkbox"/> Systems; <input checked="" type="checkbox"/> Fleets
Project delivery model:	I&S Project/Alliance/Novo Rail/
Project type:	For all project types
Project lifecycle:	<input checked="" type="checkbox"/> Feasibility; <input checked="" type="checkbox"/> Scoping; <input checked="" type="checkbox"/> Definition; <input checked="" type="checkbox"/> Construction readiness; <input checked="" type="checkbox"/> Implementation; <input checked="" type="checkbox"/> Finalisation; <input type="checkbox"/> Not applicable
Process owner:	Director Project Management Office

Document History

Version	Date of approval	Doc. Control No.	Notes
1.0	09 Jan 2017	1678578_5	Annual review. Previously a procedure PR-143.

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1. Purpose

The purpose of this procedure is to address the practical application of implementing, maintaining and reporting Earned Value (EV) using Primavera P6.

This procedure is consistent with the Project Management Body of Knowledge (PMBOK) 2008 and AS4817-2006 Project Performance measurement using Earned Value.

2. Scope

This Procedure is applicable to all I&S projects, to be applied to the setup and performance monitoring of all projects and programs. It can be applied regardless of the project type, contract delivery method, complexity and project duration.

The Procedure applies to single projects, for parts of projects (including contracted and sub-contracted parts) and for programs consisting of multiple projects.

Earned Value Management (EVM) in accordance with this Procedure must be applied to all Alliance projects and PSC's. With the exception of 5.2.4.1 Indirect costs and 5.2.4.2 Contingency, this Procedure must be applied on all lump sum projects.

3. Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

TfNSW	Transport for New South Wales
I&S	Infrastructure and Services
P6	Primavera P6
WBS	Work Breakdown Structure
CBS	Cost Breakdown Structure
LOE	Level of Effort
PV	Planned Value
EV	Earned Value
AC	Actual Cost
CPI	Cost Performance Index
SPI	Schedule Performance Index
CR	Critical Ratio
TOC	Target Outturn Cost
TAE	Target Adjustment Event

Terms that are in common use have been adopted from the PMBOK Guide 2000 edition v1.2 and AS4817-2006 - Project Performance measurement using Earned Value.

4. Accountabilities

The Director Program Management Office is accountable for this Procedure including authorising the document, monitoring its effectiveness and performing a formal document review.

Direct reports to the I&S Principal Manager Project Controls are accountable for ensuring the requirements of this document are implemented within their area of responsibility.

The direct reports to the I&S Principal Manager Project Controls who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this document.

5. Earned Value using Primavera P6

5.1. Earned Value Management

Earned Value Management (EVM) is a method of measuring and reporting project cost performance by integrating the time, cost and scope elements into a single measurement (Earned Value). I&S employ Primavera P6, a project scheduling tool that incorporates EVM within the application. This procedure describes the practical application of Primavera P6 in implementing, maintaining and reporting Earned Value (EV).

Historically, the task of creating and maintaining an integrated cost and schedule model has been challenging. Many projects employed separate cost and schedule models which, in turn, raised the additional challenges of needing to integrate the two models and ensuring consistency between them.

The method described in this procedure offers an approach that not only achieves the desired integration, but also validates and flags any errors and discrepancies between the two. This approach is a significant step towards ensuring more robust project planning and associated project control.

5.2. Establish Earned Value

With EVM, a project is planned as a manageable set of individual work units or work packages derived from the work breakdown structure (WBS). Each work unit or task has its own cost and time allocation. With EVM, the level of detail is such that a portion of the budget is allocated to each planned work unit (work package). The project can then be defined in terms of the total value of all work units, with the progress of the project being tracked from the accumulated “value” of completed work units.

As work is performed, it is ‘earned’ on the same basis as it was planned (either in dollars or other quantifiable units). As the work units are completed, the project earns the budgeted value of those work units. Thus the project is assessed by comparing the amount ‘earned’ against the amount actually spent to show cost variance or potential cost overruns as well as spending to date against planned spending to determine schedule variance or schedule slippage.

In this manner, planned and actual spending is integrated with actual work performed. This integration offers greater visibility of the real project status for all stakeholders and provides a scenario for:

- better management of risks
- early determination of whether a project is in trouble

- Estimating what will be needed (time & cost) to complete the project.

5.2.1. Schedule Quality

Effective EVM is heavily reliant on the quality of the project schedule. Schedule Quality is assessed within I&S using the Acumen Fuse ® package. I&S has established assessment criteria to determine Schedule Quality. Prior to establishing and reporting EVM the Schedule Quality must meet the assessment criteria as provided in Appendix A – Schedule Quality Assessment Criteria.

I&S's PMO will undertake the Schedule analysis and provide the results to the Project Manager.

5.2.2. Define the Work

The Project Manager must develop a Work Breakdown Structure (WBS) and break the project into discrete and distinct manageable tasks or groups of tasks (work packages) each having decisive outputs and specifically measurable start and finish criteria. The duration of each work package should be as short as practical and meet the requirements of 0 Direct costs. If a package is too long, it should be divided into a series of activities and milestones where the individual status is capable of being objectively measured. Each work package must be identified by a start and finish date and a budget value. The Schedule can be summarised at the WBS level.

It is important to balance the level of detail in the WBS with the needs of the project. The ultimate goal is the ability to *realistically* estimate the cost of accomplishing each task (earned value). Too much detail can create an overload of data, making the tracking process difficult, while a lack of detail can mask vital information.

The levels in the WBS are to be reflective of the project complexity. The schedule WBS is to cover the minimum requirements as covered in the Time Management Standard. (Section 6.3.1).

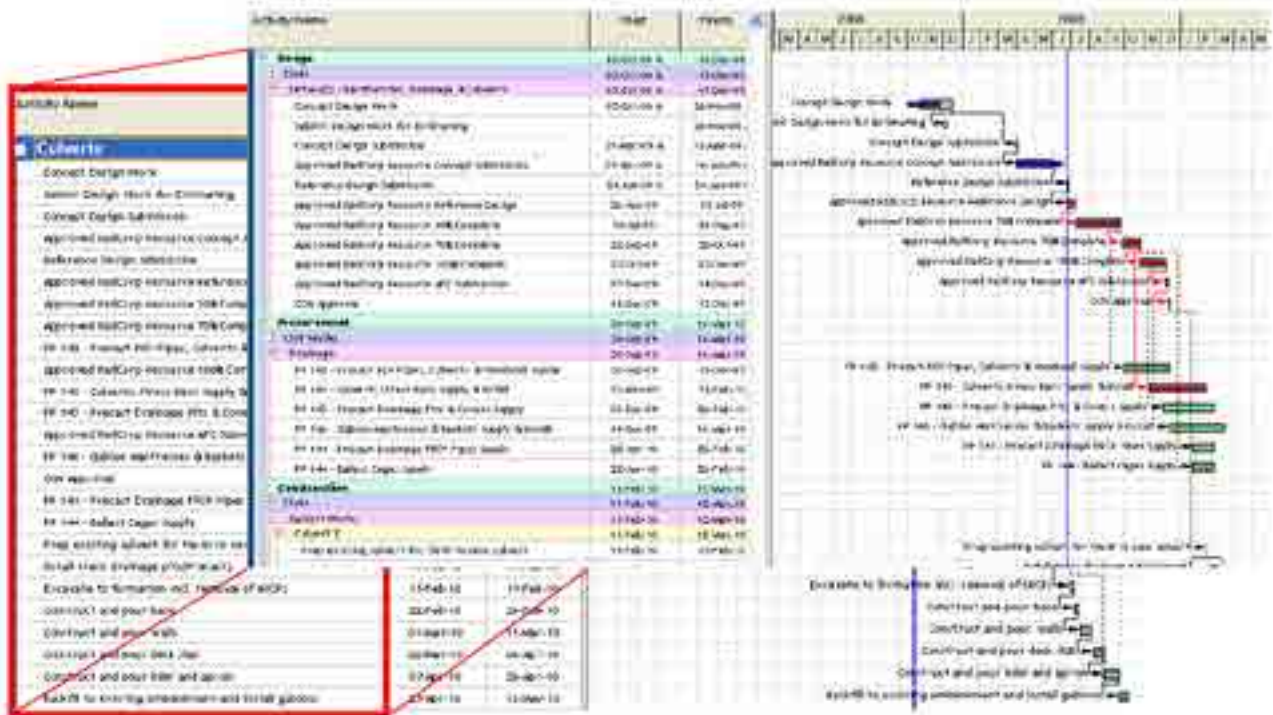
A Cost Breakdown Structure (CBS) is prescribed in the [Project Cost Estimating Standard – 4TP-ST-173](#). The WBS and CBS must be aligned in order for the EVM process to work correctly.

Things to promote

The cost breakdown must be modified and arranged in accordance with the WBS. This rearranged cost breakdown is known as the Cost Breakdown Structure (CBS). Alignment of the WBS with the CBS should be done as early as possible. This is covered in more detail in the next section “Define the Costs” and will make the application of the costs into the schedule much easier.

In general the WBS represents the work packages to be delivered and should only be modified to accommodate the CBS where the work packages defined by the WBS can be maintained.

Ensure the tasks within the WBS are grouped within the correct part of the structure. As shown in the example following, the design and procurement for this work should be isolated in their respective WBS and separated from the construction activities.



Things to avoid

Avoid repeating parts of an activity description. Where this repetition does occur, it would be better to include these activities under a separate WBS.

- Zone 2a - Stage 1 - Excavate to bottom of foundation
- Zone 2a - Stage 1 - Lay geogrid
- Zone 2a - Stage 1 - FB - structural
- Zone 2a - Stage 1 - Trench excavate for drainage
- Zone 2a - Stage 1 - Lay drainage SW-404

Notice the repetitive use of Zone 2a – Stage 1 to identify the activity

- Zone 2a - Stage 1 ch42.000 - 42.100**
 - Excavate to bottom of foundation
 - Lay geogrid
 - FB - structural
 - Trench excavate for drainage
 - Lay drainage SW-404

Creating a WBS element to store the same activities

When using expenses to store costs on WBS summary tasks avoid having long durations and avoid spreading cost over long periods of inactivity. Break down the WBS to a level that avoids long and unrealistic summaries and provides more resolution

Resources can be used to store costs instead of expenses. The resource units can be manually modified to accommodate for periods of inactivity. In any case the duration of the WBS summary bar is still governed by the requirements of 5.2.4.1 Direct costs, within this procedure.

5.2.3. Define the Costs

Once the effort has been identified through the WBS, if a project Estimate or Target Outturn Cost (TOC) is not available, the project manager must prepare a budget. Details of budgeting and estimating are not within the scope of this procedure, but essentially this involves identifying the resources needed and the effort required, within the time frame, to complete each of the tasks or group of tasks in the WBS.

To track EV it is crucial that a portion of the budget is allocated for each work package that comprises the WBS and that the WBS adequately defines all works necessary to meet the requirements of the project.

It is important to establish the aligned WBS/CBS early in the project life. The requirements of the CBS are prescribed in the [Project Cost Estimating Standard – 4TP-ST-173](#). If costs have been incurred against a WBS item and this item needs to be broken down further at a later stage of the project, the actual costs incurred will also need to be split out.

The use of cost accounts, covered under 5.2.4.5

Things to promote

The CBS may need to be broken down to reflect the level of detail in the WBS. The illustration below shows a case where the CBS contains a single item for Culverts and the P6 schedule WBS identifies 8 culverts being built at various times. In this case the CBS will need to be broken down to show the 8 culverts and the individual costs applied within the WBS. In other words the CBS must align to the WBS. This makes setting up and maintaining the EVM a simple process and removes the guesswork of having to break out actual costs later.

Modifying CBS to match the level of detail within the schedule WBS

Before

Activity Name	Start	Finish	Amount (Base Cost)
Culvert Works	14-Dec-09 A	14-Dec-11	\$1,292,854.72
Culvert 1 at 40.720km	22-Mar-10 A	25-Sep-11 A	\$112,238.21
Culvert 2 at 40.910km	23-Feb-10 A	16-Jun-11 A	\$139,942.08
Culvert 6A at 41.470km	21-Mar-10 A	16-Jun-11 A	\$94,670.00
Culvert 6 at 41.480km	06-Mar-10 A	22-Jun-11 A	\$297,262.00
Culvert 7 at 41.070km	14-Dec-09 A	23-Jun-11 A	\$78,272.00
Culvert 8 at 41.470km	03-May-10 A	24-Jun-11 A	\$97,694.00
Culvert 9 at 41.670km	21-Apr-10 A	23-Jun-11 A	\$58,009.00
Culvert 10 at 41.570km	15-Apr-11 A	21-Oct-11	\$138,276.21
Culverts Snags	07-Sep-11 A	14-Dec-11	\$17,073.10

Work Breakdown Structure

Element	Estimate
Culvert Works	\$1,292,854.72
Earthworks and Capping Layer	\$6,346,726.29
Retaining Walls	\$540,344.85
Drainage	\$1,102,464.00
Combined Services Route (CSR)	\$2,526,382.16

Cost Breakdown Structure

After

Activity Name	Start	Finish	Amount (Base Cost)
Culvert Works	14-Dec-09 A	14-Dec-11	\$1,292,854.72
Culvert 1 at 40.720km	22-Mar-10 A	25-Sep-11 A	\$112,238.21
Culvert 2 at 40.910km	23-Feb-10 A	16-Jun-11 A	\$139,942.08
Culvert 6A at 41.470km	21-Mar-10 A	16-Jun-11 A	\$94,670.00
Culvert 6 at 41.480km	06-Mar-10 A	22-Jun-11 A	\$297,262.00
Culvert 7 at 41.070km	14-Dec-09 A	23-Jun-11 A	\$78,272.00
Culvert 8 at 41.470km	03-May-10 A	24-Jun-11 A	\$97,694.00
Culvert 9 at 41.670km	21-Apr-10 A	23-Jun-11 A	\$58,009.00
Culvert 10 at 41.570km	15-Apr-11 A	21-Oct-11	\$138,276.21
Culverts Snags	07-Sep-11 A	14-Dec-11	\$17,073.10

Element	Estimate
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Culvert 9 at 41.670km	\$58,009.00
Culvert 10 at 41.570km	\$138,276.21
Culverts Snags	\$17,073.10
Earthworks and Capping Layer	\$6,346,726.29
Drainage	\$1,102,464.00
Ret Walls	\$540,344.85
Capping Layer	\$571,930.00
	\$508,313.10

Modified CBS broken down to align with the level of the WBS

Things to avoid

The WBS could be modified to accommodate the CBS, but this is generally discouraged as the WBS represents how the work is packaged for construction. It is far easier to break down and rearrange a Cost Estimate than it is to modify the schedule.

Rearranging the WBS to accommodate the CBS will lose the original work packages, normally found in the WBS and required to assemble the project.

Since Earned Value = Performance % complete x budget, then the budgets are not meant to be changed once the work on the activity commences. Changing the budget after the work has started will distort the Earned Value result. Changes are to be limited to the actual costs and remaining costs once an activity has started.

In the event that the budget needs to be changed after the start of an activity, for any reason and with the express approval of the I&S PMO, the actual costs and remaining cost must relate directly to the revised budget.

In the case where the scope of the work has changed and results in a variation (negative or positive) this is to be handled in accordance with section 5.2.4.3 Variations of this document.

5.2.4. Applying budget costs to the P6 schedule

Budget costs can be applied to the P6 schedule using several methods, which include;

Resources only on WBS summary bars with the % complete type set to Duration and Duration Type set to either;

- Fixed units



- Fixed Units/Time



Expenses or resources on normal activities

Expenses on milestones

Expenses or resources on Level of effort (LOE)

Where the work is consistent across the duration of the cost activity and the costs are spread evenly, expenses can be used to apply the cost. Otherwise use resources with start and finish dates to stagger the resource usage as illustrated below

The screenshot shows a software interface with a Gantt chart at the top and a resource table below. The Gantt chart displays a timeline from 2011 to 2012, with a bar for 'Staff & Wages Resources' starting on 22-Feb-10 and ending on 30-Apr-11. The resource table below lists various resources and their associated costs.

Resource Name	Planned Start	Planned Finish	Budgeted Cost	Actual Cost	Remaining Cost	At Completion Cost
Accounting	22-Feb-10	01-Oct-14	\$197,981.00	\$212,788.00	\$232,870.00	\$448,639.00
Administration	22-Feb-10	09-Apr-15	\$363,923.00	\$550,012.00	\$402,585.00	\$852,577.00
Alliance Management	22-Feb-10	07-Aug-14	\$53,671.00	\$10,453.00	\$165,776.00	\$176,229.00
Alliance Management	22-Feb-10	09-Jan-14	\$1,578,652.00	\$996,821.00	\$479,602.00	\$1,478,471.00
Business Systems	22-Feb-10	11-May-15	\$434,652.00	\$902,921.00	\$529,204.00	\$1,932,125.00

Note: Applying expenses on WBS summary bars will limit the spread of costs to three accrual types:

- End of activity
- Uniform over activity
- Start of activity

Generally the uniform distribution of costs over an activity is sufficient to represent the planned spending for activities. If greater refinement is required, resources will have to be applied to the cost activities. Using resources allows the costs to be spread using predefined or custom defined distribution curves.

Activities within a construction schedule typically represent direct cost items and generally do not include indirect costs such as profit/fee, overheads and risk contingency. The application of these cost types is treated under 5.2.4.1. Indirect costs.

Things to promote

Using WBS summary activities is the preferred method as this activity type will accurately calculate a complete percentage of the activities within the respective WBS. Also the use of WBS summary activities avoids the maintenance of logic links.

Things to avoid

Avoid using expenses or resources on LOE activities where a physical percentage is used on activities. While the LOE will show the physical percentage of individual activities, only duration percentages will roll into the WBS correctly.

5.2.4.1. Direct costs

As with defining the work, it is important to balance the level of cost detail applied to the activities in the WBS with the needs of the project. The ultimate goal is the *realistic* estimation of the cost of accomplishing each task (earned value). Providing too much detail creates an overload of data, creating a tracking nightmare, while a lack of detail may mask vital information.

If the cost breakdown is insufficient at the time of applying the costs to the schedule, then apply the costs to a higher level of the WBS initially and then provide the details to the lower level of the WBS once the details become available.

The detailing of budgets should be done before the work on the respective activities commences. If the detailing is done after the work commences it is important that the respective actual costs and remaining costs for the new items corresponds to the detailed item and the original item. Manipulating budgets will distort the Earned Value model. This distortion effect is covered in more detail under the sections to do with Contingency and Variations later in this procedure.

As mentioned under 5.2.3 Define the Costs, changing the budget after the work has started will distort the Earned Value result. Changes are only meant to be made to the actual costs and remaining costs once an activity has started. In the event that the budgets need to be changed after the start of an activity for any reason and with the express approval of I&S, the actual costs and remaining cost must relate directly to the revised budget.

In the case were the scope of the work has changed and results in a variation (negative or positive) this is to be handled in accordance with section 5.2.4.3 Variations of this procedure.

As a guide, each cost activity should be broken down to reduce its total value. Table 1 below provides a guide to the maximum value of any cost activity, based on the total project value. The requirements provided do not apply to indirect cost items.

Project Value	WBS or Activity Value (Max)	Number of items to track	Maximum value per month (Not applicable for indirect costs)
1 - 5 million	\$20k	50 - 250	\$100k/ Month
6 – 20 million	\$80k	75 - 250	
21 – 100 million	\$200k - \$300k	100 - 300	
101 – 500 million	\$400k - \$1m	100 - 400	\$300k/ Month
501 million >	\$1m	450	

Table 1: Maximum value of cost activity based on project size



It is estimated that only one third of the cost activities are active during any given reporting cycle and so the burden of maintenance will be manageable.

It is acknowledged that there may be exceptional cases where the guidelines within this section can not be strictly adhered to. Exceptional cases are to be approved by the I&S's PMO and I&S Project Manager and tagged within the P6 schedule as approved exemptions.

5.2.4.2. Indirect costs

Schedules do not ordinarily have activities that cover indirect costs as indirect costs do not form part of the construction planning process and methodology. Indirect costs represent a significant part of the project budget and in order to arrive at a matching total with the total project cost, indirect costs will need to be accounted for.

Indirect costs are to be grouped under a separate WBS element and will cover items such as:

Where the indirect cost is consistent across its duration and the costs are spread evenly, expenses can be used to apply the cost. Otherwise use resources with start and finish dates to stagger the resource usage as illustrated below:

- Indirect Costs**

 - + Preliminaries
 - + Design
 - + Contingency
 - + Wet Weather
 - + Escalation

Activity Name	Start	Finish	2011				2012																																													
Staff & Wages Expenses	22-Feb-10	30-Apr-11																																																		
<table border="1"> <thead> <tr> <th>Resource Name</th> <th>Planned Start</th> <th>Planned Finish</th> <th>Budgeted Cost</th> <th>Actual Cost</th> <th>Remaining Cost</th> <th>At Completion Cost</th> </tr> </thead> <tbody> <tr> <td>Accounting</td> <td>22-Feb-10</td> <td>02-Oct-14</td> <td>\$387,981.00</td> <td>\$212,789.00</td> <td>\$222,870.00</td> <td>\$445,839.00</td> </tr> <tr> <td>Administration</td> <td>22-Feb-10</td> <td>06-Apr-15</td> <td>\$966,923.00</td> <td>\$550,012.00</td> <td>\$402,565.00</td> <td>\$952,577.00</td> </tr> <tr> <td>Alliance Management</td> <td>22-Feb-10</td> <td>07-Aug-14</td> <td>\$63,671.00</td> <td>\$10,453.00</td> <td>\$165,778.00</td> <td>\$176,229.00</td> </tr> <tr> <td>Alliance Management</td> <td>22-Feb-10</td> <td>09-Jan-14</td> <td>\$1,273,052.00</td> <td>\$996,821.00</td> <td>\$479,850.00</td> <td>\$1,476,471.00</td> </tr> <tr> <td>Business Systems</td> <td>22-Feb-10</td> <td>11-May-15</td> <td>\$434,552.00</td> <td>\$302,921.00</td> <td>\$529,204.00</td> <td>\$1,032,125.00</td> </tr> </tbody> </table>											Resource Name	Planned Start	Planned Finish	Budgeted Cost	Actual Cost	Remaining Cost	At Completion Cost	Accounting	22-Feb-10	02-Oct-14	\$387,981.00	\$212,789.00	\$222,870.00	\$445,839.00	Administration	22-Feb-10	06-Apr-15	\$966,923.00	\$550,012.00	\$402,565.00	\$952,577.00	Alliance Management	22-Feb-10	07-Aug-14	\$63,671.00	\$10,453.00	\$165,778.00	\$176,229.00	Alliance Management	22-Feb-10	09-Jan-14	\$1,273,052.00	\$996,821.00	\$479,850.00	\$1,476,471.00	Business Systems	22-Feb-10	11-May-15	\$434,552.00	\$302,921.00	\$529,204.00	\$1,032,125.00
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5.2.4.3. Contingency

Contingency is an indirect cost for the provision in the project plan to mitigate the typical, but undefined and unplanned events that happen on projects – to cover ‘known unknowns’. Contingency can take into account for additional budget and/or additional time.

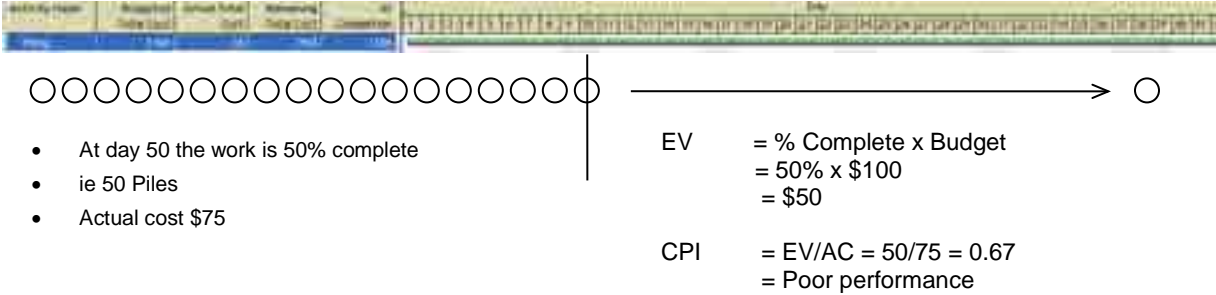
Contingent items such as wet weather, escalation and general contingency are to be placed against a separate milestone activity and not distributed in any way into other activities. The contingency milestones for these items is to be a milestone held at the end of the project.

Once the contingency needs to be drawn down, then funds should be journaled from the contingency item into the new item to receive the contingency. This provides a traceability of how the contingency is being used.

More importantly the journaling of funds from the contingency are not to be appended to the original budget. Changes to the budget for activities that have commenced will alter the Earned Value and consequently the CPI & SPI.

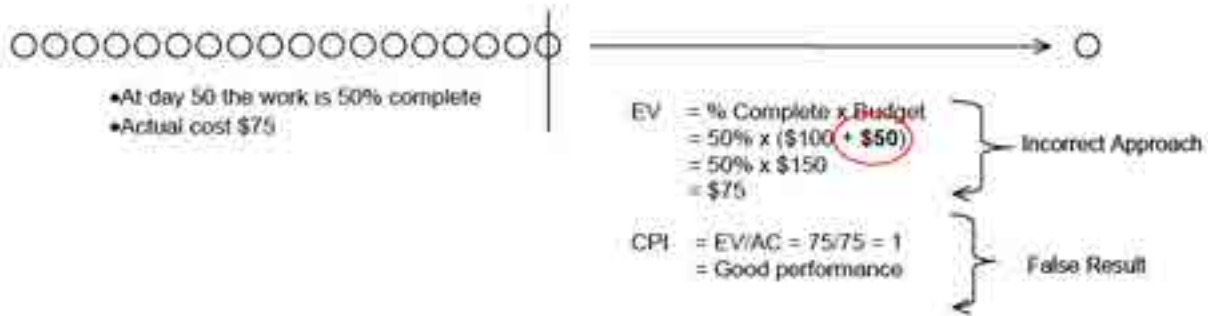
For example

In the case of the works being 100 piles to be completed in 100 days for \$100



On day 51 of this scope it is realised that the piling is now into rock and will remain so till the end. This would be a contingency event since it was expected but unquantifiable.

In this example the contingency to cover the event is an additional \$50. If the budget for this work was amended to include the contingency event the result is the Earned Value and Cost Performance is altered.



Amending budgets has the effect of masking poor performance. Therefore it is necessary to track separately the scope and costs for the Variation or Contingency items and events as they occur. A new item is required to capture the costs for the event. The actual costs for this new event will need to be captured and recorded separately.

Activity Name	Budget	Actual	Remaining	...
...	100	75	25	...

As mentioned the contingency milestones used for these items is to be a milestone held at the end of the project. Negative actuals can be used to journal funds out of an activity. If this is done it should be added as a separate line in the expenses or resources to provide traceability of the budget.

Expense Item	Cost Account	Expense Category	Budgeted Units	Price / Unit	Budgeted Cost
Contingency	RLA indirect	TDC	1 000	\$7,150,000.00	\$7,150,000.00
Contingency Draw Down - Event 1	RLA indirect	TDC	1 000	-\$250,000.00	-\$250,000.00
Contingency Draw Down - Event 2	RLA indirect	TDC	1 000	-\$150,000.00	-\$150,000.00

Things to promote

Keep indirect costs under a separate WBS node in the schedule.

Things to avoid

Spreading contingency over other activities. Drawing down from the contingency needs to be a clear and traceable process. Spreading contingency over other activities will make it impossible to see the true performance of the activities and will mask the status of the contingency.

5.2.4.4. Variations

Scope management applies to the EVM process and is necessary to ensure that the budget and actual costs associated with a variation are accounted for correctly. The requirements of this section apply equally to negative variations or scope reduction.

The application of variation costs within the schedule should be handled in the same way and for the same reasons as described in the previous section 5.2.4.2 Contingency. Amending of budget costs to take into account the variation in scope will mask the true performance of the work.

The original scope would be represented as below;



The variation to the original scope is to be represented as a separate activity entry as follows;



Variation work is often undertaken before the variation approval is received. As a result actual costs are incurred but no value can be earned for the work without the provision of a budget, which negatively distorts the Earned Value results for the project.

Activity Name	Start	Finish	Budgeted Total Cost	Actual Total Cost	Remaining Total Cost
Total	20-Mar-09 A	19-Feb-11	138,874,096	130,220,721	8,653,375
Budget	01-Sep-09 A	12-Jul-14	138,114,364	129,260,541	8,853,823
Variations	20-Aug-12	20-Aug-12	0	11,000,000	11,000,000
Approved			0	0	0
Pending	20-Aug-12	20-Aug-12	0	11,000,000	11,000,000
Variation 1 - Piling in rock	20-Aug-12	20-Aug-12	0	11,000,000	11,000,000
To be submitted			0	0	0
TPD Costs	22-Feb-10 A	21-Dec-12	15,460,632	16,667,721	1,207,089

Project actual cost for the period will now reconcile with the addition of the actual cost to the variation

No value can be earned for this item since it has no budget and Earned Value is % Complete x Budget

In such cases the actual costs attributed to the variation are to be applied to the variation activity that has been generated to store the variation work and costs. This will allow for the reconciliation of Actual Costs.

Activity Name	Start	Finish	Budgeted Total Cost	Actual Total Cost	Remaining Total Cost
Total	20-Mar-09 A	19-Feb-11	138,874,096	130,220,721	8,653,375
Budget	01-Sep-09 A	12-Jul-14	138,114,364	129,260,541	8,853,823
Variations			0	0	0
Approved			0	0	0
Pending			0	0	0
To be submitted			0	0	0

Actual Total Cost is reduced after filtering variations that are pending and to be submitted. Calculations for CPI will now reflect correctly - $CPI = EV/AC$

Earned Value reporting should filter out any "pending" or "to be submitted" variations.

5.2.4.5. Coding of cost activities

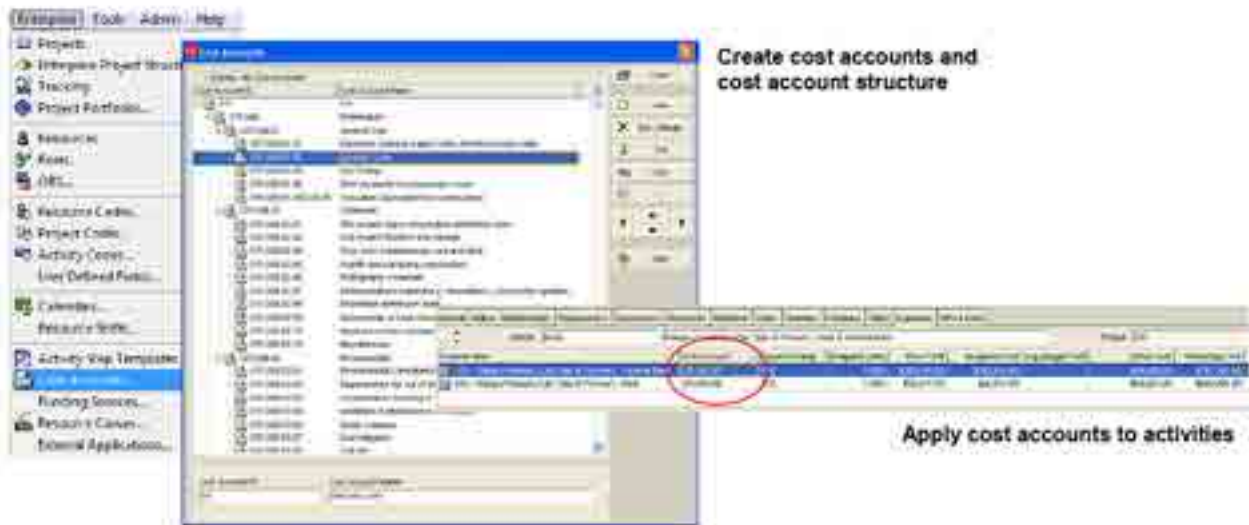
A CBS activity code structure is provided that is to be applied to P6 schedule for activities that contain cost information. The within the P6 schedule should reflect the total contract value, including profit and contingency, where known and applicable.

the costs

5.2.4.6. Cost accounts

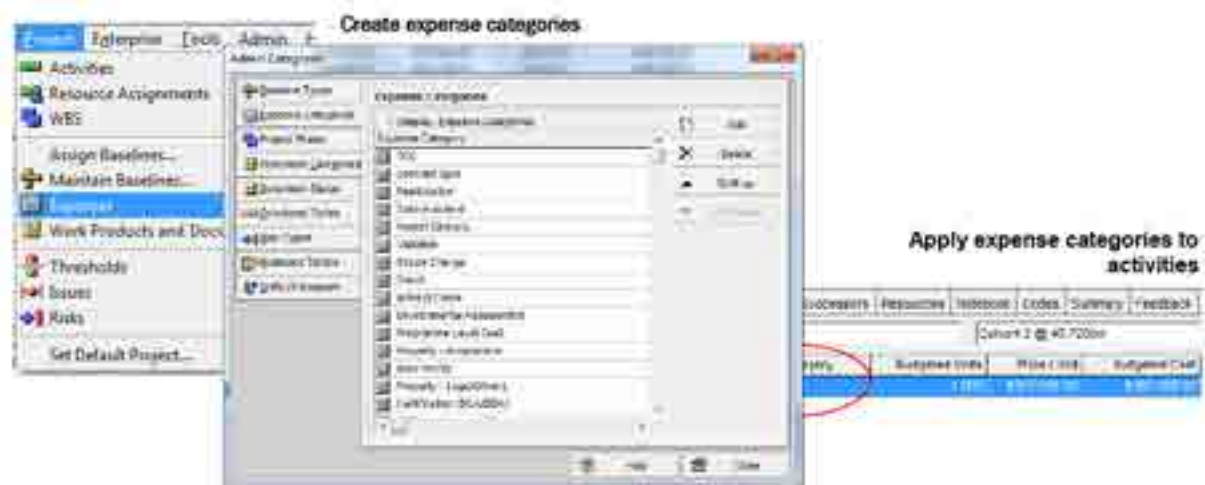
Cost accounts can be used to help report and organise costs when assigned to the activities with cost – either expenses or resources. The use of cost accounts is not mandatory but is a helpful way to align with accounting cost codes and in consolidating costs. Also cost accounts can be associated with individual resource assignments.

The application will allow rollup or summary reporting of costs in accordance with the structure created. The cost account structure must be created within P6 before it can be applied to the cost storing activities. If access to add or apply cost accounts is not available then refer back to the P6 administrator.



5.2.4.7. Expense categories

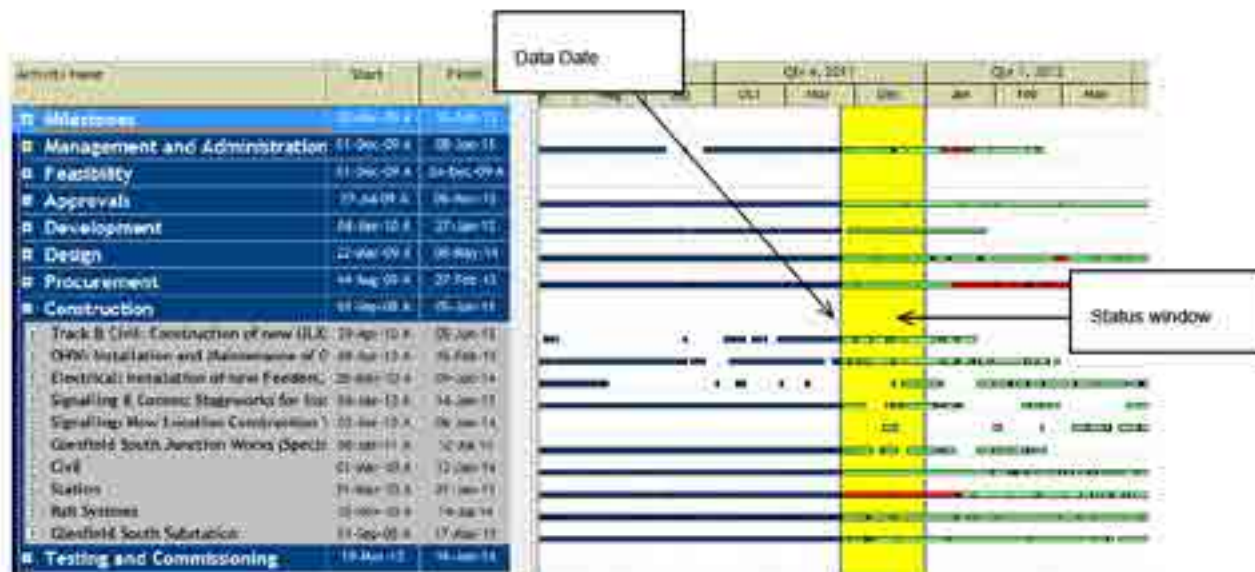
Expense categories are similar to cost accounts in that they provide another way of grouping costs. They can be used to differentiate the costs that make up the original contract and any variations to the contract. If access to add or apply expense categories is not available then refer back to the P6 administrator.



5.2.5. Statusing & Forecasting

On a recurring basis (i.e. weekly, bi-weekly, or monthly) the schedule is to be updated to capture performance and reflect adjustments to the forecast. As a minimum the schedule updates must be done monthly.

The data date, also known as “time now” or the “status date”, is the date that the Schedule considers as “today”. This date is commonly aligned with accounting system End-Of-Month closeout dates. Everything to the left of the data date actually occurred and is in the past; everything to the right of the data date has yet to occur and is in the future. It is essential that the Schedule status be consistent with data date to ensure accurate forecast dates.



During each status period, the program addresses all tasks forecasted to occur within the status window. It is equally important to validate and update the activities that are not started and the in-process activities in the Schedule.

Forecasting is the process of validating the durations and logical relationships of not started and in-process tasks. It may also include a refresh of estimated resource needs. Forecasting ensures the Schedule contains the most up to date information, is executable, and accurately represents the program position and priorities.

5.2.5.1. Costs

The schedule can be used to capture actual cost information once the budget costs have been applied. It is important to confirm that the budget totals are reconciled with the project value and respective breakdown, since the actual cost information is applied to the respective activities as the budget information.

The schedule data date and the actual cost information being applied to the schedule must be the same, or at least very close. If the actual cost information is for a period too far from the data date of the schedule then the EV results will be distorted.

Expense Item	Cost Account	Expense Category	Budgeted Units	Price / Unit	Budgeted Cost	Actual Cost	Remaining Cost
Travel	INTL-EXP-OP-1	100	1,000	\$100,000.00	\$100,000.00	\$107,180.00	\$7,180.00

The remaining cost or forecast cost to complete **is not** the difference between the costs to date less the budget for the item. The remaining cost is a revaluation of the costs required to complete the task as at the data date and is to be substantiated

Expense Item	Cost Account	Expense Category	Budgeted Units	Price / Unit	Budgeted Cost	Actual Cost	Remaining Cost	W-Completion Cost
Travel	INTL-EXP-OP-1	100	1,000	\$100,000.00	\$100,000.00	\$107,180.00	\$7,180.00	\$107,180.00

Things to avoid

Since Earned Value is the product of Performance % complete and the budget then the budgets can not be changed once the work on the activity commences. Changing the budget after the work has started will distort the Earned Value result. Changes are only to be made to the actual costs and remaining costs.

In the case were the scope of the work has changed and results in a variation (negative or positive) this is to be handled in accordance with section 5.2.4.3 Variations of this procedure.

5.2.5.2. Time

During the status process, task-owners status all tasks that occurred within the status window. Additionally, they validate and correct the logical relationships, remaining durations, and constraints of future tasks.

Task owners answer the following questions during the status process for each of their applicable tasks:

- If the task started, when did it start? Capture this date in the Schedule as the Actual Start Date.
- If the task did not start, when will it start? This date represents the new Forecast/Early Start Date. Capture this date in the Schedule by adding any missing predecessors
- If the task finished, when did it finish? Capture this date in the Schedule as the Actual Finish Date.
- If the task did not finish, how much duration is required to finish it? This date represents the new Forecast/Early Finish Date. Capture this date in the Schedule by adjusting the task's Remaining Duration.

Or

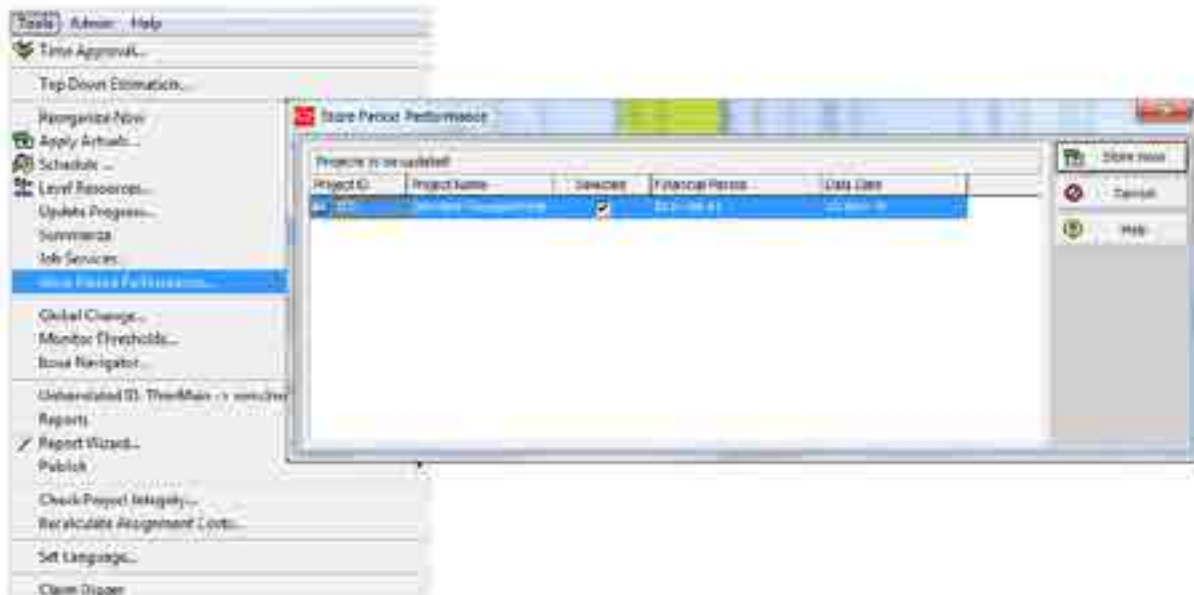
- Capture this date by entering the Forecast Finish Date and letting Primavera calculate the remaining duration. Do not provide percentage complete. Provide remaining duration and allow the application to calculate the percentage complete.

5.2.6. Storing period performance

Once actuals are applied and the totals are reconciled with the project costs for the period, the actual costs can be stored for the period. The financial periods need to be setup before the results can be stored. Access to this feature may be limited by the P6 administrator.



Once the financial periods are available then the period details can be stored. Access to this feature may be limited by the P6 administrator.

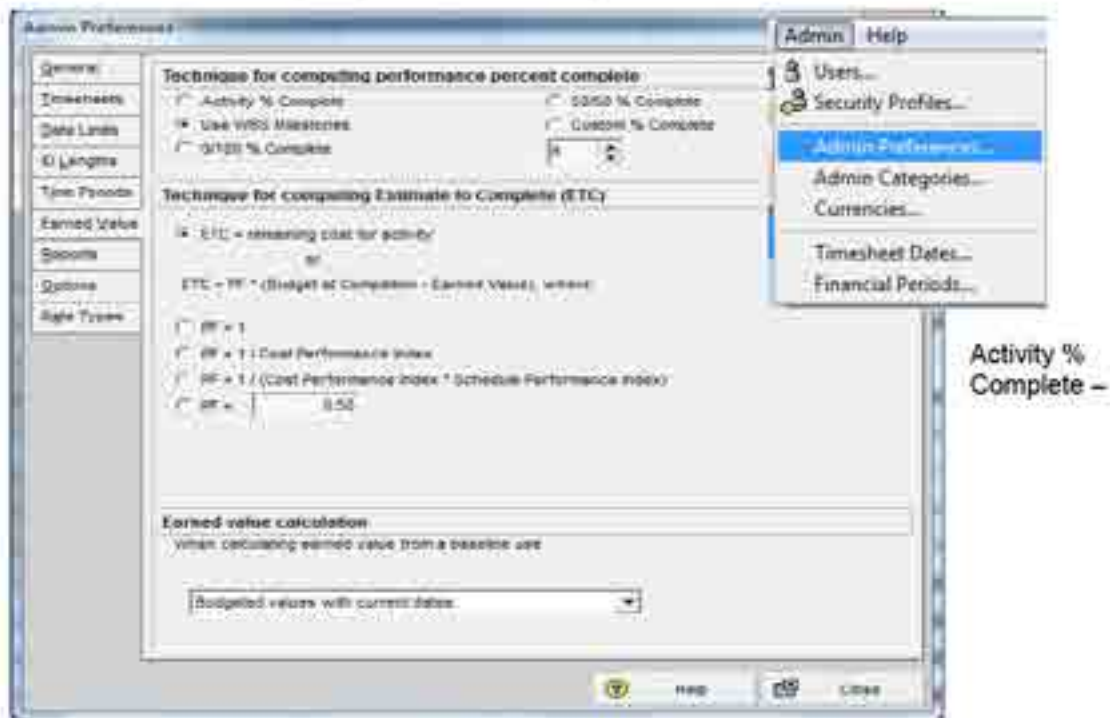


If the period performance is not stored, an averaged spend per period will be calculated, rather than the correct actual spend per period. Storing period performance is necessary to view historical values for things such as CPI and SPI, which if not stored for the period would only be valid up to the period to which the actual costs have been entered.

5.2.7. EV setting within P6

There are various settings for how EV is calculated. If access to these settings is not available then refer to the P6 administrator. I&S recommends Activity % Complete as the techniques for computing performance percent complete. The use of other available techniques is to be agreed with the PMO.

The options available to compute performance complete are:



This option is the default option for computing performance. The performance percent complete is equal to the activity's percent complete.

Use WBS Milestones – This option can be used if you have weighted milestones for a particular WBS or Project and would like to update the performance percent as and when these milestones are completed.

0/100 % Complete – This option can be used if an activity does not get credit for partial completion and only gets credit for full completion. Performance percent complete is not updated until an activity is 100% complete.

50/50 % Complete – This option assumes that an activity is 50 percent complete when it begins and gets credit for the last 50 percent only when it is complete. The performance percent complete is 50% when the activity starts and 100% when it is complete.

Custom % Complete – If it is desired to use a custom percent complete for updating, rather than the above options, this option is available. One of the most common options used on projects is 20/80.

The above options can be applied to the entire schedule or individually against any WBS within the schedule.

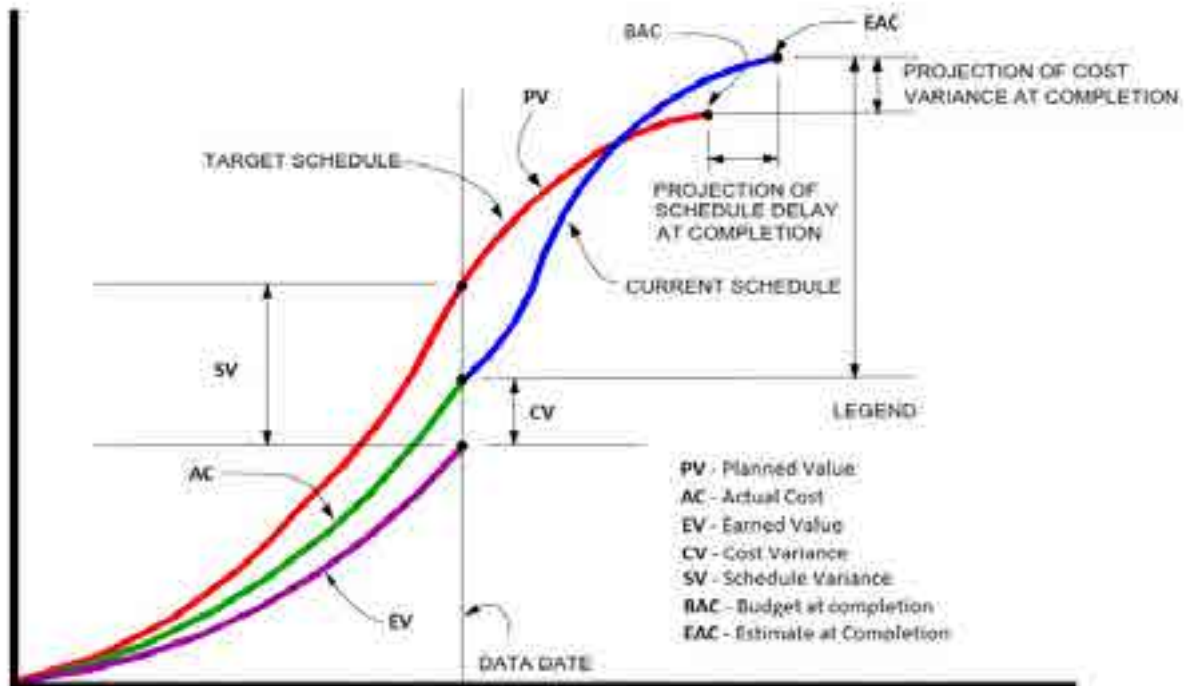
5.3. Measure Performance

Project performance should be established at the start of a project and measured throughout the life of the project. Performance is to be measured against a fixed time frame, specifically a baseline for the project. Primavera will allow EV to be calculated without a baseline. If no baseline is available or selected, the application will rely on the planned dates.

Once EVM is established within Primavera P6, the performance of the project can be determined. This activity focuses on performance, not just planned vs. actual spending. The performance calculations are built into the application but it is worth understanding how they are derived. There are also several EVM settings within the application which are covered in this section.

EVM requires three key parameters to measure project performance. These are;

- **Planned Value (PV)** - This is the time-phased budget baseline and is calculated by the application as an immediate result of the schedule assembly.
- **Actual Cost (AC)** - This is the cumulative actual cost spent at a given point in time and is derived from the actual cost information inputted.
- **Earned Value (EV)** - The earned value represents the amount budgeted for performing the work that was accomplished by a given point in time. This is calculated by the application as a result of statusing the schedule.



From the three primary measures derives other calculated measures that can be used to accurately assess the status of the project and predict its future state. All of these values are calculated within Primavera P6

- **Cost Performance Index (CPI)** – The cost efficiency factor representing the relationship between the actual costs (AC) expended and the earned value (EV). $CPI = EV/AC$. A $CPI = 1$ suggests a relatively efficient cost factor, while a $CPI < 1$ may be cause for concern.
- **Schedule Performance Index (SPI)** – The planned schedule efficiency factor representing the relationship between the earned value (EV) and the initial planned schedule (PV). $SPI = EV/PV$. A $SPI = 1$ is good. $SPI < 1$ suggests actual work is falling behind the planned schedule.
- **Critical Ratio (CR)** – The Critical Ratio, also known as the cost-schedule index considers both the CPI & SPI and represents the overall status of the project. $CR = CPI \times SPI$
- **Cost Variance (CV)** – The numerical difference between the earned value (EV) and the actual cost (AC). $CV = EV - AC$. Another way of thinking of this is the difference between the planned and actual costs of work completed.
- **Schedule Variance (SV)** - An indicator of how much a program is ahead of or behind schedule. $SV = EV - PV$. Another way of thinking of this is the difference between the value of work accomplished for a given period and the value of the work planned.
- **Budget at Completion (BAC)** – sum total of the time-phased budget. Synonymous with “Performance Measurement Baseline”.
- **Estimate to Complete (ETC)** – A calculated value, in dollars or hours, which represents the cost of work required to complete remaining project tasks. $ETC = EAC - AC$.

Estimate at Completion (EAC) - A calculated value, in dollars or hours, which represents the projected total final costs of work when completed. $EAC = AC + ETC$.

There are two approaches to calculate the Estimate at Completion;

Method 1: Assumes that the cost performance for the remainder of the task will revert to what was originally budgeted. $EAC = \text{Approved budget for the entire task} - \text{Cost variance for the work done to date on the task}$.

$EAC = \text{Budget at completion (BAC)} + \text{Actual cost (AC)} - \text{Earned value (EV)}$

Method 2: Assumes that the cost performance for the remainder of the task will be the same as it has been for the work done to date.

$EAC = \text{Budget at completion (BAC)} / \text{Cumulative cost performance index (CPI)}$

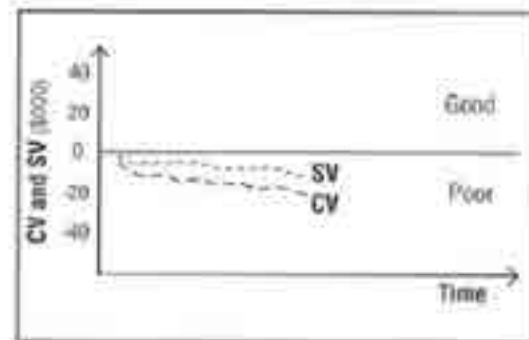
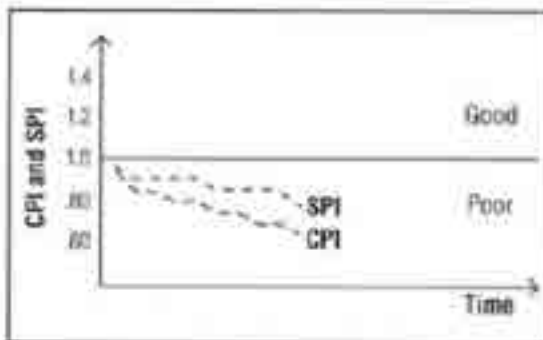
The use of EVM has shown historically that trends, once established, tend to remain in force until the end of the project. More unfavourably, it has been observed that if trends do change it is rarely for the better – the situation is far more likely to get worse.

5.4. Reporting

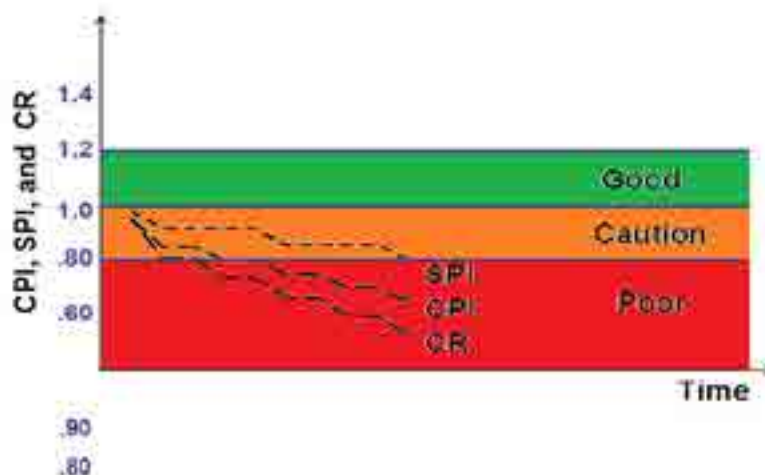
EVM reports are to be generated on a monthly basis as a minimum.

The reports are to provide a tabulated and graphical representation of the performance measurements as outlined in the previous section. Graphically displaying CPI, SPI, SV, CV

and CR over time provide valuable indicators of trends in project performance and the impact of any corrective actions.



These graphs can be banded to aid in interpreting the results: green indicates good performance, amber indicates caution, and red indicates poor performance.



It is important for the project to carefully establish meaningful thresholds for action on project performance. This helps ensure that when action is needed it is highlighted, and when action is not needed, micromanagement is minimized.

CPI, SPI, and CR of say 1.0 or above can be considered green, CPI, SPI, and CR between say 1.0 and 0.9 can be considered amber, and CPI, SPI, and CR below .9 can be considered red.

A project should be carefully reviewed when it enters the amber zone, to find the root cause(s) of performance or planning problems and eliminate them. When an item in the red zone is reviewed, this should generally be a status report on action(s) previously taken, or not taken.

When an item exceeds the green zone, it should also be reviewed, to determine the root cause(s) of the super performance or planning and consider the lessons learned in future work.

In addition, a tabulated and graphic report of the Estimate at Completion over time provides a valuable indicator of trends in project cost performance and the impact of any corrective actions.

6. Related documents and references

[Project Cost Estimating Standard – 4TP-ST-173](#)

[Scheduling Standard – 4TP-ST-123](#)

Appendix A - Schedule Quality Assessment Criteria

The "Schedule Quality" will be examined from the initial submission and upon each subsequent submission. The Contractor shall maintain the Schedule Quality, by satisfying the criteria in the table provided below. The Schedule will be rejected by the I&S if the Schedule Quality does not meet the thresholds prescribed. Further assessment criteria and thresholds may be added to the Schedule Quality assessment.

It is acknowledged that there may be exceptional cases where the thresholds provided in the table below can not be strictly adhered to. Exceptional cases are to be approved by the I&S's PMO and I&S Project Manager and tagged within the P6 schedule as approved exemptions.

The Schedule Quality will be assessed for all normal activities and milestones that are planned, in-progress, or complete.

Criteria	Description	Remarks	Threshold
Missing Predecessors	Total number of activities that are missing predecessors.	Activities that have missing predecessors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a Schedule during the planning phase.	Less than 1%
Missing Successors	Total number of normal activities that are missing successors.	Activities that have missing successors are known as open-ended activities. Open ends cause time and risk analysis calculations to be erroneous. Ideally, all open ends should be fixed in a Schedule during the planning phase.	Less than 1%
Merge Hotspot	The total number of activities with a high number of predecessor links.	Also known as merge bias, merge hotspot is an indication as to how complex the start of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question will be delayed due to the cumulative effect of all links having to complete on time in order for the activity to start on time.	Less than 2.5%
Diverge Hotspot	The total number of activities with a high number of successor links.	A diverge hotspot is an indication as to how complex the end of an activity is. If the number of links is greater than two, then there is a high probability that the activity in question may delay a large number of successors.	Less than 2.5%
Critical	Number of critical activities	The number of critical tasks within a grouping. Typically critical activities have Total Finish Float of zero. Primavera Schedules may have critical activities with more than zero float depending on the threshold set in Primavera P6.	No threshold
0 to 20 Days Float	Total number of activities with positive float of more than zero and less than or equal to 20 days.	Near critical activities should be closely monitored during execution to ensure a successful on-time project.	No threshold
Hard Constraints	Number of activities with hard or two-way constraints.	Hard or two-way constraints such as Must Start On or Must Finish On should be avoided. Consider using soft constraints if absolutely necessary. Includes normal activities and milestones that are planned, in-progress, or complete.	Zero
Soft Constraints	Number of activities with soft or one-way constraints.	Soft or one-way constraints such as Start no Earlier Than or Finish No Later Than, constrain an activity in a single direction. While not as	Less than 2.5%

Criteria	Description	Remarks	Threshold
		impactful as hard constraints, soft constraints do impact CPM calculations in a Schedule and should be reviewed carefully.	
High Float	Excessive free total float	Number of activities with total float greater than 2 months. Activities must be agreed with I&S.	Less than 5%
Negative Float	Total number of activities with total finish float less than 0 working days.	Negative float is a result of an artificially accelerated or constrained Schedule. Negative float indicates that a Schedule is not possible, based on the current completion dates. Compare this metric to constraint metrics to determine which activities (with negative float) are being impacted by constraints. Ideally, there should not be any negative float in the Schedule. Includes normal activities and milestones that are planned or in-progress.	Zero
Insufficient Detail / High Duration	Total number of activities that have a duration longer than 10 days. This number should not exceed 5%.	Total number of activities that have duration longer than 10 days. Activities with durations in excess of this criterion must be agreed with I&S as an exception.	Less than 5%
SF Predecessors	Total number of activities with Start to Finish (SF) logic links.	Start-to-Finish (SF) links are deliberately used very rarely because they have the unusual effect that the successor happens before the predecessor. Generally a poor practice when planning. Includes only normal activities and milestones that are planned, in-progress, or complete.	Zero
Leads & Lags	Lags in excess of 10 days	A lag is a duration applied to a logic link often used to represent non-working time between activities such as concrete curing. Lags tend to hide detail in Schedules and cannot be "stated" like normal activities. Lags should typically be replaced with activities. Includes normal activities and milestones that are planned, in-progress, or complete.	Zero

Transport for NSW

Editorial Style Guide

This guide to editorial standards applies to all Transport cluster agencies and brands.

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What's new in the June 2017 update

New entries: 'automated vehicles', 'brownfield', 'busway', 'connected vehicles', 'connected and automated vehicles (CAVs)', 'districts', 'driverless vehicle or self-driving vehicle', 'expressway', 'flexible transport', 'Future Transport (planning and technology)', 'greenfield', 'greyfield', 'journey', 'LGBTI', 'on-demand transport or demand-responsive transport', 'regions', 'route', 'service', 'transfer', 'transport precinct', 'trip', 'Trip Planner'

Removed terms 'freeway', 'PrePay' (fare or service type)

Note:

- Addition of Opal network-specific definitions: 'trip', 'journey', 'transfer'
- Addition of 'screen' at the end of terms which previously ended in 'indicator' (e.g. internal/external indicator, service indicator)
- Ensure correct capitalisation for commonly used words: 'platform', 'bus stop', 'wharf', 'public transport', 'city'
See *capitalisation* (p.10)
- Ensure correct capitalisation for shortened forms and initialisms.
Common nouns are lower case when written in long form but capitalised in shortened form.
central business district, CBD
Proper nouns are capitalised when written in long form and shortened form
New South Wales, NSW
See *shortened forms* (p.45)

Introduction

Style is not about being correct 100% of the time. It is about taking a consistent and appropriate approach to terminology, spelling, capitalisation, hyphenation, times and dates when possible. It can also relate to typography, heading hierarchy, menus and labels, page and screen layouts, tables, illustrations and captions, which should all follow design specifications.

Please refer to this guide for the current and preferred editorial style for Transport for NSW (TfNSW). It applies to all published material in printed and electronic format, for both corporate and customer-facing communications. This includes publications, reports, brochures, newsletters, letters, memos, papers, public updates and online (internet and intranet) content.

Your comments are welcome

This guide will be regularly updated to incorporate new or common TfNSW terms or standards. Your suggestions and comments are welcome. Please email Brand at brand@transport.nsw.gov.au.

For reference

- For terminology relating to wayfinding, please contact the Wayfinding team directly at wayfinding@transport.nsw.gov.au for the current Customer Information Rules.
- For current Australian spelling and usage, refer to *The Macquarie Dictionary*.
- For all other editorial style questions, use the accepted Australian Government style manual: Snooks & Co., *Style manual for authors, editors and printers*, 6th edn, John Wiley & Sons Australia, Ltd, 2002.



Is there a difference between corporate communication and customer-facing communication?

Customer-facing communication must always be clear, easy to read and friendly to echo our Brand tone of voice. It is important to make it easy for the customer to quickly scan and understand information, especially in posters, web tiles or other bite-sized media.

Corporate communication has a broader audience, and ranges from informal messages to TfNSW staff to high-level ministerial communications. It is more appropriate to follow the rules of formal writing with corporate communication.

The level of formality may be adjusted depending on the type of communication. Your professional judgement and operational knowledge is always required.

Public transport networks

A network is a group of services within a mode. Network names, used extensively on wayfinding maps, always:

- have initial caps
- directly reference the mode
- indicate the geographical range of the service
- *do not* include the service provider's name.

For example:

'Sydney Buses Network' refers to buses operated by the State Transit Authority and by a number of contracted private providers servicing the Sydney metropolitan area. There is no provider called Sydney Buses.

'Sydney Trains Network' refers to trains operating in the Sydney metropolitan area. The network name happens to coincide with the name of the sole provider, Sydney Trains.

'Sydney Ferries Network' refers to the ferries known as Sydney Ferries contracted to the private provider Harbour City Ferries on Sydney waterways. It does not include private ferry services on Sydney waterways.

Sydney Trains Network

'Sydney Trains Network' refers to trains operating in the Sydney metropolitan area. The network name happens to coincide with the name of the sole provider, Sydney Trains.

When listing Sydney Trains Network lines, use the order shown on the Sydney Trains Network map:

- T1 North Shore, Northern & Western Line
- T2 Airport, Inner West & South Line
- T3 Bankstown Line
- T4 Eastern Suburbs & Illawarra Line
- T5 Cumberland Line
- T6 Carlingford Line
- T7 Olympic Park Line

Sydney Buses Network

The bus network that includes buses operated by both the State Transit Authority and a number of contracted private providers servicing the Sydney metropolitan area. The network name does not imply there is an operator called Sydney Buses. (Note that State Transit Authority services in Sydney were *formerly* known as Sydney Buses.)

Sydney NightRide Buses Network

The bus network that provides late night and early morning services in the Sydney metropolitan area.

Sydney Ferries Network

The ferry network contracted to private provider Harbour City Ferries under the brand 'Sydney Ferries' on Sydney waterways. It does not include private ferry services on Sydney waterways.

These are the services in the Sydney metropolitan area serviced by Sydney Ferries:

- F1 Manly
- F2 Taronga Zoo
- F3 Parramatta River
- F4 Darling Harbour
- F5 Neutral Bay
- F6 Mosman Bay
- F7 Eastern Suburbs

Sydney Light Rail Network

The light rail network currently contracted to private provider Transdev Sydney that services the Sydney metropolitan area. Currently the L1 Dulwich Hill Line is the only light rail line in service.

The CBD and South East Light Rail project will provide Sydney's next light rail line.

Intercity Trains Network

The train network currently operated by NSW Trains under the brand 'NSW TrainLink' that services the outer Sydney metropolitan areas of the Blue Mountains to the west, Central Coast and Hunter to the north, Illawarra and South Coast to the south and Southern Highlands to the south west.

When listing Intercity Trains Network lines, use the order shown on the Intercity Trains Network map:

- Blue Mountains Line
- Central Coast & Newcastle Line
- Hunter Line
- South Coast Line
- Southern Highlands Line

Blue Mountains Buses Network

An outer Sydney metropolitan area bus network with buses operated by a number of contracted private providers servicing the Blue Mountains region including Springwood and Katoomba.

Central Coast Buses Network

An outer Sydney metropolitan area bus network with buses operated by a number of contracted private providers servicing the Central Coast region including Woy Woy, Gosford and Wyong.

Hunter Buses Network

An outer Sydney metropolitan area bus network with buses operated by the State Transit Authority and by a number of contracted private providers servicing the Hunter region including Newcastle, Lake Macquarie, Cessnock and Maitland.

Illawarra Buses Network

An outer Sydney metropolitan area bus network with buses operated by a number of contracted private providers servicing the Illawarra region including Thirroul, Wollongong and Shellharbour.

Newcastle Ferries

The ferry service currently operated by the State Transit Authority in Newcastle. Services operate between Stockton and Queens Wharf. The name does not imply there is a brand called 'Newcastle Ferries'.

Newcastle Light Rail

The planned light rail line that will operate in Newcastle. The name does not imply there is a brand called 'Newcastle Light Rail'.

Regional Trains and Coaches Network

The combined train and coach network currently operated by NSW Trains under the brand 'NSW TrainLink' that services regional NSW and extends to Brisbane, Canberra and Melbourne.

These are the areas in regional NSW serviced by the Regional Trains and Coaches Network:

- North Coast Region
- North Western Region
- Western Region
- Southern Region

These are the train services operating on the Regional Trains and Coaches Network:

- Armidale & Moree XPLOERER
- Brisbane XPT
- Broken Hill XPLOERER
- Canberra XPLOERER
- Casino XPT
- Dubbo XPT
- Griffith XPLOERER
- Melbourne XPT

Style, grammar and commonly used expressions across the Transport cluster

Numbers	
000	See Triple Zero (000)
13 22 32	NSW TrainLink telephone number for general enquiries and Regional bookings. Note spacing. Always in bold in text. Never break over two lines. Call 13 22 32 .
13 28 29	NSW TrainLink telephone number for Regional holiday packages and group bookings. Note spacing. Always in bold in text. Never break over two lines. Call 13 28 29 .
13 67 25	Opal Customer Care (Opal call centre) phone number. Note spacing. Always in bold in text. Never break over two lines. May also be expressed as 13 67 25 (13 OPAL) .
131 500	Transport Info telephone number for all public transport modes except NSW TrainLink Regional services. Note spacing. Always in bold in text. Never break over two lines. Call 131 500 . NOT Call 131500 .
133 677	The National Relay Service (NRS) number that has replaced the previously used TTY 1800 637 500 number for customers with hearing or speech impairment.
1800 657 926	Security Control Centre
1800 684 490	Project Infoline
1800 775 465	Construction Response Line
24/7	Use numerals.
24-hour	Hyphenated when used as a noun. 24-hour timetable, 24-hour customer service NOT 24-hr or 24 hr
3rd party	See <i>third party</i> or <i>3rd party</i>
4WD	Note combination of number and upper case. NOT 4wd
60-minute transfer	See <i>Opal trip advantage</i>
7-Eleven	Convenience store and ticket reseller. Note preferred style.
A	
a or an	Choosing 'a' or 'an' depends on how a word or letter sounds when spoken. an honour a car an introduction a union an hour's time a New South Wales destination an NSW destination a historic
abbreviations	See <i>shortened forms</i>

Aboriginal or Indigenous	<p>See also indigenous or Indigenous</p> <p>Note capitalisation. 'Indigenous' is generally used by the Commonwealth Government, which provides services and programs to both Aboriginal and Torres Strait Islander peoples at a national level. The term 'Aboriginal' refers specifically to the Aboriginal people of mainland Australia and Tasmania and does not necessarily include Australia's other Indigenous population – Torres Strait Islanders. Within NSW the term 'Aboriginal' is preferred.</p> <p>This position is identified for Aboriginal applicants.</p> <p>NOT Aborigines</p> <p>For further information, refer to the Transport Inclusive Interactions Guide on the intranet.</p>
about and around	<p>Use 'about' or 'around' in terms of time, money or measurement where possible, instead of 'estimated' or 'approximately'.</p> <p>About 20,000 people work for Sydney Trains, including contractors and skill hire staff.</p> <p>The new bridge will cost around \$21.5 million.</p>
accessible	<p>See also <i>Web Content Accessibility Guidelines (WCAG)</i></p> <p>A term used to describe public transport facilities designed to provide access to customers with a mobility or vision impairment.</p> <ul style="list-style-type: none"> accessible parking accessible pay phone accessible services accessible toilet hearing loop
accident	Do not use. When referring to traffic accidents, use 'crash' or 'incident'.
activation	In relation to Opal, this term is reserved for initial card activation.
active transport	<p>See also <i>walking and cycling</i></p> <p>A term to be used internally only. Comprises the active transport modes of walking and cycling as opposed to train, bus, ferry, light rail, taxi and private vehicle.</p>
active voice vs passive voice	<p>Active voice is usually regarded as a more effective writing style.</p> <p>Active: 'Catch special event buses here.' (preferred)</p> <p>Passive: 'Customers can catch special event buses here.'</p> <p>However, passive voice may more desirable in customer-facing communications.</p> <p>Passive: 'You will receive ...' (preferred)</p> <p>Active: 'We will send you ...'</p> <p>Passive: 'This station is unstaffed.' (preferred)</p> <p>Active: 'We no longer staff this station.'</p> <p>Use professional judgement.</p>
acts of parliament	See <i>legislation</i>

addresses	<p>When giving a physical address, do not include the state or postcode unless this is the preferred postal address for enquiries.</p> <p>Where space permits, spell out street types. Spell out the term 'corner'. Corner Waterloo and Herring Roads, Macquarie Park</p> <p>Although suburbs are shown in all caps on envelopes, there is no need for this in documents.</p> <p>When written over multiple lines, use no punctuation, and one space between the suburb/city, state and postcode. It's unlikely you'll need to add 'Australia'. For expressing an address that will go on an envelope, capitalise the suburb/city.</p> <p>In editorial: GPO Box 4191 Sydney NSW 2001</p> <p>On an envelope: GPO Box 4191 SYDNEY NSW 2001</p> <p>In text and when written on one line, add commas. GPO Box 4191, Sydney NSW 2001</p>
Adult Opal card	<p>See also <i>Gold Senior/Pensioner Opal card</i>, <i>Concession Opal card</i> and <i>Child/Youth Opal card</i></p> <p>Note capitalisation. The Opal card for customers with no concession entitlements.</p>
adviser or advisor	Use 'adviser'. However, note spelling of 'advisory'.
affect	See <i>effect or affect</i>
age	<p>Use neutral terms or phrases for age.</p> <ul style="list-style-type: none"> retired older (e.g. older drivers) senior citizens, seniors young people youth adolescent child, children school-age children babies young children <p>For further information, refer to the Transport Inclusive Interactions Guide on the intranet.</p>
ageing or aging	Use 'ageing'.
aids to navigation	Water traffic signal system.
air-conditioned, air-conditioner	Always hyphenate.
airport	Name the airport on first use. Use 'Sydney Airport' or 'Newcastle Airport', etc., in preference to 'the airport'.
Airport Link	<p>See also <i>airport services</i></p> <p>Two words. Note capitalisation. Airport Link owns Green Square, Mascot, Domestic Airport and International Airport Stations.</p>
airport services	<p>See also <i>Airport Link</i> and <i>GatePass</i></p> <p>The T2 Airport Line connects City Circle stations through to Macarthur Station via Sydney Airport. Train services are operated by Sydney Trains.</p>
airport station access fee	See <i>Sydney Airport station access fee</i>
airport stations	See <i>Sydney Airport stations</i>

all right	Always two words. NOT alright
alternative transport	Particularly during trackwork and following major incidents, buses or coaches may be provided as alternative transport. They are referred to as 'replacement buses'. NOT rail replacement bus services trackwork buses
am/pm	See <i>time</i>
among or amongst	Use 'among'.
ampersands (&)	Never use in text to replace 'and'. Use only where '&' is part of the official name of an organisation or company, or an accepted abbreviation. T2 Airport, Inner West & South Line Procter & Gamble Australia Pty Ltd R&D (research and development)
antisocial	Always one word. NOT anti-social
anymore or any more	One word when used as an adverb meaning 'any longer'. Two words when meaning a quantity. With Opal, customers don't have to buy paper tickets anymore. Are there any more reasons to get an Opal card?
Anzac or ANZAC	Use 'Anzac'.
apostrophes	See also <i>quotation marks</i> In typeset text use 'curly' apostrophes, not footprints (') or 'straight' apostrophes. the State Government's policies the atlas's size Chris's hat all State Governments' budgets the spokeswomen's newsletter the people's choice In general, do not use apostrophes to create plurals. potatoes the 1990s the swinging '60s NOT potato's the 1990's the swinging '60's There are accepted rare exceptions for plurals when there may be ambiguity: do's and don'ts mind your p's and q's It is acceptable to leave possessive apostrophes out of plural expressions of time. When time reference is singular, always use an apostrophe. six weeks time or six weeks' time 10 years experience or 10 years' experience one week's time a day's journey the year's cycle No apostrophes for place names. Kings Cross Frenchs Forest
Arial	See <i>fonts</i>
arrivals indicator screen	See <i>service indicator screen</i>

asterisk	See also <i>footnotes</i> The symbol '*'. NOT asterix
auto top up	See also <i>top-up or top up</i> Three words, lower case. The optional feature that links an Opal card to a credit or debit card so the Opal card balance tops up automatically as required.
automated vehicle	A vehicle in which one or more elements of the driving task is automated and the vehicle therefore does not require a human driver for at least part of the driving task. Note the difference between 'automated' vehicles and 'driverless' or 'self-driving' vehicles. The latter are distinguished by their capability to perform all driving tasks autonomously under all conditions. See also <i>driverless vehicle or self-driving vehicle</i>
B	
baby change room	Three words. A room with a dedicated table, usually within a toilet, on which to change babies' nappies.
BAC	Blood alcohol concentration.
balance	The current value on an Opal card. Also Opal balance, card balance and Opal card balance.
Barangaroo Ferry Hub	Project name. Note capitalisation.
bicycle or bike	Both are correct and may be used interchangeably. 'Bike' is well understood in context and may be preferred for customer-facing material.
bicycle locker or bike locker	Both are correct. Secure key-lockable facility in which to place a single bicycle. Use 'bike locker' in customer-facing communications.
bicycle rack or bike rack	Both are correct. Dedicated, non-secure rack or space to park bicycles. Use 'bike rack' in customer-facing communications.
bicycle shed or bike shed	Both are correct. Dedicated covered facility for parking bicycles at transport interchange hubs that can be accessed with a linked Opal card. Use 'bike shed' in customer-facing communications.
Bike and Ride	Note capitalisation. An initiative to encourage customers to ride bikes to transport hubs and transfer to public transport by providing secure bike facilities.
Blue Mountains ExplorerLink	Product name. Note capitalisation and spacing. A 1-day or 3-day combined ticket that includes Intercity train travel to Katoomba Station and a pass for the Explorer Bus.
boarding ramp	Ramp deployed by staff on a station or train that bridges the gap between the platform and the train – usually used for customers with mobility aids.
boat driver's licence	See also <i>driver licence</i> NOT boat driver licence
boat ramp	Two words.
bold	In printed documents, bold text is appropriate for headlines, subheads and highlighted words in body copy. Avoid overuse. URLs and phone numbers in text should always be bold . 131 500 rms.nsw.gov.au transportnsw.info
Booking Office	See <i>NSW TrainLink Booking Office</i> and <i>NSW TrainLink Travel Centre</i>
brackets and parentheses	See <i>parentheses</i> and <i>brackets</i> and also <i>dashes</i>

braille	Lower case. NOT Braille
branches – business areas within a division	Branch is also used to describe business areas of each division. When writing a branch name in full, the word ‘branch’ should not be included. Timetable Development NOT Timetable Development Branch
branches – train lines	The Sydney Trains Network and Intercity Trains Network contain three sections of line referred to as ‘branches’. For customer information it is clearer to express in terms of stations. <ul style="list-style-type: none"> • For Cronulla branch line, use ‘T4 Eastern Suburbs & Illawarra Line services between Sutherland and Cronulla’. • For Port Kembla branch line, use ‘South Coast Line services between Coniston and Port Kembla’. • For Richmond branch line, use ‘T1 Western Line services between Blacktown and Richmond’.
brownfield	Describes land previously used for industrial or commercial purposes which may be polluted or contaminated with hazardous waste. See also <i>greenfield</i> and <i>greyfield</i>
bullet points	See also <i>stand-alone lists</i> Bullets are a handy way to present bite-sized information. Use them in preference to numbers or letters, which should only be used to demonstrate priority. There are two ways to use bullets in customer-facing material: <i>With full stops</i> <ul style="list-style-type: none"> • Bullet points that are full sentences start with a capital and finish with a full stop, like this. • When one bullet point contains more than one sentence, each bullet point must also have a full stop. Even if the final sentence is incomplete. <i>Without full stops</i> Do not end bullet points with full stops if they are: <ul style="list-style-type: none"> • fragments • a stand-alone list • a single sentence • in marketing communication, not even the final bullet point However, in more formal documents, always end the final bullet with a full stop even if it is a fragment or a stand-alone list. For both customer-facing and more formal documents, TfNSW style is to never end any bullet point with: <ul style="list-style-type: none"> • a semicolon (;) • a comma (,) • ‘and’ or ‘or’.
bus	Never use as a verb.
bus interchange	Where customers have access to a number of different bus routes at a central location.
bus lanes, bus only lanes	‘Bus lanes’ are marked road lanes that may be used by buses, taxis and motorbikes. ‘Bus only lanes’ are for the exclusive use of buses.
bus network	A network of routes and their bus stops.
bus operators	When providing travel information, refer to bus <i>services</i> rather than bus <i>companies</i> . It is generally unnecessary to write out a bus company’s name in full. Tickets can be purchased on board CDC Hillsbus services. NOT Tickets can be purchased from Hillsbus
bus route	An individual bus service route.

bus stands	Multiple bus stops at an interchange.
buses or busses	Use 'buses' when expressing the plural of 'bus'. The verb 'busses' should not be used.
bushland	One word.
busway	A lane dedicated to buses only. One word, lower case.
bygone	One word. bygone era
bypass	One word, lower case.
by-product	Hyphenated.

C

café	Note accent.
cannot	One word.
capitalisation	<p>The TfNSW standard is to minimise capitalisation. Headlines and subheads should be in sentence case, with only the first letter capitalised. However, titles of publications may Have Initial Caps, like this.</p> <p>Initial caps are used for proper nouns including:</p> <ul style="list-style-type: none"> • names of specific people, geographical locations/places and organisations • nationalities and languages • official titles • bridges, tunnels, streets and roads • awards, prizes, honours and degrees • events and ceremonies • brands, models and classes of vehicles • specific courses, policies and guidelines (not italicised) • product, project and service names. <p>Do not use an initial cap if not using the full name, or if the word is not a proper noun, e.g. bridge, city, platform. Traffic is flowing well over the Sydney Harbour Bridge. The bridge is ... All train platforms except Platform 3 will reopen ...</p> <p>Do not use BLOCKS OF ALL CAPITAL LETTERS to emphasise a point or to introduce an idea. They are difficult to read.</p>
captions (photographs)	<p>Use a description or title for a photo caption followed by a colon (:) and then follow with identifying information. Fully implemented: the Opal ticketing system.</p> <p>Captions for graphs, tables, diagrams, etc., need not follow this style. The general rule is to name people from left to right, in which case it is not necessary to include the naming directions. A successful day's work: Mary Brown and Bob Davis at the community information day.</p> <p>Only indicate direction when it is not ordered from left to right. The style is (R-L) in parentheses, both letters upper case, using an en rule (see also <i>dashes</i>). All smiles: Manager Bob Brown (second from left) praises his team (R-L) Mary Jones, David Smith and John Citizen. For rows, use back, middle and front in that order.</p>
car or carriage (for trains)	Both terms are used. Refer to carriages rather than cars in longer text, and specific naming conventions such as 'quiet carriage'. However, use 'car' where space is limited, such as when referring to short platform stations. Light rail has 'vehicles'.

car or vehicle	When talking about road traffic, use 'vehicle' as a more inclusive term than 'car'.
car park	Two words.
car seat	Two words. NOT child restraint child car restraint
carry-on luggage	Used in reference to NSW TrainLink Regional services. Note hyphen for compound adjective.
case-by-case or case by case	Hyphenated when used as an adjective. Three words at other times. We are dealing with this on a case-by-case basis. We are dealing with this case by case.
CAV	See <i>connected and automated vehicle</i>
CBD	Short for Central Business District. Because major centres other than Sydney have CBDs, include the name of the centre to avoid ambiguity. Sydney CBD, Newcastle CBD, Maitland CBD
CCTV	Stands for closed-circuit television. Usually no need to spell out.
central divisions	Not capitalised.
Central Station	NOT Sydney Terminal Central Railway Station The address is: Eddy Avenue, Sydney. NOT Corner of Eddy Avenue and Pitt Street When referring to NSW TrainLink services arriving at Central from interstate, use 'Central (Sydney) Station' if required for clarity.
check-in or check in	Hyphenated when used as a noun or adjective. Two words when used as a verb. Allow 30 minutes for check-in. Check-in time is 30 minutes before departure. Check in at least 30 minutes before departure.
Chief Executive	Initial caps. Always write in full. NOT CE Chief Executive Officer CEO
Child/Youth Opal card	See also <i>Gold Senior/Pensioner Opal card, Adult Opal card and Child/Youth Opal card</i> Note capitalisation. The Opal card for children aged from 4 to 15 years, as well as those aged 16+ who are currently NSW or ACT secondary school students.
City or city	See also <i>Sydney CBD</i> Capitalise for line descriptions and the MyTrain ticket destination. Hornsby or Epping to the City Select 'City' as your destination Lower case if being used as a common noun. Roads in the city will be closed ...
CityRail	Note capitalisation. Former service name of the public transport brand now known as Sydney Trains, which also included Intercity trains (now operated by NSW Trains).
clock tower	Two words. Central Station's landmark clock tower
cluster	See <i>Transport cluster</i>

co-	<p>No hyphen for words starting with ‘co’ when followed by another ‘o’. cooperate, cooperative, coordination, coordinator</p> <p>Use a hyphen when ‘co’ modifies another word. co-author co-brand co-drive co-locate</p>
coach interchange	Where customers have access to a number of different coach routes at a central location.
coach operators	In general, do not identify companies operating NSW TrainLink coach services by name.
coach route	A service route provided within the NSW TrainLink Regional Coach Network.
coach stands	Multiple coach stops at an interchange.
coach stop	A place to get on and off coaches.
coach terminal	Location for originating and terminating intrastate and interstate coach services where customers can get on and off coaches.
collective nouns and names	<p>TfNSW is singular. Use ‘is’ not ‘are’. TfNSW is committed to improving transport services.</p> <p>For other collective nouns, singular or plural may be used depending on whether the meaning relates to the group as a whole or to individuals within the group. Staff are happy with the new arrangements. His team is not concerned with the changes required.</p>
colons	<p>Use a colon (:), <i>never</i> a semi-colon (;), to introduce a series of bullet points or list. Light rail stops affected: <ul style="list-style-type: none"> • Lilyfield • Marion • Leichhardt North </p> <p>A colon is often used in a heading or subheading. Stakeholder engagement and information sharing: exploring its role in transport</p> <p>In more formal writing, the colon marks relationship and sequence. It is commonly used to introduce a word, phrase or clause that summarises or contrasts with what precedes it. There is only one word to describe it: dishonest. There were four tickets: not enough for all of us.</p> <p>Colons can be used to help introduce a series in a sentence. Three portfolios were represented: finance, transport and health.</p>
colour	<p>Always with a ‘u’ unless part of a title. Pantone COLOR BRIDGE® Coated</p>

commas	<p>A comma marks a break in the continuity of a sentence and can eliminate ambiguity.</p> <p>A short time after, the train left the station.</p> <p>Short introductory clauses don't require a comma when there is no possibility of ambiguity, but a comma may be used to make the message clearer.</p> <p>To plan your trip, call 131 500.</p> <p>A comma separates items in a simple series or list.</p> <p>The details required are name, date of birth, address and telephone number.</p> <p>Commas are not normally required before the final 'and', but should be used to clarify groupings in a list.</p> <p>The meeting was attended by Customer Services, Strategy and Planning, and Finance and Investment.</p> <p>Do not use commas simply to change pace of a sentence.</p>
commuter	See <i>customer</i>
commuter car park	Dedicated car park near a public transport facility.
compass points	<p>Compound forms of compass points are hyphenated, except where part of an established line, region or place name.</p> <p>The people of south-western Sydney Explore the state's north-west</p> <p>Does not apply to project or service names.</p> <p>South West Rail Link NSW TrainLink North Western train services</p> <p>Only capitalise directional descriptions when used in proper nouns.</p> <p>Northern Territory western Sydney heading west pointing south-east the north-south link (note en dash to signify 'to') travelling in a westerly direction northbound lane NSW North Coast Southern Hemisphere South Australia North Sydney</p>
concession or concessional	<p>Always concession. Concessional is no longer used, even as an adjective.</p> <p>concession fare NOT concessional fare</p>
Concession Opal card	<p>See also <i>Gold Senior/Pensioner Opal card, Adult Opal card and Child/Youth Opal card</i></p> <p>Note capitalisation. The Opal card for eligible tertiary students, apprentices and trainees, jobseekers and other Centrelink customers.</p>
concourse indicator screen	<p>See also <i>service indicator screen</i></p> <p>Line-based or route-based display in unpaid area of stations and ferry wharves, and paid areas of line interchange locations, providing details of next service departure including stops.</p> <p>NOT indicator board</p>
conditions of entry	Notice to customers of rules and relevant laws when entering transport locations.
conductor	See <i>customer service officer</i>

connected and automated vehicle (CAV)	<p>A vehicle that has connected and automated vehicle technologies. The term is also used to refer collectively to all types of vehicles that are equipped with varying ranges and capabilities of connected and/or automated vehicle technologies.</p> <p>See also <i>connected vehicle</i> and <i>automated vehicle</i></p>
connected vehicle	<p>A vehicle that uses wireless technology to communicate wirelessly with other vehicles, infrastructure and/or devices.</p>
contact details	<p>Primary contact phone numbers, email addresses and URLs in text should always be in bold.</p> <p>Call 131 500 or visit transportnsw.info.</p> <p>The exception is the lockup that appears on every element, where the TTY number is not bold.</p> <p>Since operations cover multiple area codes across TfNSW, show phone numbers with area code, no parentheses. Regular eight-digit telephone numbers should be grouped in sets of four. Don't break over two lines.</p> <p>02 8837 0000 NOT (02) 8837 0000</p> <p>Only include Australia's international dialling code +61 when required for an international audience.</p> <p>+61 2 8202 2000 NOT +61 (0) 2 8202 2000</p> <p>Internal extensions are written as follows: Please call reception on x22000.</p> <p>TfNSW has standard short forms for telephone, mobile, fax, email and website:</p> <p>T for Telephone M for Mobile F for Fax E for Email W for Website</p>
contractions (grammatical)	<p>See also <i>shortened forms</i></p> <p>Grammatical contractions are sometimes discouraged in formal writing, but use professional judgement.</p> <p>Contractions like 'shouldn't', 'can't', 'don't', etc., have been shown to improve comprehension. However, if contractions sound or look like other words they may be confusing in certain contexts, for example, if English is not the reader's first language, or if the reader has limited literacy skills. Because of similarity to other words, use contractions carefully in customer-facing communication, for example:</p> <ul style="list-style-type: none"> • we're (where, were) • you're (your) • they're (there, their) • it's (its)
council or Council	<p>Only use a capital for a council name. Use lower case for local council, local government, councils and local government area.</p> <p>City of Sydney Council All councils in the region ...</p>
Country Pensioner Excursion ticket	<p>Note capitalisation. Not to be confused with Pensioner Excursion Ticket (PET) or Regional Excursion Daily (RED) ticket.</p> <p>NOT NSW TrainLink Pensioner Excursion ticket</p>
CountryLink	<p>The former name of the Regional public transport brand that is now operated by NSW Trains under the NSW TrainLink brand. Note capitalisation and no space.</p>

credit card, debit card	For consistency always refer to these payment options in this order. credit or debit card credit and debit cards
crew or staff	Sydney Trains and NSW TrainLink Intercity services have staff. NSW TrainLink Regional services have crew on board and staff at stations. Ferries have crew on board and staff at wharves. Light rail has staff – including customer service officers.
currency	Amounts of money are generally expressed in figures. For cents, millions and billions, use the word in full in text or the symbol ('c', 'm', 'b') in tables and graphs. Million and billion are abbreviated with a lower case 'm' and 'b'. Avoid putting .00 at the end of whole dollar amounts quoted in text unless cents are important to the message. five cents / 5 cents / five-cent coin / 5-cent coin 10 cents / 10-cent coin one dollar / \$1 / one-dollar coin \$1.10 five-dollar note 10-dollar note \$1500 (no comma required in editorial for four-digit amounts) \$10,000 (comma) \$1 million (for text) / \$1m (for tables) \$1 billion / \$1b NOT \$1000 million / \$1000m
customer	Not passenger, traveller, commuter. Always lower case. Wherever possible in customer-facing communication, refer to 'you'. Opal customer NOT Opal Customer
customer experience	The complete sum of experiences our customers have with us and the transport infrastructure and services we provide.
Customer Experience Drivers	Note capitalisation. Groups of individual, related service attributes which reflect what's important to customers and drive satisfaction.
customer journey mapping	A method used to help us see transport from our customers' perspective.
customer service officer	Note lower case. Staff on board light rail selling tickets and engaging with customers. NOT conductor
Customer Value Propositions (CVPs)	Note capitalisation. Customer insights gained through research that are used to guide long-term transport planning and strategic improvement initiatives across Transport. NOT CVP's
cyclane	One word. A dedicated on-road corridor for cycling.
cyclepath	One word. A dedicated off-road corridor for cycling.
cycleway	One word. A dedicated on-road or off-road corridor for cycling.
cycling and walking	See <i>walking and cycling</i>
cyclist	Try using 'bicycle rider' or 'bike rider' instead if feasible.

D

Daily Travel Cap and
Sunday \$2.50 Travel Cap

Note capitalisation. A feature of Opal where customers benefit from capped fares for unlimited travel within the Opal network during a specified timeframe. Fares are capped differently depending on Opal card type.

See also *Weekly Travel Reward*

dashes

See also *hyphens* and *parentheses* and *brackets*

A hyphen is not a dash. There are three specific symbols to represent hyphens and dashes:

- hyphen (-)
- en dash (–)
- em dash (—)

TfNSW does not use em dashes.

When to use an en dash (–), not a hyphen (-):

When the meaning is 'to' for spans of figures, time and distance, and the word 'from' is not used. No space on either side when single words or numbers are used:

1960–1970, 11am–1pm, 3–6pm, April–June, 25–28 March

To indicate an association between two single words.

UK–US relations

To indicate the minus or negative sign.

a temperature of –12°C

To indicate an abrupt change or an explanation instead of using parentheses. Make sure that in these instances the en dash has a space on either side.

Issues facing public transport users – such as frequency and coverage of services – were raised.

Add a space on either side of en dash to link more than one word on either side, including spans of figures, time and distance.

A Commonwealth Government – State Government agreement

1 July 2014 – 30 June 2016

28 February – 4 March

TIP Microsoft Word automatically creates an en dash when a space is added before and after a hyphen in a sentence.

dates	<p>9 January 2015 NOT 9th January 2015 January 9, 2015</p> <p>Write dates including the day of the week where appropriate with no commas. Monday 9 January 2015</p> <p>However, be flexible around context and available space, especially when expressing date ranges. For example: 24 January – 9 February 13–23 February Fri 21 March – Sat 12 April Saturday 1 March Fri 28 Feb – Sun 2 Mar</p> <p>Don't use full stops with abbreviated days or months in date ranges. Mon, Tue, Wed, Thu, Fri, Sat, Sun</p> <p>In editorial, consider whether the exact day or date needs to be used, especially when referring to events in the past. Sunday 11 October 2015 11 October 2015 11 October October 2015 NOT 11th October 2015 October 11</p> <p>The form for dates in tables and other space-constrained situations is dd/mm/yyyy. 11/10/2017</p> <p>Spell out the Latin 'circa' (meaning 'around') where possible. Otherwise abbreviate with a full stop. circa 1850 c. 1850</p> <p>In media releases or other communication materials, avoid using exact dates in introductory paragraphs. Make a more general reference in the introduction and provide details further down.</p>
Daylight Saving Time (DST)	Note capitalisation. It is okay to refer to 'daylight savings'.
DayScape	One word. Note capitalisation. An NSW TrainLink product marketing Intercity trips as one-day leisure excursions.
daysitter cabin	Note lower case. Sleeping compartment on board selected NSW TrainLink Regional XPTs that converts to First Class seating on daytime services.
debit card, credit card	See <i>credit card, debit card</i>
default fare	Note lower case. The fare incurred for incomplete Opal journeys where the customer has incorrectly tapped on or off.
demand-responsive transport	See <i>on-demand transport or demand-responsive transport</i>
Demerit Points Scheme	Note capitalisation.
demerit points and double demerit points	<p>Lower case. Always write demerit points as numerals. 3 demerit points</p> <p>Rework sentences that start with numerals During a double demerit period, 3-point offences go up to 6 points. NOT 3-point offences go up to 6 points during a double demerit period.</p>
departures indicator screen	See <i>service indicator screen</i>

disabilities	<p>Always check acceptable terminology before referring to particular disabilities in text.</p> <ul style="list-style-type: none"> a customer with a disability a customer with vision impairment a customer with hearing impairment <p>NOT</p> <ul style="list-style-type: none"> a disabled customer a blind customer a vision-impaired customer a deaf customer a hearing-impaired customer
disclaimers	<p>Try not to add fine print to brochures, posters and other customer-facing material as it suggests concealment. It should be a last resort. Say it in the text if possible. Privacy disclosures such as those below must be approved by Legal Services.</p> <p>Information correct at time of printing.</p> <p>This publication is intended as a guide only and should not be used as a substitute for legal advice.</p> <p>This publication is intended as a guide only and should not be used as a substitute for medical advice.</p>
Discovery Pass	Two words. Note capitalisation. NSW TrainLink product.
disk or disc	<p>'Disk' refers to magnetic media, such as a floppy disk, the disk in your computer's hard drive, an external hard drive. Use 'disc' at all other times.</p> <p>'Disc' also refers to optical media, such as an audio CD, CD-ROM, DVD-ROM, DVD-RAM or DVD.</p>
dispatch or despatch	Use 'dispatch'.
districts	<p>The six districts of Greater Sydney, as defined by the Greater Sydney Commission, are:</p> <ul style="list-style-type: none"> Central District Bayside, Burwood, Canada Bay, Inner West, Randwick, Strathfield, the City of Sydney, Waverley, Woollahra North District Hornsby, Hunters Hill, Ku-ring-gai, Lane Cove, Northern Beaches, Mosman, North Sydney, Ryde, Willoughby South District Canterbury-Bankstown, Georges River, Sutherland South West Camden, Campbelltown, Fairfield, Liverpool, Wollondilly West Central District Blacktown, Cumberland, Parramatta, The Hills West District Blue Mountains, Penrith, Hawkesbury

division	<p>Lower case.</p> <p>When writing a division name in full, the word 'Division' should not be included at the end of the name.</p> <p>Customer Services NOT Customer Services Division</p> <p>This rule applies to document file names, headings, business cards, letterheads and email signatures. It may be necessary to add 'Division' in document titles to avoid ambiguity. Use professional judgement. When initials are used to represent division names, spell out the division name in full on first mention, with the initials in parentheses.</p> <p>The five core divisions at Transport for NSW should be abbreviated as:</p> <p>Customer Services (CS) Freight, Strategy and Planning (FSP) Infrastructure and Services (IS) Finance and Investment (FI) People and Corporate Services (PaCS)</p>
double-deck, double-decker	<p>See also <i>single-deck</i>, <i>single-decker</i></p> <p>Always hyphenated. Double-deck is an adjective. Double-decker is a noun. May apply to trains or buses.</p>
downloads	<p>In electronic documents only, always underline links to downloadable files. These files can include the file size and format in parentheses.</p> <p>For linking from a web page to a document within the same site: <u>Transport for NSW Annual Report 2015-16 (4.8MB pdf)</u></p> <p>For linking to a document on another site, or linking from a document from within another document, as the file size can be subject to change and is best to be exclude: <u>Some paper tickets are retiring brochure (pdf)</u></p> <p>File size is shown to one decimal place, expressed in kilobytes (KB) or megabytes (MB). File format is shown as the three-letter file extension, in lower case.</p> <p>doc/docx Microsoft Word document jpg JPEG image pdf Adobe PDF document rtf Rich Text Format document xls Microsoft Excel spreadsheet zip ZIP archive</p>
draft	<p>For depth of vessel below waterline.</p> <p>NOT draught</p>
Driver Knowledge Test	<p>Note capitalisation.</p> <p>NOT driving test</p>
driverless vehicle or self-driving vehicle	<p>A vehicle with an automated driving system that can perform all driving tasks under all conditions, to the same extent as a human driver. Also known as 'driverless car' if referring to a five-seat sedan.</p> <p>Note the difference between 'driverless' or 'self-driving' vehicles and 'automated' vehicles. In the latter, a human driver may still be required for at least part of the driving task.</p> <p>See also <i>automated vehicle</i></p>
driver licence	<p>See also <i>boat driver's licence</i></p> <p>NOT driver's licence</p>
Driver Reviver sites	<p>Note capitalisation.</p>
DRIVES	<p>Stands for 'DRIVER VEHICLE System'. A Roads and Maritime Services computer system used to process and access driver licensing and vehicle registration transactions.</p>

DVA	Stands for digital voice announcement. Refers to audible prerecorded voice announcements. <i>Not for customer-facing communication.</i>
E	
Eastern Suburbs	Region of Sydney. Capitalised.
Easy Access Gate	See <i>wide gate</i>
easy access	See also <i>Transport Access Program</i> Lower case unless part of a proper name or project. The website offers easy access to timetables.
Economy	See also <i>First Class</i> Note capitalisation. Only applies to booked seats on NSW TrainLink Regional services. A Discovery Pass gives you unlimited Economy travel. NOT Economy Class
EDI screen	See <i>external destination indicator screen</i>
eDM	Short for 'electronic direct mail'. In other words, a targeted email distributed to a defined mailing list.
effect or affect	'Effect' as a noun is the cause or consequence of an event or action. The effect of heat was damaging. 'Effect' as a verb means to make something happen. He was determined to effect change. 'Affect' as a verb is to act on, to produce an effect or to change. Consuming alcohol can affect your driving skills.
EFTPOS	All caps. There is no need to explain the acronym.
e.g. or i.e.	See also <i>for example</i> or <i>e.g.</i> The Australian Government style manual recommends keeping the full points in both these shortened forms. Use 'e.g.' preceded with a comma when your meaning is 'for example'. Do not follow with a comma. Use 'i.e.' preceded with a comma when your meaning is 'that is'. Do not follow with a comma. In general, write 'for example' or 'that is' in full, either starting a new sentence or both preceded and followed by a comma.
ellipsis points	Three full stops (...) can show the omission of a word or words from quoted material ... and they can also be used to informally link two thoughts. It is overused in advertising materials, so avoid if possible. If you must, no space between, and one space before and one space after. Back in the good old days ... when roads were built by hand. Except for quotations or for sentences ending with an exclamation (!) or question mark (?), no punctuation follows the first point of the ellipsis or follows the last. What should I do about ... ? I'll tell you what I said ... NOT I'll tell you what I said
email	Lower case, one word, no hyphen. It is okay for email addresses and URLs to have a full stop if at the end of a sentence. In body copy, write email addresses in bold. Feel free to email the editor at travel@nsw.gov.au .
Emergency Help Point	Note capitalisation. A communication device at train stations, ferry wharves and light rail stops, for customers who need security or police assistance. NOT Passenger Emergency Intercom
en route	Note spelling. On the way to a destination. NOT on route

Endeavour	See also <i>fleet</i> Train type. Also known as N Set.
enquiry or inquiry	Common use throughout the cluster shows 'enquiry' is preferred when the meaning is for ad hoc queries, and 'inquiry' is used for formal investigations. General enquiries: 13 22 13 This matter is the subject of a broader inquiry. The customer enquired when the inquiry would be held.
environmental impact assessment (EIA), environmental impact statement (EIS)	Note lower case. Only capitalised when part of a publication title, for example: Bulahdelah Upgrade Environmental Impact Statement
e-tag	See also <i>E-Toll</i> Hyphenated, lower case. This specific term is used by Opal to help explain the concept of auto top up to customers. When not used in conjunction with Opal for generic reference, use 'electronic tag' or simply 'tag' rather than e-tag.
E-Toll	Note hyphen and capitalisation. The electronic tag issued by Roads and Maritime Services is known as E-Toll. <ul style="list-style-type: none"> • Roam e-TAG and e-PASS – M7, M2 and Lane Cove Tunnel (Transurban) • E-way – M1, M4, M5 (Interlink) • Beep pass and beep tag – Cross City Tunnel • Queensland Motorways – Go Via • Melbourne CityLink – CityLink pass For generic reference, use 'electronic tag' or simply 'tag'.
every day or everyday	One word when used as an adjective. As an adjective it always means ordinary, usual, routine, and sometimes dull. Two words when the meaning is 'each day'. Public transport is part of our everyday lives. Thousands of people use the station every day.
exclamation mark (!)	Only use for genuine exclamations – usually the spoken word, or as a device when expressing special offers or other forms of limited-time product promotion. If an exclamation mark is essential, don't use more than one per page. Do not use in corporate communication. Avoid in customer-facing communication.
ExplorerLink	See <i>Blue Mountains ExplorerLink</i>
external destination indicator (EDI) screen	EDI screens are provided on vehicles and vessels. They may include a line code or route number, and destination with key via points if required. Not for customer-facing communications.
expressway	See <i>highways, motorways, expressways</i>
F	
fare cap	See also <i>Daily Travel Cap</i> and <i>Sunday \$2.50 Travel Cap</i> Always lower case. A specific marketing term sometimes used by NSW TrainLink relating to special offers on Regional services.
Fare Free Zone	Note capitalisation. An area operated by State Transit buses in the city centre of Newcastle between 7.30am and 6pm seven days per week.
farebox revenue	Lower case. Two words.
fast ferry services	Note lower case when not referring to a specific service such as Manly Fast Ferry (not a Sydney Ferries service).
ferry network	See also ' Public transport networks ' section A network of ferry services and their wharves.

ferry service	Individual ferry service, such as F1 Manly.
ferry wharf	A place to get on and off ferries.
fine or penalty	See <i>penalty or fine</i>
fireworks	One word.
First Class	See also <i>Economy</i> Only applies to booked seats on NSW TrainLink Regional services. Note capitalisation. Full-fare First Class seats come with a seat for a friend at no extra cost.
flammable	Use in preference to 'inflammable'.
fleet	Use 'fleet' in preference to 'rolling stock' where possible. Sydney Trains Network sets can be referred to as carriages, trains or in isolation. C Set carriage/train K Set carriage/train S Set carriage/train Millennium (or M Set) carriage/train Tangara (or T Set) carriage/train Waratah (or A Set) carriage/train The NSW TrainLink Regional and Intercity fleet consists of a number of train types. Regional trains: XPT, XPTs XPLOER, XPT, XPTs XPLOERS NOT Xplorer Intercity trains: V Set carriage/train Oscar (or H Set) carriage/train Endeavour (or N Set) carriage/train Hunter (or J Set) carriage/train
flexible transport	Flexible transport is any transport service (including public and private transport options) that is responsive to customer needs and is characterised by the flexibility of its route, schedule, vehicle type, passenger type, and/or payment system. Some services may require booking by customers to guarantee their provision. <i>See also on-demand transport or demand-responsive transport</i>
focused or focussed	Use 'focused', 'focusing', 'focuses'.
fonts	Also referred to as typefaces. <ul style="list-style-type: none"> • TransText is used for customer-facing communication. • Gotham is used for corporate communication. • Arial is used for corporate communication when Gotham is not available. • Frank is used for wayfinding signage and maps. For further information on this and other design elements, refer to current Transport for NSW style guides and Roads and Maritime Services style guides .

footnotes	<p>To support plain language and Transport’s tone of voice, try to avoid the use of footnotes, especially in customer-facing communications.</p> <p>When footnotes are unavoidable, use superscript symbols in this order: * asterisk, † dagger, ‡ double dagger, § section mark, parallel lines, # hash. Alternatively, use superscript numbers. Footnote symbols should follow all punctuation marks except en dashes.</p> <p>At the press conference,* the minister quoted figures from several annual reports.†</p> <p>At the press conference,‡ the minister quoted figures from several annual reports.²</p> <p>NOT At the press conference*, the minister quoted figures from several annual reports†.</p> <p>Try to place symbols or numbers at the end of the sentence to minimise disruption for the reader.</p>
footpath	One word.
for example or e.g.	<p>Begin examples in text with ‘for example’ preceded and followed with a comma in preference to ‘e.g.’. An example can be written as a new sentence or after a comma depending on the context and length of the sentence. Only use ‘e.g.’ where space is limited.</p> <p>The plan includes public transport projects, for example, the South West Rail Link.</p> <p>The plan includes new public transport projects that support areas of housing and employment growth. For example, the South West Rail Link and the growth areas of Glenfield, Edmondson Park and Leppington.</p> <p>The plan includes public transport projects that support areas of housing and employment growth, e.g. the South West Rail Link.</p>
forward slash (/)	<p>The forward slash (also known as the solidus, oblique or slash) is used in some shortened forms:</p> <ul style="list-style-type: none"> • to provide alternatives • as a substitute for ‘per’ or ‘or’ • in web addresses. <p>No space required on either side unless meaning is unclear. Thus, if used between single or hyphenated words, no space is required on either side:</p> <p>and/or pick-up/drop-off Services from Scone/Dungog to Newcastle Services from Sydney to Armidale/Moree</p> <p>Insert a space on either side of the slash if one or more of the alternatives is not a single or hyphenated word:</p> <p>Services from Central to Port Kembla / Kiama</p> <p>Do <i>not</i> use a slash to indicate a range. Use an en dash. In this context an en dash is shorthand for ‘to’:</p> <p>Sydney–Brisbane services the 2009–10 financial year trackwork on 11–12 July</p> <p>NOT Sydney/Brisbane services the 2009/10 financial year trackwork on 11/12 July</p>

fractions	<p>Where possible, spell out the words or use the decimal point rather than fractions to avoid confusion.</p> <p>one quarter 0.25 NOT $\frac{1}{4}$</p> <p>If unavoidable, use the fraction bar rather than a slash for fractions.</p> <p>$\frac{1}{2}$ NOT 1/2</p> <p>Numbers less than one should have a zero before the decimal point. Numbers after the decimal point should not end in zero.</p> <p>0.25 3.5km 4.1 per cent NOT .25 3.10km</p> <p>Where possible, time measurements should be broken down to hours and minutes rather than fractions to avoid confusion.</p> <p>4 hours 15 minutes NOT 4.25 hours</p>
Frank	See <i>fonts</i>
freecall	One word, not capitalised. Also toll-free. Refers to 1800 numbers, where calls are free to a caller dialling from a local landline. For 1300 numbers, the caller pays a local charge.
front line or frontline	One word when used as an adjective, two when used as a noun. frontline staff staff on the front line
fuchsia	'Walking Fuchsia' is the colour used to represent the Walking mode. There are no alternative spellings.
full stop	Two words.
Future Transport Strategy	Refers to TfNSW's approach to planning transport and engaging customers, to address future technological, economic and social changes.
	Future Transport Strategy comprises two focus areas – planning ('Future Transport Planning') and technology ('Future Transport Technology' and 'Technology Roadmap').
	Capitalise in this context.
G	
gangway	One word. Ramp deployed by staff on a wharf or ferry that bridges the gap between the wharf and the ferry.
gaol	See <i>jail or gaol</i>
gases or gasses	Gases is the plural of gas. Gasses is a verb.
GatePass	See also <i>airport services</i> and <i>Sydney Airport station access fee</i> One word. Note capitalisation. A GatePass is purchased at Domestic Airport Station or International Airport Station if a customer's ticket does not include the Sydney Airport station access fee.

gender	<p>Use gender-neutral terms whenever possible. Restructure sentences if pronoun is 'he/she'.</p> <p>Applicants should provide copies of their application to their referees. You should provide a copy of your application to your referees. NOT Every applicant should provide a copy of his/her application to his/her referees.</p> <p>police officer, minister of religion, fire-fighter, supervisor, milk vendor NOT policeman, clergyman, fireman, foreman, mi kman</p> <p>staffed NOT manned</p> <p>For further information, refer to the Transport Inclusive Interactions Guide on the intranet.</p>
geotech	One word.
Ghan, The	Not part of the TfNSW system. Always 'The Ghan', title case. Experience Central Australia on board The Ghan.
Gold Senior/Pensioner Opal card	See also <i>Concession Opal card</i> , <i>Adult Opal card</i> and <i>Child/Youth Opal card</i> Note capitalisation. The Gold Senior/Pensioner Opal card is available for holders of NSW Seniors, Pensioner Concession and NSW War Widow/er Transport Concession Cards. The name may be shortened after first use. Senior/Pensioner Opal card Gold Opal card Gold Opal
Gotham	See <i>fonts</i>
government terminology	<p>'State Government' and 'Australian Government' should be capitalised. When referring to the entity, use lower case ('government').</p> <p>NSW Government Australian Government Commonwealth Government the government of the day State Government agency Federal Court of Australia</p> <p>the court federal government federal funding</p> <p>NOT Commonwealth funding</p> <p>Some nouns used in connection with government are capitalised. the Cabinet the Treasury the Budget</p> <p>Do not capitalise the above terms if they are used in adjective or plural form. budget provisions successive federal budgets</p> <p>Names of government agencies and programs are subject to change. Check the agency's website for the most up-to-date name. In some cases it is not necessary to include 'NSW' in the name of the state agency. Always follow the agency's preferred usage.</p> <p>In the legislative context, some words are always capitalised in singular or plural for example Act(s), Ordinance(s), Regulation(s), Bill(s).</p>
Grand Concourse	Part of Central Station. Note capitalisation.

Great Southern Rail (GSR)	Operator of the Indian Pacific (Sydney – Adelaide – Perth); The Ghan (Adelaide – Alice Springs – Darwin) and The Overland (Melbourne – Adelaide). NOT Great Southern Railway
Greater Sydney	See <i>outer Sydney metropolitan areas</i> See also <i>districts</i>
greenfield	Describes land not previously developed, that is unpolluted and suitable for urban development. One word, lower case. See also <i>brownfield</i> and <i>greyfield</i>
greyfield	Describes sites used for retail or commercial purposes that are now old, obsolete and unprofitable. One word, lower case. See also <i>brownfield</i> and <i>greenfield</i>
H	
handle	The name used for the graphic device incorporating line code (when relevant) and line name for all public transport modes. For example, L1 Dulwich Hill Line. Twitter handles are the names of our Twitter accounts. For example, @T4SydneyTrains.
Harbour City Ferries	The operator of the Sydney Ferries Network on behalf of TfNSW.
has or have	Use 'has' when the subject is singular. Use 'have' when there is more than one subject, or the subject is a collective noun such as people, staff, fish, etc. The team has achieved its goals. The managers have left the building.
headings and headlines	Under corporate style guidelines, headlines and subheadings should be sentence case, with only the first letter capitalised unless they contain a proper noun, such as title of an event, person or book. Lower level subheads may be italicised. Use single inverted commas to indicate a heading within text. The 'Transport for NSW Corporate Communication Editorial Style Guide' has recently been revised. Typography for <i>campaign communication</i> can be flexible. It may be possible to start a headline with a lower case letter for design reasons. Use previously produced elements in a family of communication as a guide to current Transport for NSW style guides and Roads and Maritime Services style guides .
hearing augmentation	Space where improved audible capability is provided.
hearing induction loop	Location where T-switch hearing capability is provided.

highways, motorways, expressways	<p>Capitalise names of highways, motorways and expressways when referred to in full. After initial introduction, when not using full name, type of road should be lower case.</p> <p>An effort is being made to upgrade the Pacific Highway. The highway has been ...</p> <p>Pacific Highway Upgrade Program</p> <p>Princes Highway</p> <p>the highway between ...</p> <p>M1 Pacific Motorway (M1)</p> <p>M2 Hills Motorway (M2)</p> <p>M4 Western Motorway (M4)</p> <p>M5 South West Motorway (M5)</p> <p>Westlink M7 Motorway (M7)</p> <p>Hunter Expressway</p>
Hop	<p>See also <i>Splice</i> and <i>Waratah</i></p> <p>Note capitalisation. The Hop is the internal nickname for the brand that should be used on all communication to public transport customers.</p>
Horsley Drive, The	<p>Always refer to The Horsley Drive with three initial caps.</p>
Hunter	<p>See also <i>fleet</i></p> <p>Train type. Also known as J Set.</p>
hyperlinks	<p>Do not use 'click here' or other non-descriptive terms to link text on web pages.</p> <p>Find out more about Opal.</p> <p>NOT To find out more about Opal click here.</p> <p>When a URL is included in printed material, use bold.</p> <p>Find out more about Opal at opal.com.au.</p> <p>NOT Find out more about Opal at opal.com.au.</p>
hyphens	<p>See also <i>dashes</i></p> <p>Hyphens are not dashes. Use hyphens (-) with no space on either side to show a link between words, especially compound adjectives.</p> <p>long-term commitment</p> <p>short-term solution</p> <p>hands-on management</p> <p>Tip Hyphenated words often evolve into one word with common use. For example, 'e-mail' has evolved to 'email'.</p> <p>Generally hyphens are no longer used with prefixes, even with doubled-up vowels.</p> <p>cooperate</p> <p>coordinate</p> <p>Re-enter is always hyphenated.</p> <p>Use when there is the possibility of ambiguity.</p> <p>recover, recreation, re-cover, re-creation</p> <p>Refer to <i>The Macquarie Dictionary</i> for the spelling of particular words. For a comprehensive explanation of all rules and current accepted Australian usage, refer to Snooks & Co., <i>Style manual for authors, editors and printers</i>, 6th edn, John Wiley & Sons Australia, Ltd, 2002.</p>

I	
i.e. or e.g.	See <i>e.g. or i.e.</i>
indents	Do not use indents or tabs for paragraphs or bullet points. Bullet points in printed matter should line up at the left margin. Block indented text should only be used to indicate text that is quoted from another source.
Indian Pacific	Not part of the TfNSW system. Two words. NOT Indian-Pacific
indicator screen	See <i>service indicator screen</i>
indigenous or Indigenous	See also <i>Aboriginal or Indigenous</i> 'Indigenous' refers to all Aboriginal and Torres Strait Islander peoples and should be spelled with a capital. A capital is not used when referring to indigenous peoples of countries other than Australia. Australia's Indigenous communities For further information, refer to the Transport Inclusive Interactions Guide on the intranet.
initialisms	See <i>shortened forms</i>
Inner West Light Rail Extension	Project name for the additional light rail stops from Lilyfield to Dulwich Hill that created the L1 Dulwich Hill Line. Note capitalisation and spacing. Do not refer to 'Inner West Light Rail' in any other context.
inquiry	See <i>enquiry or inquiry</i>
interchange or Interchange	See also <i>bus interchange</i> A location where it is possible to change within a mode or between modes. Lower case except when major transport interchanges are named. Blacktown Interchange Chatswood Interchange Parramatta Interchange
Intercity or intercity	See also <i>Regional</i> Always with a capital when referring to NSW TrainLink train services. Lower case at other times. Drive safely when making intercity trips. See how far Intercity services can take you. ... served by NSW TrainLink's air-conditioned Intercity trains NOT InterCity
internal destination indicator (IDI) screen	IDI screens are provided inside vehicles and vessels. They provide destination and stopping pattern information in addition to other relevant information. Not for customer-facing communication.
internet	Not capitalised.
intranet	Not capitalised.
-ise or -ize	Use 'ise'. organisation minimise personalise NOT organization minimize personalize
it's or its	It's (with an apostrophe) is the abbreviation for 'it is'. Its (without an apostrophe) indicates ownership. It's time to renew your driver licence. The government has its own waste-reduction policy.

italics	<p>Avoid italics in customer-facing communication.</p> <p>Use single quotation or quote marks for brochures, campaigns, policies, guides, jargon and publication titles rather than italicising word/s.</p> <p>The ‘Get your hand off it’ campaign.</p> <p>Ask for a copy of ‘Getting around on Sydney Trains’.</p> <p>Click on the ‘Trip planner’ tab.</p> <p>When required in corporate communication use italics for:</p> <ul style="list-style-type: none"> titles of books, films, newspapers and periodicals <ul style="list-style-type: none"> <i>TfNSW Mode Magazine</i> <i>The Daily Telegraph</i> <i>The Sydney Morning Herald</i> <p>‘The’, when part of a periodical title, need not be italicised and may be removed altogether in a sentence.</p> <p>An article appeared in Tuesday’s edition of the <i>Daily Telegraph</i>.</p> <p>The article appeared in the <i>Australian</i> on Tuesday.</p> <p>A recent <i>Sydney Morning Herald</i> article outlined the changes.</p> <ul style="list-style-type: none"> acts of legislation (but not regulations and Bills) <ul style="list-style-type: none"> <i>Transport Administration Act 1988</i> names of ships and aircraft scientific names of plants and animals <ul style="list-style-type: none"> <i>Eucalyptus tereticornis</i> (or Queensland blue gum) <i>Melaleuca decora</i> (or tea tree)
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J

jail or gaol	Use ‘jail’.
jetski	<p>One word.</p> <p>NOT jet ski</p> <p>Jet Ski (a brand name)</p> <p>Use ‘personal watercraft’, or ‘PWC’ for short, instead of jetski.</p>
job titles	See <i>titles (positions)</i>
journey	One or more public transport trips where any transfers between services occur within a limited timeframe.
journey mapping	See <i>customer journey mapping</i>
judgement or judgment	With an ‘e’. The only time ‘judgment’ is used is in legal contexts.
justification (typographic)	TfNSW style is generally left aligned – also referred to as ‘ragged right’.
	Do not indent the first line of a paragraph.

K

Kingsford Smith Airport	Use ‘Sydney Airport’.
kiss and ride	<p>Three words. Note lower case. Describes a dedicated limited-time parking bay near a public transport mode for picking up or dropping off customers.</p> <p>kiss and ride bay</p> <p>NOT kiss and ride point</p> <p>kiss and ride zone</p> <p>kiss and ride area</p> <p>kiss-and-ride</p> <p>Kiss and Ride</p> <p>Kiss & Ride</p>
kiteboard, kiteboarding or kitesurf, kitesurfing	One word. Both expressions are used.
km	<p>Use for both singular and plural.</p> <p>NOT kms</p>
km/h	<p>Use for both singular and plural.</p> <p>NOT km/hr</p> <p>kms/h</p> <p>kph</p>
knot	A vessel speed equivalent to one nautical mile per hour, or 1.87km/h.

L

L plater or learner driver	Either expression is correct. NOT L-plater
L plates	Note capitalisation. NOT L-plates Ls L's
land bridge	Two words.
land-holder	Hyphenated.
landowner	One word.
left-hand drive	Note hyphenation.
legislation	Acts and Ordinances are italicised and written in full with a date. Use 'the Act' with a capital when referring to specific legislation after the first reference. Regulations are not italicised. When referring to non-NSW legislation, include the abbreviated jurisdiction in parentheses, not italicised – ACT, Cwlth, Qld, NT, SA, Tas., Vic. or WA. Bills and Regulations are shown with initial caps, not italicised. <i>Australian National Railways Act 1975 (Cwlth)</i> <i>Transport Infrastructure Act 1994 (Qld)</i> Transport Administration Amendment Bill 2010
letterbox or mailbox	Use letterbox. One word.
level crossing	Safe place for customers to cross train or light rail tracks on foot or by vehicle.
LGBTI	The abbreviation used by government when referring to lesbian, gay, bisexual, transgender or intersex people or groups in the context of diversity and inclusion. NOT LGB, LGBTQI or other variations.
licence or license	Licence is a noun. License is a verb. A national system of driver licence classes has been introduced in NSW. How do I get a licence? I have a learner licence. Roads and Maritime Services administers all aspects of registration and licensing in NSW Graduated Licensing Scheme (GLS). He is licensed to drive a heavy vehicle. A person or organisation that holds a licence, or is licensed, is a licensee.
licence types	car licence taxi driver licence motorcycle rider licence tow truck driver licence
lifejacket	One word.

light rail or Light Rail	<p>A group of routes which may be known to the public by a name or number.</p> <p>Sydney Trains Network, Sydney Light Rail Network, Intercity Trains Network and Newcastle Light Rail all travel along 'lines'.</p> <p>Capitalise when specifying line names, and include line number. Avoid writing as a plural when capitalised. Lower case when referring to a non-specific line or to more than one line.</p> <p>Get the latest news on your line.</p> <p>Trackwork is underway on all lines.</p> <p>Good news for T5 Cumberland Line customers.</p> <p>Trackwork on the T1 North Shore, Northern & Western Line and T6 Carlingford Line.</p> <p>NOT Trackwork on the T1 North Shore, Northern & Western and T6 Carlingford Lines.</p> <p>For distinctions between use of line, route and services, see <i>line, route or service</i>.</p>
line or Line	<p>Capitalise when specifying line names, and include line number. Avoid writing as a plural in this case. Lower case when referring to a non-specified line or to more than one line.</p> <p>Get the latest news on your line.</p> <p>Trackwork is underway on all lines.</p> <p>Good news for T5 Cumberland Line customers.</p> <p>Trackwork on the T1 North Shore, Northern & Western Line and T6 Carlingford Line.</p> <p>NOT Trackwork on the T1 North Shore, Northern & Western and T6 Carlingford Lines.</p>
line, route or service	<p>Sydney Trains Network has lines.</p> <p>Sydney Buses Network has routes.</p> <p>Sydney Ferries Network has services.</p> <p>Sydney Light Rail Network has lines.</p> <p>Intercity Trains Network has lines.</p> <p>Blue Mountains Buses Network has routes.</p> <p>Central Coast Buses Network has routes.</p> <p>Hunter Buses Network has routes.</p> <p>Illawarra Buses Network has routes.</p> <p>Newcastle Ferries has services.</p> <p>Newcastle Light Rail has lines.</p>
local council and government areas	<p>Use lower case when referring to council, local council, local government and local government areas.</p> <p>Write the names of local government authorities according to their own preferred style. Note that council amalgamations have taken place across much of regional NSW in recent years, so check that the council you're referring to still exists.</p> <p>Each council is responsible for a 'local government area' (LGA) rather than a 'council', 'municipality' or 'council area'.</p> <p>City of Sydney</p> <p>Kiama Municipal Council</p> <p>Ku-ring-gai Council</p> <p>Wollongong City Council</p> <p>Wyong Shire Council</p>
log book	Two words.
long-distance or long distance	<p>Hyphenated when used as an adjective. No hyphen at other times.</p> <p>NSW TrainLink provides long-distance services.</p> <p>The XPT covers a long distance.</p>
low season	<p>See <i>seasonal fares</i></p> <p>Lower case.</p>
luggage	NOT baggage

M

Macdonaldtown Station	NOT	MacDonaldtown Station
Macquarie University Station	NOT	Macquarie Uni Station
mail or post		See <i>post or mail</i>
mailbox or letterbox		See <i>letterbox or mailbox</i>
major event buses and special event buses	Note lower case. NOT	Major Event Buses Special Event Buses
Manly Fast Ferry		Note capitalisation. The sole operator of fast ferry services between Manly and Circular Quay. Not a Sydney Ferries service.
Manly ferries		Note current capitalisation. If possible, refer instead to 'F1 Manly services'. Manly ferries have a long history, which is why they previously enjoyed their own identity as Manly Ferries (capital 'F'). However, now they are part of the Sydney Ferries Network.
measurement		Units of measure are spelled out in editorial text. 300 tonnes of rail Use abbreviations in tables, graphs, and where appropriate in customer-facing text. Full stops are not used for abbreviations of measurements unless ending a sentence. Do not separate abbreviations for measurement from the numerical value of the relevant physical quantity by a space (for example, 10gm not 10 gm). With this exception, the rules about measurement in Snooks & Co., <i>Style manual for authors, editors and printers</i> , 6th edn, John Wiley & Sons Australia, Ltd, 2002 are followed. No plurals when abbreviations are used. KB kilobyte/s MB megabyte/s GB gigabyte/s m metre/s m ² square metre/s m ³ cubic metre/s km kilometre/s km ² square kilometre/s km/h kilometre/s per hour g gram/s kg kilogram/s t tonne mL millilitre/s L litre/s ML megalitre/s sec second/s min minute/s h hour/s °C degree/s Celsius

members of parliament	<p>All ministers in federal, state and territory parliaments have the title 'The Honourable'.</p> <p>The form of address depends on the position.</p> <ul style="list-style-type: none"> • Prime Minister The Hon. Givenname Familyname MP Prime Minister of Australia • State premiers The Hon. Givenname Familyname MP Premier of NSW • Ministers The Hon. Givenname Familyname MP Minister for Transport • Ministers who are members of the Senate Senator the Hon. ... Minister for ...
Metro	See <i>Sydney Metro</i>
mid-	Note hyphenation. mid-July mid-year review
Millennium	See also <i>fleet</i> Train type. Note spelling. Also known as M Set. NOT Millenium
Milsons Point	NOT Milson's Point
Minister for Transport	Note capitalisation.
mobility scooters and motorised wheelchairs	Express these terms in full when necessary. NOT scooters
mode	See also <i>transport mode</i> The four public transport modes are train, bus, ferry and light rail. Always refer to public transport modes in this order. The two active transport modes are walking and cycling. Always refer to active transport modes in this order.
Moore Park Link ticket	Note capitalisation. Combined train and bus ticket that allows travel from any station on Sydney and Intercity Trains Networks to Central, and then a bus to Moore Park.
Moore Park precinct	Note capitalisation. Location of Allianz Stadium (formerly Sydney Football Stadium), the Sydney Cricket Ground, the Hordern Pavilion and the Entertainment Quarter and Randwick Racecourse.
Moore Park shuttle	Note capitalisation. An event shuttle bus that runs before and after major sporting and music events held in the Moore Park precinct.
Motorail	One word, initial cap. A service offered by Great Southern Rail on The Ghan (Darwin-Adelaide), Indian Pacific (Perth-Adelaide-Sydney) and The Overland (Adelaide-Melbourne).
motorcycle riders	Express 'motorcycle' in full. NOT motorbike riders
motorways	M2 Hills Motorway (M2) M4 Western Motorway (M4) M5 South West Motorway (M5) Westlink M7 Motorway (M7)
multimedia	One word, no hyphen, no capitalisation.

N

N/A	<p>Note capitalisation. Short for ‘not applicable’ or ‘not available’. N/A can be used in a table, but not in text.</p> <p>NOT na n.a. n/a</p>
names	<p>Use non-discriminatory, culturally sensitive terms when requesting names on forms or setting up templates, etc.</p> <p>given name, family name NOT first name, christian name, last name</p> <p>For further information, refer to the Transport Inclusive Interactions Guide on the intranet.</p>
National Relay Service (NRS)	<p>Government initiative that helps those who are deaf or have a hearing or speech impairment to communicate with anyone with a phone, and vice versa. TfNSW now includes the NRS number 133 677 alongside the Transport Info phone number 131 500.</p>
NB or Note	<p>In formal writing, use ‘Note’ or ‘Please note’ followed by a comma in preference to ‘NB’. Can be shown in bold.</p> <p>In informal writing ‘NB’ (short for <i>nota bene</i> meaning ‘note well’) is well recognised and may be used. Note capitalisation, no full stops. Use as the first item in a sentence with the next word also capitalised.</p> <p>NB Services do not run after midnight. NOT nb</p>
network or Network	<p>See also <i>Transport Network</i></p> <p>See also ‘Public transport networks’ section</p> <p>Capitalised only when used in approved Transport network names:</p> <ul style="list-style-type: none"> the Sydney Trains Network the Sydney Buses Network the Sydney Ferries Network the Sydney Light Rail Network the Intercity Trains Network the Blue Mountains Buses Network the Central Coast Buses Network the Hunter Buses Network the Illawarra Buses Network the Regional Trains and Coaches Network <p>Note that network names are descriptive only, indicating geographical service boundaries and modes. They do not include the name of any service provider.</p>
new-look or new look	<p>Hyphenated when used as an adjective. No hyphen at other times.</p> <p>Intercity trains’ new-look quiet carriages NSW TrainLink’s XPT has a new look.</p>
New South Wales or NSW	<p>‘New South Wales’ on first reference, then ‘NSW’, except where first reference is in the term ‘NSW Government’.</p>
New Year’s Eve	<p>Note apostrophe.</p>
Newcastle Buses	<p>See also ‘Public transport networks’ section</p> <p>Former service name for bus services operated by the State Transit Authority in Newcastle. Note capitalisation.</p> <p>Like Sydney Buses, Newcastle Buses is not a brand like Sydney Trains and Sydney Ferries, and should not be used. When necessary to differentiate from private bus operators, refer to State Transit buses.</p>

Newcastle Buses & Ferries	See also 'Public transport networks' section The former collective service name for bus and ferry services in Newcastle operated by the State Transit Authority. The term 'Newcastle Buses & Ferries' should not be used.
Newcastle Fare Free Zone	Note capitalisation. Area in Newcastle where all bus travel is free.
Newcastle Ferries	See also 'Public transport networks' section The current network name, but also the former service name for ferry services operated by State Transit in Newcastle. Note capitalisation. Unlike Sydney Ferries, 'Newcastle Ferries' is not a brand, and should not be used in this context. There is only one Newcastle Ferries service, which runs between Queens Wharf and Stockton.
next train indicator screen	See <i>service indicator screen</i>
NightRide	See also 'Public transport networks' section One word. Note capitalisation. NightRide buses are late-night bus services that replace train services from midnight to around 4am. They operate on the Sydney NightRide Buses Network. NOT NightRider NightRide network
nightwork	One word.
Nobbys Beach	NOT Nobby's Beach
no entry	A location to which access is not permitted.
non-accessible	Facility or services which are not wheelchair accessible and/or do not provide accessible facilities.
North Coast	Region of NSW. Note capitalisation.
North Shore	Region of Sydney. Note capitalisation.
North Shore, Northern & Western Line	North Shore Line and upper Northern Line trains on the Sydney Trains Network proceed to the Western Line or lower part of the Northern Line, and vice versa. Thus they are shown as one line.
North West Rail Link	See <i>Sydney Metro</i>
northbound	One word.
NorthConnex	Project name. Note capitalisation.
Northern Beaches	Region of Sydney. Note capitalisation.
NSW Government	Note capitalisation. To avoid confusion, never refer solely to 'the government'. The State Government is an acceptable alternative, but keep use to a minimum. Do not link the name of the current premier. NOT the Baird Government
NSW or New South Wales	In more formal documents, 'New South Wales' on first reference, then 'NSW', except where first reference is in the term 'NSW Government'. In customer-facing communication, NSW is well understood.
NSW TrainLink	The service brand name now used for trains and coaches operating outside of the Sydney Trains Network. On 1 July 2013, CountryLink services operating under the former RailCorp brand were replaced by NSW TrainLink Regional services, and Intercity services operating under the former CityRail were replaced by NSW TrainLink Intercity services.
NSW TrainLink Booking Office	See also <i>NSW TrainLink Travel Centre</i> Note capitalisation. A facility where customers can go in person to book tickets on Regional services. Name can be shortened after first use. Booking Office

NSW TrainLink Intercity services	See 'Public transport networks' section
NSW TrainLink Regional services	See 'Public transport networks' section
NSW TrainLink Regional train and coach services	See also 'Public transport networks' section Note capitalisation. NSW TrainLink Regional services are divided into four regions: <ul style="list-style-type: none"> North Coast region North Western region Western region Southern region NSW TrainLink tourist information is divided into four regions: <ul style="list-style-type: none"> NSW North Coast Canberra and the South Country NSW Outback NSW
NSW TrainLink Travel Centre	See also <i>NSW TrainLink</i> Booking Office Note capitalisation. A dedicated facility where customers can go in person for a variety of travel services including booking tickets on Regional services. Name can be shortened after first use. Travel Centre
NSW War Widow/er Transport Concession Card	Note that this card is issued to surviving spouses of both genders. NOT NSW War Widows Card NSW War Widow/ers Transport Concession Card
number plates	Always write as numerals.

numbers

In **formal editorial text** (annual reports, press releases, etc.), the rule is to spell out numbers one to nine, and use figures for 10 onwards (except dates, page numbers, tables, graphs and when writing figures with a decimal point). Don't start or end sentences with figures. Don't insert a comma for four-digit numbers.

4.1 per cent

four per cent

2366

23,660

236,600

Two hundred staff attended the training course.

16,000 square kilometres

Demerit points are always written as numerals.

Use hyphens for numbers up to 99 that comprise two words.

twenty-one

forty-three

When using a suffix for a number, it should be typed as normal text.

the 16th position

the 30th anniversary

NOT the 16th position

When writing millions and billions use a combination of words and numbers.

one million

2.5 million

two billion

3.7 billion

In **customer-facing communication** (trackwork notices, safety notices, campaigns, etc.), these rules don't necessarily apply. Use what works best to express meaning most clearly. In general, numerals in text and headlines can be scanned quickly and are more readily understood.

Children aged from 3 to 16 can travel free.

Children aged 3-16 can travel free.

NOT Children aged from three to 16 can travel free.

The trip to Canberra will take 4 hours and 20 minutes.

NOT The trip to Canberra will take four hours and 20 minutes.

200 staff attended.

NOT Two hundred staff attended.

4 per cent or 4%

NOT four per cent

It may be clearer to use a comma in four-digit numbers.

1,938

NOT 1938

Use professional judgement.



off-peak

Always hyphenated.

Take advantage of off-peak discounts.

Save by travelling off-peak.

off-peak train fares

office hours

Refers to the operating times of an information or ticket office.

Olympic Park Station

NOT Sydney Olympic Park Station

on board or onboard	<p>'On board' (two words) is roughly equivalent to 'aboard'. 'Onboard' is an adjective.</p> <p>Give yourself plenty of time to get on board.</p> <p>Enjoy the onboard services.</p>
on-demand transport or demand-responsive transport	<p>A flexible service that operates within a defined service area, which can be booked or scheduled by customers when required.</p> <p>Lower case, note hyphen.</p> <p>See also <i>flexible transport</i></p>
on route	See <i>en route</i>
on-the-spot or on the spot	<p>Hyphenated when used as an adjective. Not hyphenated at other times.</p> <p>Transport officers can issue on-the-spot fines.</p> <p>Transport officers can issue fines on the spot.</p>
on-time or on time	<p>Hyphenated when used as an adjective. Not hyphenated at other times.</p> <p>We have improved our on-time running.</p> <p>We will make sure trains arrive on time.</p>
ongoing	One word, no hyphen.
online	<p>One word, no hyphen.</p> <p>Fill in your application online.</p> <p>Take advantage of our online services.</p>
Opal 60 minute transfer	<p>See also <i>Opal Trip Advantage</i></p> <p>Note capitalisation. For this term, do not hyphenate '60 minute'.</p>
Opal Activity Statement	Note capitalisation. A customer's record of Opal travel history and transactions available from opal.com.au .
Opal card	<p>Note capitalisation.</p> <p>Opal is the integrated ticketing system that allows customers to access all public transport modes with a single ticketing option. The Opal card is not a ticket.</p> <p>NOT Opal Card Opal smartcard</p>
Opal card reader	Also known as an Opal reader. The device where customers tap on and tap off to calculate the correct fare on public transport.
Opal Customer Care	Note capitalisation. Note spacing. The Opal Customer Care team offers Opal customer service and support over the phone via 13 67 25 and online.
Opal-only gates	Note hyphenation.
Opal ticketing system	NOT Opal card ticketing system
Opal Transfer Benefit	Note capitalisation. A fare discount which applies when customers travelling on the Opal network transfer between different modes on a single trip, within a limited period of time (referred to as 'transfer time').
Opal Trip Advantage	Note capitalisation. Also referred to as 'Opal 60 minute transfer'. The feature of Opal allowing customers to make multiple trips using the same mode of transport and, if the transfer occurs within 60 minutes, only pay one fare based on the distance travelled. For the Sydney Ferries Manly service the standard transfer time is extended to 130 minutes from tap on.
opal.com.au	Never with 'www.'
operating agencies	<p>Lower case.</p> <p>NOT operating entities</p>
organisation names	The full name of the organisation should be spelled exactly as the organisation spells it. If in doubt, check the organisation's website.

orphans and widows	<p>Orphans and widows relate to typeset documents, particularly when text is in columns. When looking at the layout of any finished document, such as a newsletter, widows and orphans are words or ends of sentences that are left hanging over, creating unnecessary white space and reducing readability.</p> <p>A 'widow' is when a very short line or a word is left at the end of a paragraph. Avoid widows by reworking the layout or editing the text.</p> <p>An 'orphan' is like a widow but appears at the beginning of a column or page, and should also be avoided.</p>
Oscar	<p>See also <i>fleet</i></p> <p>Train type. Note capitalisation. Short for 'Outer Suburban Carriages'. Also known as an H Set.</p> <p>NOT OSCAR OSCar</p>
outer Sydney metropolitan area	<p>See also <i>Sydney metropolitan area</i> and <i>districts</i>.</p> <p>Note capitalisation. Area covering the Blue Mountains, Central Coast, Hunter, Illawarra / South Coast and Southern Highlands regions of NSW where the Opal card is accepted.</p> <p>NOT greater Sydney metropolitan area Greater Sydney</p>
overboard	One word.
P	
P plater or provisional driver	<p>Either expression is correct.</p> <p>NOT P-plater</p>
P plates	<p>Note capitalisation.</p> <p>NOT P-plates Ps P's</p>
Paddy's Markets	A stop on the L1 Dulwich Hill Line. Note the apostrophe.
paddle craft	Two words.
parentheses and brackets	<p>See also <i>dashes</i></p> <p>(If parentheses are used for an entire sentence the full stop falls inside the bracket, like this.)</p> <p>If parentheses are used for only part of a sentence, the full stop falls outside (like this).</p> <p>Use square brackets [like this] in quoted material to indicate insertions made by someone other than the author.</p> <p>'The strategy was implemented in March [2011].'</p> <p>Don't use brackets within parentheses. Use a combination of en dashes and parentheses instead.</p>
parliament or Parliament	<p>Capitalised only in formal titles.</p> <p>the NSW Parliament Parliament House the Parliamentary Library Parliament of New South Wales a state parliament initiative the debate in parliament parliamentary parliamentarian</p>
passenger	See <i>customer</i>
passive voice	See <i>active voice and passive voice</i>
pay phone	Two words.

peak season	See <i>seasonal fares</i> Lower case.
penalty or fine	'Penalty' is an all-purpose word that may include loss of licence, demerit points or fines. 'Fine' applies to cash penalties only.
pensioner	Lower case.
Pensioner Excursion Ticket (PET)	Note capitalisation.
per cent or %	Always two words when used in text. Only use '%' in tables or graphs. People aged between 16 and 20 represent only 7 per cent of all drivers but are involved in 18 per cent of fatalities.
personal watercraft (PWC)	'Watercraft' is always one word. NOT personal water craft
phone numbers	See ' Numbers ' section (p.4). See also <i>contact details</i>
plain language	See ' Plain language ' section Plain language is the single most important principle of the TfNSW tone of voice. It means making sure all written and verbal communication is expressed in a direct and clear way, and avoids jargon and unnecessary official, legal or bureaucratic wording. It replaces lengthy, complex sentences with concise ones. It pays attention to design and layout of documents to make them as accessible as possible.
platform indicator screen	See <i>service indicator screen</i>
platform or Platform	Capitalise when naming a specific platform. Lower case when used as a common noun. Platform numbers are written as numerals. City trains leave from Platform 1. Express trains leave from Platforms 3 and 15. City services leave from this platform. Works are being carried out on various platforms at Central station.
police	The correct name for the State police is the 'NSW Police Force'. In most cases, however, it is acceptable to refer simply to 'police' or 'NSW Police'. Transport officers work with police. Transport officers work with NSW Police. NOT Transport officers work with the NSW Police Force.
post or mail	Use 'post' rather than 'mail'. Tickets can be ordered by post. Your ticket will be posted to you next week. You will receive your tickets by post. Note passive language in these examples.
postcode	One word.
powerboat	One word.
pre-	A prefix meaning 'before'. No hyphen is necessary unless followed by an 'e' or 'i', or a special term. prepay, prepurchased, pre-empt, pre-ignition, pre-Hop
precinct	See <i>transport precinct</i>
program or programme	Use 'program' at all times.
projects	TfNSW has projects ongoing at any time, managed by Transport Projects and Roads and Maritime Services. Always refer to projects using initial caps: Inner West Light Rail Extension CBD and South East Light Rail North West Rail Link South West Rail Link Wynyard Walk

public holiday	Lower case.
public transport	See also <i>Transport</i> Always lower case.
public transport modes	<p>When public transport is referred to in general and in body copy where mode distinctions are clear, use lower case singular, in this order: train, bus, ferry and light rail trains, buses, ferries and light rail</p> <p>To differentiate services operated by non-government service providers, use customer-facing brand names followed by the word 'services': Sydney Trains, NSW TrainLink, Buses, Sydney Ferries and Light Rail services</p> <p>Because NSW TrainLink has two different service areas – Regional and Intercity – it may be necessary to spell these out, but note capitalisation: NSW TrainLink Regional trains (coaches, or services) NSW TrainLink Intercity trains (services)</p> <p>When shorthand is required to refer to train services in both the Sydney metropolitan area (Sydney Trains Network) and the outer Sydney metropolitan area (Intercity Trains Network) made up of Sydney Trains and NSW TrainLink Intercity services, it is okay to refer to 'Sydney and Intercity trains'.</p>
PWC	Personal watercraft.
Q	
quiet carriage	Lower case. A designated car on NSW TrainLink Intercity trains where mobile phones should be set to silent, headphones turned down in volume, and talking is kept to a minimum.
quotation marks	<p>See also <i>apostrophes</i></p> <p>Use 'single quotation marks' for the titles of brochures, campaigns, policies and guides, and for jargon, speech and reference quotes. Use "double quotation marks" for a quote within a quote. The 'Beasts of bad behaviour' campaign. Ask for a copy of 'Getting around on Sydney Trains'. Click on the 'Trip planner' tab. 'I like my job,' said Geoff Brown, Project Manager. 'When I came into the project I asked the question "Is this what customers want?"</p> <p>Use 'curly' quotation marks (", ""), not footprints (', ").</p> <p>Tip When a document follows Web Content Accessibility Guidelines (WCAG), a single quote will be read out loud as 'apostrophe'.</p>
quoting sources (references or citations)	<p>See also <i>footnotes</i></p> <p>When references are incorporated into body text, the author and date of the publication quoted should be placed at the end of the sentence before the concluding punctuation. Road safety research demonstrated that 'increasing experience as a learner could result in a 24 to 40 per cent reduction in accidents in the first two years after obtaining a driver licence' (Johnson, 1997).</p> <p>If the quote refers to only part of the sentence, it should be placed after the clause or phrase.</p> <p>The reference list is placed at the end of the document.</p> <p>List documents in alphabetical order according to the authors' names.</p>

R

rail agencies	<p>Current and former NSW rail-related agencies:</p> <ul style="list-style-type: none"> • Country Rail Infrastructure Authority (2010–2012) • Department of Railways (1932–1972) • Independent Transport Safety and Reliability Regulator (2004–2010) • Independent Transport Safety Regulator (2010–present) • NSW Trains (2013–present) • Olympic Roads and Transport Authority (1998–2001) • Office of the Coordinator General of Rail (2000–2003) • Public Transport Commission of New South Wales (1972–1980) • Public Transport Ticketing Corporation (2006–2010) • Rail Access Corporation (1996–2001) • Rail Corporation New South Wales (2004–2013) • Rail Infrastructure Corporation (2001–2010) • Rail Services Australia (1998–2001) • Railway Services Authority (1996–1998) • State Rail Authority of NSW (1980–2003) • Sydney Metro (2008–2010) • Sydney Trains (2013–present) • Transport Construction Authority (2010–present) • Transport Infrastructure Development Corporation (2004–2010)
rail network	The rail infrastructure in NSW.
rail or train	<p>Sydney Trains and NSW TrainLink provide train services, not rail services. Customers travel by train, not rail.</p> <p>Rail describes heavy rail infrastructure and physical steel rails on sleepers, not passenger services. Use the term ‘heavy rail’ when necessary to differentiate from ‘light rail’.</p>
RailCorp	RailCorp was the operator name for the service previously known as CityRail (now Sydney Trains and NSW TrainLink Intercity services) and CountryLink (now NSW TrainLink Regional services).
re-	<p>Prefix meaning ‘again’. In general, it is linked to its root word without a hyphen, even when the root word starts with a vowel. Only use a hyphen if there is possible confusion with another word or where the root word begins with ‘e’.</p> <ul style="list-style-type: none"> realign reassess recover recreation redeploy redevelop reinvest rework re-cover (meaning to cover again) re-creation (meaning to create again) re-engineer re-enter
real-time or real time	<p>Hyphenated when used as an adjective. Two words at other times.</p> <p>Real-time apps allow you to track your journey in real time.</p>

regions	Regions, as defined by NSW Department of Planning and Environment, include: Central Coast Central West and Orana Far West Hunter Illawarra-Shoalhaven Metropolitan Sydney New England North West North Coast Riverina-Murray South East and Tablelands
regional or Regional	Always with an initial cap when referring to NSW TrainLink Regional train and coach services or the network. See how far Regional services can take you. Regional Trains and Coaches Network Lower case at other times. Enjoy the variety of regional New South Wales.
registration numbers	Always write as numerals.
resale	One word.
right-hand drive	Note hyphenation.
RMS	See <i>Roads and Maritime Services</i>
rms.nsw.gov.au	Roads and Maritime Services website.
road network	All roads in NSW, consisting of local roads/streets, highways, freeways and motorways.
road user	Two words.
Road Users' Handbook	A Roads and Maritime Services publication. Note the apostrophe.
Road Users Summit	A Roads and Maritime Services initiative. Note there is no apostrophe.
roadheader	One word.
roads	Dedicated carriageways for use by motor vehicles, buses, coaches and trucks, and people walking or riding bicycles.
Roads and Maritime Services	Use the full title on first reference: Roads and Maritime Services. Then the short form 'Roads and Maritime' may be used. Do not use 'RMS' in customer-facing communication. For interstate or international audiences, use 'NSW Roads and Maritime Services'. Roads and Maritime Services is a State Government agency, not an authority, and should never be referred to as 'the Authority'. Always express as a singular entity. Roads and Maritime Services has ... NOT Roads and Maritime Services have ... Roads and Maritime Services is ... NOT Roads and Maritime Services are ...
Roads & Transport Authority (RTA)	See <i>Roads and Maritime Services</i> Name of the previous State Government agency managing roads in NSW.
roadwork	One word.
roll out or rollout	Two words when used as a verb. One word when used as a noun. We will roll out new initiatives in March. The Opal rollout is complete. Our rollout of new initiatives begins in March. NOT roll-out

rolling stock	See <i>fleet</i> Two words. Use 'fleet' in preference to 'rolling stock' where possible. NOT rolling-stock rollingstock
route	A path connecting individual stops. Sydney Buses Network, Blue Mountains Buses Network, Hunter Buses Network and Illawarra Buses Network all travel along 'routes'. Use the term 'service' rather than 'route' when referring to the paths of Sydney Ferries Network and Newcastle Ferries. For distinctions between use of line, route and services, see also <i>line, route or service</i> .
route, line or service	See <i>line, route or service</i>
run-down	Hyphenated when used as a noun. Two words at other times. The media release provides a run-down of the project. NOT rundown
S	
Safe-T-Cam	Note hyphens and capitalisation.
sailboard, sailboarding or windsurf, windsurfing	One word. Both expressions are used for the same sport.
SCATS	Stands for 'Sydney Coordinated Adaptive Traffic System'.
scooters	Use 'mobility scooters' or 'motorised wheelchairs'.
seasonal fares	Three seasonal fare scales that apply to reserved seating on NSW TrainLink services: peak (normal fares), shoulder (15% discount) and low (30% discount).
seasons	Not capitalised unless part of name. This month is Spring Cycle month. Australia's largest celebration of spring is held in Canberra.
seatbelt	One word. NOT car restraint restraint
secure prepaid taxi rank	See also <i>taxi rank</i> Secure prepaid taxi ranks operate in certain CBD locations from 9pm to 6am on Friday and Saturday nights. Customers pay an estimated fare up front.
self-service or self service	Hyphenated when used as an adjective. Two words at other times. self-service machines Help yourself - it's self service.
semicolon (;)	Avoid semicolons. They are difficult to use correctly. Use a colon (:), never a semicolon, starting a list.
Senior/Pensioner Opal card	See <i>Gold Senior/Pensioner Opal card</i>
Seniors Card	No apostrophe. NOT Seniors' Card Senior's Card

service	<p>A name used to describe a particular service operating on a train line, bus route, ferry service or light rail line.</p> <p>Use the term 'service' rather than 'train' when referring to Sydney Trains or NSW TrainLink services that may be provided by a bus or coach.</p> <p>Customers can enjoy unlimited travel on all NSW TrainLink Regional services.</p> <p>NOT Customers can enjoy unlimited travel on all NSW TrainLink Regional trains.</p> <p>Use the term 'service' rather than 'route' when referring to the paths of Sydney Ferries Network and Newcastle Ferries.</p> <p>For distinctions between use of line, route and services, see also <i>line</i>, <i>route</i> or <i>service</i>.</p>
service indicator screen	<p>The name for any display for any mode that guides customers towards their destinations. Name service indicator screens according to purpose.</p> <p>next train indicator screen</p> <p>NOT indicator board</p>
shadecloth	One word.
short platforms	<p>Station platforms that are too short to accommodate all carriages of some Intercity trains. Always use the following key:</p> <p>SP1 Leave the train from the rear carriage</p> <p>SP1r Leave the train from the rear carriage's rear door</p> <p>SP2 Leave the train from the rear 2 carriages</p> <p>SP4 Leave the train from the rear 4 carriages</p> <p>SP6 Leave the train from the rear 6 carriages</p> <p>SP6# Leave the train from the front 6 carriages</p> <p>SPM Leave from middle doors of train</p>

shortened forms

See also *contact details* and *dates*

Shortened forms comprise abbreviations, contractions, acronyms and initialisms.

Abbreviations include the first letter of a word but not the last letter. They normally have a full stop. Avoid them except in rare circumstances, like attributions of photos or mandatory fine print. The Australian Government style manual recommends keeping the full points in all these shortened forms.

cont.
Co.
fig.
c. (short for circa)
e.g.
et al. (meaning 'and others')
etc.
co. (company)
inc. (incorporated)
p. (page)
i.e.
Mon.
Dec.
Vic.

When days or months in date ranges need to be shortened to three letters for headlines or subheads, it is okay to leave off the full stop.

Contractions include the first and last letters of a word. In Australia they never have a full stop (full stops are US usage only). An exception is 'no.' (meaning 'number' but short for 'numero') to avoid confusion with the word 'no'. Some common contractions (Mr, Mrs, Dr) are never written in full.

Mr, Mrs, Dr, Qld, Ltd, Pty, St, Rd, Cnr
NOT Mr., Mrs., Dr., Qld., Ltd., Pty., St., Rd., Cnr.

Keep other contractions such as 'mgr', 'dept', etc., to a minimum, especially in formal documentation and communication material. In text, write 'Road' or 'Street' in full. Only contract to 'Rd' or 'St' if space is limited, such as on maps.

Acronyms are strings of initial letters (and sometimes other letters) pronounced as a word. Often all caps, sometimes initial cap, and sometimes all lower case depending on familiarity. No full stops.

Anzac, Qantas, scuba, sonar

Initialisms are strings of initial letters not pronounced as a word.

No full stops.

TfNSW, NWRL, NSW, SBS, PC, TV, CPI, IQ, NB, BAC

If the words being shortened are a common noun, first letters of words should not be capitalised when written in long form.

environmental impact statement (EIS)

An ampersand (&) may be used for initialisms with only two letters, but is often not necessary for initialisms with more than two letters.

R&D (research and development)
RMS
OHS
DSTA

TfNSW has standard short forms for telephone, mobile, fax, email and website: T, M, F, E and W.

shortened forms (cont.)	<p>Where an agency, division, branch or section is shortened, always spell out the word in full in the first instance, followed by the short form in parentheses.</p> <p>Central Business District (CBD) Department of Premier and Cabinet (DPC) Transport for NSW (TfNSW) Department of Transport (DoT) Human Resources (HR) Information Technology (IT) Local Government Area (LGA) New South Wales (NSW)</p> <p>Specific examples used by Roads and Maritime Services: Sydney Harbour Bridge (SHB) – not used in customer-facing communication Variable Message Signs (VMS) Driver Knowledge Test (DKT) Australian Builder’s Plate (ABP) Australia and New Zealand Safe Boating Education Group (ANZSBEG) Better Boating Program (BBP) Hull Identification Number (HIN) Marine Rescue NSW (MRNSW) personal watercraft (PWC)</p> <p>The five core divisions at Transport for NSW should be shortened as: Customer Services (CS) Freight, Strategy and Planning (FSP) Infrastructure and Services (IS) Finance and Investment (FI) People and Corporate Services (PaCS)</p>
shoulder season	See <i>seasonal fares</i> Lower case.
sign-off or sign off	Hyphenated when used as a noun. Two words when used as a verb. This document requires a sign-off. Please sign off this document. NOT signoff
signalised intersection	Use ‘traffic lights’.
single-deck, single-decker	See also <i>double-deck, double-decker</i> Single-deck is an adjective. Single-decker is a noun.
single trip ticket	A single-use Opal ticket customers can purchase for a one-off trip.
smartcard or smart card	Use ‘smartcard’.
Sound, The	Always refer to ‘The Sound’ with two initial caps.
smartphone	One word.
South Coast	Region of NSW. Note capitalisation.
South West Rail Link	Project name. Note capitalisation and spacing. Now part of the T2 Airport, Inner West & South Line.
southbound	One word.
Southern Highlands	Region of NSW. Note capitalisation.
space after full stop	One space only, not two, between a full stop and start of the next sentence.
special event buses	See <i>major event buses and special event buses</i>
spelled or spelt	Use ‘spelled’.

Splice	<p>See also <i>Hop</i> and <i>Waratah</i></p> <p>Note capitalisation. The Splice is the internal nickname of the customer-facing brand used on communication about the roads and waterways system in NSW.</p> <p>Note that the Splice is not the same as the Roads and Maritime Services State Government agency.</p>
stand-alone or stand alone	<p>Hyphenated when an adjective. Two words at other times.</p> <p>This is a stand-alone service.</p> <p>For this responsibility, every staff member must stand alone.</p>
stand-alone lists	<p>See also <i>bullet points</i></p> <ul style="list-style-type: none"> • May be used with or without bullets • May be used in display material, brochures and technical documentation • May have only a heading without any lead-in. <p>Each item can take an initial capital, and no full stop is required at the end of the list.</p>
start	<p>Or begin.</p> <p>NOT commence</p>
state or State	<p>When 'state' refers to NSW it should start with a capital. When referring to other Australian states, singular or plural, use lower case.</p> <p>Statewide is one word. When referring to NSW, use with a capital.</p> <p>State Government Legislation will be introduced across the State.</p> <p>State roads.</p> <p>All the Australian states will submit a proposal.</p> <p>The legislation will be introduced Statewide.</p>
State Rail Authority of NSW	<p>RailCorp's predecessor agency (1980–2003).</p> <p>the then State Rail Authority of NSW</p> <p>NOT the then State Rail</p>
State Transit Authority	<p>The operator of Sydney and Newcastle's government-owned buses (formerly Sydney Buses and Newcastle Buses & Ferries).</p> <p>It is not a customer-facing brand. However, for special events it may be necessary to identify buses run specifically by this operator.</p> <p>State Transit buses</p> <p>NOT Sydney Buses Newcastle Buses State Transit Authority buses STA buses</p> <p>Consider if it is more appropriate to refer to 'buses' (lower case), to use route numbers and names, or to refer specifically to the Sydney Buses Network or Hunter Buses Network.</p>
states and territories	<p>Abbreviated as follows. Note capitalisation and full stops, which vary dependent on initialisation, contraction or abbreviation.</p> <p>ACT, NSW, NT, Qld, SA, Tas., Vic., WA</p>
statewide, Statewide	<p>Always one word.</p>
station manager	<p>Lower case.</p> <p>NOT station master</p>
station names	<p>Do not abbreviate station names that include words such as Beach, Creek, East, Heads, Hospital, Island, Junction, Little, Mount, North, Park, Point, Port, River, Road, South, Square, Station, Street, Town, turnoff, University and West.</p> <p>Do not leave off parts of a station name in parentheses except in significantly space-constrained situations such as complex tables, small maps and service indicator screens.</p>

station or Station	<p>Lower case when referring to stations in general, but capitalised when naming both singular and plural stations. If meaning is clear, the word 'Station' is unnecessary.</p> <p>Leave the train at Edgecliff Station. Trains depart from Central, Redfern and Strathfield Stations. Pick up a copy at any Sydney Trains Network station.</p> <p>Do not abbreviate. NOT stn</p>
Stockton ferry	Note capitalisation. This is the one ferry service operated under Newcastle Ferries.
stop or station or wharf	<p>'Stop' is the inclusive wayfinding term used for trains, buses, ferries and light rail.</p> <p>When speaking to customers, trains have stations, buses have stops, ferries have wharves and light rail has stops.</p>
streets	<p>Where space permits, spell out street types. Spell out the term 'corner' (except for bus stop names). Street types are capitalised, including in plural form when two streets of the same type are listed.</p> <p>Delhi Road, North Ryde Corner Waterloo and Herring Roads, Macquarie Park The school is on a busy street.</p>
substation	One word.
Sunday \$2.50 Travel Cap	See <i>Daily Travel Cap and Sunday \$2.50 Travel Cap</i>
sustainable transport	When possible, use 'walking, cycling and public transport'.
Sydney Airport station access fee	<p>See also <i>airport services</i> and <i>GatePass</i> Note capitalisation. Trips by train to or from Domestic Airport Station or International Airport Station incur a Sydney Airport station access fee. The access fee is included in single and return fares and is covered when a customer uses an Opal card. If a customer's ticket does not include the Sydney Airport station access fee, they must purchase a GatePass.</p> <p>NOT Sydney Airport Station Access Fee</p>
Sydney Airport stations	Acceptable shorthand for Domestic Airport and International Airport Stations.
Sydney Buses	<p>See also 'Public transport networks' section Do not use the term 'Sydney Buses' unless specifically referring to the State Transit Authority's former brand or to the Sydney Buses Network which comprises a number of operators. 'Sydney Buses' is not a brand like Sydney Trains and Sydney Ferries, and should no longer be used. When necessary to differentiate from private bus operators, refer to State Transit buses.</p>
Sydney CBD	<p>See also <i>City</i> Use in preference to 'the City' or 'CBD' alone when referring to Sydney city centre, since Sydney Trains serves a number of destinations outside Sydney (Newcastle, Parramatta, etc.) that also have CBDs.</p>
Sydney Ferries	<p>See also 'Public transport networks' section Capitalised when referring to ferry services in Sydney operated by Harbour City Ferries. Sydney Ferries is just one provider of ferry services in Sydney. When necessary to avoid ambiguity, refer to 'Sydney Ferries services'. Note capitalisation.</p> <p>Tickets can be used on most Sydney Ferries services. NOT Tickets can be used on most Sydney Ferries.</p>

Sydney metropolitan area	See also <i>outer Sydney metropolitan area</i> and <i>districts</i> . Note capitalisation. Area including the Sydney CBD and suburbs of Sydney and bounded by the Blue Mountains, Central Coast, Hunter, Illawarra / South Coast and Southern Highlands regions of NSW.
Sydney Metro	Formerly known as Sydney Rapid Transit. Comprises Sydney Metro Northwest (formerly North West Rail Link) and Sydney Metro City & Southwest.
Sydney Olympic Park	On the first mention, refer to the Olympic precinct by its full name, 'Sydney Olympic Park'. The train station is Olympic Park Station.
Sydney Rapid Transit	See <i>Sydney Metro</i>
Sydney Trains	See also 'Public transport networks' section Note capitalisation. Note that 'Sydney Trains' is both the service name as well as the name of the NSW Government operating agency. the Sydney Trains Network They travel on Sydney Trains services every morning. NOT They travel on Sydney Trains
system	Refers to the entire NSW public transport system, including Sydney, Intercity and Regional services for all modes.

T

tactile surfaces	Specially designed tiles with raised treads used to warn visually impaired customers of a change of direction or stairs, lifts, ramps, platform edges.
Tangara	See also <i>fleet</i> Train type. Also known as T Set.
tap off	Touching an Opal card to an Opal card reader to end a trip or journey.
tap on	Touching an Opal card to an Opal card reader to start a trip or journey.
targeted, targeting or targetted, targetting	Use 'targeted', 'targeting'.
Taronga Zoo	NOT Taronga Park Zoo
taxi rank	See also <i>secure prepaid taxi rank</i> Facility where taxis can pick up or drop off customers, or wait for potential customers.
Technology Roadmap	See <i>Future Transport Technology</i>
teletypewriter (TTY)	Generally include the acronym (TTY) after the first reference in text to 'teletypewriter'. We offer a teletypewriter (TTY) service.
temperature	Temperature is generally expressed in Celsius. Include a zero before the decimal point of a temperature less than one degree. 0.5°C In documents and publications, references to temperatures should be expressed in words. The average temperature for January was 27 degrees. For tables and charts, temperature can be expressed as a number. 27°C
<i>TfNSW Mode Magazine</i>	Note capitalisation and italics. The staff magazine released three times per year to showcase all of the great things we are doing in Transport. May be referred to as Mode Magazine, no italics, within TfNSW.

TfNSW or Transport for NSW	<p>See also <i>divisions</i> and <i>Transport</i></p> <p>TfNSW is the accepted abbreviation for Transport for NSW. Note capitalisation.</p> <p>At the first mention in any internal document, write 'Transport for NSW' in full followed by '(TfNSW)'. Transport for NSW (TfNSW)</p> <p>As a general rule, avoid 'TfNSW' unless Transport for NSW is mentioned three times or more on one page. In that case, write 'Transport for NSW' in full the first time it is mentioned followed by '(TfNSW)' as for internal documents. Then refer to TfNSW throughout the document.</p>
thank you or thankyou	<p>Two words when used to say 'thank you' (meaning 'I thank you'). One word when used as a noun or adjective.</p> <p>Thank you for your feedback. The manager organised a thankyou for station staff. The Director General sent a thankyou card to station staff.</p>
third party or 3rd party	Use 'third party', two words, no hyphen, at all times.
tickets	<p>Paper tickets are no longer used on the Opal network. Avoid referring to Opal cards as tickets, except in the case of Opal single trip tickets.</p> <p>See also <i>single trip ticket</i></p>
time	<p><i>24-hour clock</i></p> <p>Always use the 24-hour clock when referring specifically to timetabled services or times where accuracy is required. It should not be used to express time ranges.</p> <p>the 16:35 Bomaderry–Central service NOT From 09:15 to 18:00</p> <p><i>12-hour clock</i></p> <p>Unless referring specifically to timetabled services, use 12-hour clock, including 'am' and 'pm' with no space.</p> <p>Use an en dash, not a hyphen, for time ranges.</p> <p>5–7pm 8.30am 9.15am–6pm</p> <p>If a time range starts with 'from', it <i>must</i> include the word 'to'. from 10am to 10.30pm NOT from 10am–10.30pm</p> <p>If a time range starts with 'between', it <i>must</i> include the word 'and'. between 10am and 10.30pm NOT between 10am–10.30pm</p>
timeframe	One word.
timesaving	One word.
timetable	One word.
T-intersection	Hyphenated. Note capital 'T'.
titles (organisations, departments and directorates)	Titles of organisations, departments and directorates have initial capitals.

titles (positions)	<p>When referring to the Minister for Transport, express name and title thus: The Hon. Firstname Lastname Minister for Transport</p> <p>Always write 'Transport for NSW' in full when associated with the Secretary: Firstname Lastname Secretary, Transport for NSW</p> <p>When introducing someone and their position, state the position title first. The Director Stakeholder and Community Engagement, Joe Citizen, attended the meeting.</p> <p>The exception is where the position title is very long. Jane Smith, Regional Coordinator, Regional Transport Coordinator Orana and Far West, Wentworth and Balranald also attended.</p> <p>For position titles it is not necessary to include a comma. Deputy Director General John Smith is heading the project.</p> <p>There are two exceptions – one where the title is long. General Manager, Strategy and Strategic Projects, Jane Smith will attend the opening next Tuesday.</p> <p>The other is when the person is introduced using 'the'. The Media Manager, Geoff Summers, responded to the request. Media Manager Geoff Summers responded to the request.</p> <p>Position titles should be capitalised only when referring to a specific person. The Manager Communication Services will attend the meeting. The managers from communication will discuss the project.</p> <p>Initial caps not necessary if referring to a job title in general. Sydney Trains has additional transport officers Jane Smith is a transport officer according to Transport Officer Jane Smith</p>
titles (publications)	<p>For document titles in prose, use title case, capitalising The First Letters of All Words in a Title except Articles and Coordinating Conjunctions. For titles of books, plays, movies, albums, newspapers and magazines, use <i>italics</i>.</p> <p>Use 'Title Case and Single Quotation Marks' for titles of chapters, articles, songs, and radio and TV shows.</p> <p>These conventions may not apply in contexts where it is clear that the title is a title, such as tables and navigation menus.</p>
T-junction	Note hyphen and capitalisation.
toolkit	One word.
top-up or top up	<p>Normally hyphenated when used as an adjective and two words at other times. When used as the term meaning to add value to Opal cards, or to extend other types of public transport tickets, it is <i>always</i> two words.</p> <p>Opal top up machines auto top up Top up your Opal card here.</p>
top up machines	Machines at select train stations and ferry wharves where customers can add value to their Opal card or purchase a single trip Opal ticket. Top up machines have replaced paper ticket machines and manned ticket sales offices.
touchpoint	One word. A point of contact or interaction between a customer and the public transport system before, during or after the journey.
touchscreen	One word.
tow truck	Two words.

trackwork	Lower case, one word. Term used on train and light rail networks to highlight planned or unplanned maintenance.
train, bus, ferry and light rail	Always refer to modes in this order.
train network	See also 'Public transport networks' section A network of lines and their stations.
train or rail	Sydney Trains and NSW TrainLink provide train services, not rail services. Customers travel by train, not rail. 'Rail' describes heavy rail infrastructure, not passenger services.
train replacement buses	During trackwork and following major incidents, Sydney Trains provides buses or coaches as alternative transport. NOT rail replacement bus services trackwork buses
train station	A place to get on and off trains.
tram	The last tram service in Sydney ran in 1961. In NSW, refer to light rail or light rail services.
TramLink	This ticket, which combined train and light rail travel on one ticket, is no longer available.
Transdev Sydney	The operator of the Sydney Light Rail Network.
transitway	See also <i>T-way</i> One word.
transfer	A change of transport mode or route at the end of a single trip, to continue a journey.
translations	For documents in a language other than English, an English translation of the title, language of the publication, and publisher and supplier details must be included.
transport or Transport	When used with an initial cap, 'Transport' refers to the Transport for NSW (TfNSW) cluster of agencies. Note capitalisation. It is also used to mean public transport provided by TfNSW. The customer is at the centre of everything we do in Transport. NOT The customer is at the centre of everything we do in transport. When used with a lower case, 'transport' is generic term for moving people and objects from A to B.
Transport Access Program	Note capitalisation. Previously known as Easy Access Program. An ongoing program of upgrades to provide accessible facilities across the system.
Transport cluster	Note capitalisation. The term commonly used to refer to the group of all agencies represented by Transport for NSW (TfNSW). Where there is no ambiguity, 'cluster' alone may be used. The policy applies to all staff from across the Transport cluster.
transport form	See also <i>mode</i> Type of vehicle or method used to facilitate movement of people and freight. For example, train, bus, ferry, light rail vehicle, car, motorbike, bicycle or walking.
Transport Info	Transport for NSW's customer web and mobile service transportnsw.info . Note capitalisation and spacing. NOT Transport InfoLine. Transport Information

transport infrastructure	<p>Infrastructure (including associated vehicles, vessels and rolling stock) used for or in connection with or to facilitate the movement of persons and freight by road, rail, sea, air or other mode of transport (including walking and cycling). It includes:</p> <ul style="list-style-type: none"> • railways and railway infrastructure • roads and road infrastructure • maritime infrastructure and ports • transport safety infrastructure • systems, works, structures, buildings, plant, machinery and equipment associated with or incidental to transport infrastructure.
transport mode	<p>See also <i>mode</i></p> <p>Means by which people and freight move from place to place. Falls into one of three basic types: land (bus, car, truck, motorbike, train, walking and cycling), sea (ship and ferry) and air.</p>
Transport Network	<p>See also <i>network or Network</i></p> <p>The TfNSW Transport Network is the transport system owned and operated by TfNSW or its operating agencies.</p>
transport officer or Transport Officer	<p>Lower case when used in general. Capitalised when used to identify an individual.</p> <p>Sydney Trains has additional transport officers Jane Smith is a transport officer according to Transport Officer Jane Smith NOT transit officer</p>
transport precinct	<p>A public area of urban space, often closed to traffic, that is situated around or adjacent to a transport interchange.</p>
Transport Shop	<p>Note capitalisation. NOT Transit Shop</p>
transport services	<p>Include railway (heavy rail, metro rail and light rail), bus and ferry services. See definition under the <i>Transport Administration Act 1988</i>.</p>
transport system	<p>The transport services and transport infrastructure of NSW for all modes of transport. See definition under the <i>Transport Administration Act 1988</i>.</p>
transportnsw.info	<p>The URL for the integrated Transport website that brings all the modes together and facilitates trip planning and access for customers. Always bold in text. NOT www.transportnsw.info 131500.info</p>
TransText	<p>See <i>fonts</i></p>
Travel Cap	<p>See <i>Daily Travel Cap and Sunday \$2.50 Travel Cap and fare cap</i></p>
Travel Centre	<p>See <i>NSW TrainLink Travel Centre and NSW TrainLink Booking Office</i></p>
travelled, travelling	<p>NOT traveled, traveling</p>
traveller	<p>See <i>customer</i></p> <p>It may be appropriate to use the term ‘traveller’ when referring to customers on NSW TrainLink Regional services.</p>
trip	<p>Travel on public transport on a single route and mode, ending when customers transfer to another route or service.</p>
Triple Zero (000)	<p>Always express the contact number for emergency services as both words and digits as shown. Bold in text.</p>
Trip Planner	<p>A digital interface that helps customers plan travel using maps and real-time public transport service data. See transportnsw.info Title case, two words.</p>

T-shirt	Hyphenated. Note capital 'T'. NOT t-shirt T shirt tee shirt
turnback or Turnback	Initial cap only necessary when used when naming a turnback, such as Liverpool Turnback. NOT turn-back turnaround
turnoff	When part of a NSW TrainLink coach stop name, one word and lower case. Smith Lake turnoff
T-way	Note hyphen and capitalisation. Unless using a full title (for example, Liverpool-Parramatta T-way), use the term 'transitway' rather than 'T-way'. Transitways are an efficient mode of transport. The Liverpool-Parramatta T-way is linking Sydney's west. Express 'North-West T-way' with a hyphen (-) linking North and West. Express 'Parramatta-Rouse Hill T-way' with an en dash (-) linking Parramatta and Rouse Hill. Express 'Blacktown-Parklea T-way' with an en dash (-) linking Blacktown and Parklea.
tweets, Twitter	Note capitalisation.
typefaces	See <i>fonts</i>

U

U-turn	Note capitalisation. Hyphenated.
unattended	Unstaffed train station, ferry wharf or light rail stop. NOT unmanned
underline	Only to be used online when referring to hyperlinks in electronic documents. Underlines should never be used in printed documents. Consider using bold , <i>italic</i> or increased point size as an alternative for stresses or to demonstrate subheadings.
upcoming	Always one word.
up-to-date or up to date	Hyphenated when used as an adjective. Three words at other times. Provide customers with up-to-date timetables. Our timetables are up to date.
URLs (in print documents)	Always in bold . TfNSW style is to omit ' www. ' when expressing URLs in text. Never include ' http:// '. Don't use a full stop at the end of sentence when the sentence ends with a URL. For citations, often appearing in footnotes, the URL or email address should be expressed in angled brackets, not bold. <http://www.nja.net.au/listserv/> See Australian Government style manual: Snooks & Co., <i>Style manual for authors, editors and printers</i> , 6th edn, John Wiley & Sons Australia, Ltd, 2002, p. 230.
user-friendly or user friendly	Hyphenated when used as an adjective. Two words at other times. This is a user-friendly app. This app is user friendly.
user-pays or user pays	Hyphenated when used as an adjective. Two words at other times. This is a user-pays service. When using the service, the user pays.
username	One word.

V

value	See also <i>top-up or top up</i> The term used to express Opal card balances. Load value onto your Opal card. Add value to your Opal card. NOT Put cash on your Opal card. Add credit to your Opal card. Deposit money on your Opal card.
versus or v. or vs or v	Because of headline space constraints in most customer information collateral, customer-facing style is to use 'v', no full stop, for sporting events. Qantas Wallabies v All Blacks NOT Qantas Wallabies vs All Blacks (otherwise the correct usage) In legal contexts, abbreviate as 'v.' with a full stop. In other contexts, do not shorten. Wicks v. State Rail Authority of New South Wales the merits of single-deck versus double-deck carriages.
W	
wakeboarding	One word.
walking and cycling	When the active transport modes of walking and cycling are referred to together, 'walking' comes first.
walking route	Also footpath. A dedicated corridor or path for walking.
war widow/er	See also <i>NSW War Widow/er Transport Concession Card</i> Remember that this should not be a gendered term. Always use the term 'war widow/er' in full. NOT war widow
Waratah (brand)	See also <i>Hop</i> and <i>Splice</i> Note capitalisation. The Waratah brand family should be used on all Government to Business (G2B) and Government to Government (G2G) communication representing TfNSW or the respective Transport cluster agency. It represents our State Government structure.
Waratah (train type)	See also <i>fleet</i> Train type. Also known as an A Set.
water taxi pick-up/drop-off point	Designated location where customers can board and disembark from water taxis.
water-skiing	Hyphenated.
waterways	One word.
Web Content Accessibility Guidelines (WCAG)	All TfNSW web content must be WCAG compliant. This makes our content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity and combinations of these.
web terms	Common web terms are usually written as one word: webpage, download, homepage, website, cyberspace, CD-ROM
website	One word, no hyphen, no capitalisation.
Weekly Travel Reward	See also <i>Daily Travel Cap</i> Note capitalisation. The maximum amount payable with Opal card in one week. The amount varies depending on the type of Opal card. NOT Weekly Travel Cap
WestConnex	Project name. Note capitalisation.
Western Sydney	A place name, capitalised. Good news for Western Sydney commuters.
wharf or station or stop	See <i>stop or station or wharf</i>

wharf or Wharf	<p>Lower case when referring to wharves in general. Capitalised when naming both singular and plural wharves. If meaning is clear, 'Wharf' is unnecessary.</p> <p>Leave the ferry at Mosman Bay Wharf. Leave the ferry at Mosman Bay. Services to Circular Quay will leave from Manly, Taronga Zoo and Old Cremorne Wharves. Services to Circular Quay will leave from Manly, Taronga Zoo and Old Cremorne. Pick up a copy at any Sydney Ferries wharf.</p>
wharves or wharfs	Use 'wharves'.
wheelchair access	<p>Facility with DDA compliant access for customers with mobility aids. This location is wheelchair accessible.</p>
wheelchair accessible taxi (WAT)	Lower case when written in full. Plural is 'WATs'.
while or whilst	Use 'while'.
wide gate	<p>Two words, lower case. NOT Easy Access Gate</p>
WiFi	<p>One word. Note capitalisation. NOT wifi wi-fi Wi-Fi</p>
windsurf, windsurfing	See <i>sailboard, sailboarding or windsurf, windsurfing</i>
workplace	One word.
www.	While it is not TfNSW style to include 'www.' when referring to URLs, it may be necessary to include if the URL is not set up to direct to the correct website. Please test and speak to Channels if there are direction issues.
X	
XPLORER	See <i>fleet</i>
XPT	See <i>fleet</i>
Y	
years of age	<p>Three words. The child was 5 years of age. NOT years-of-age</p>
Yours sincerely or Yours faithfully	<p>The conventional sign-off to correspondence when the recipient's name is known (for example, 'Dear Ms Jones') is 'Yours sincerely'. The conventional sign-off to correspondence when the recipient's name is <i>not</i> known (for example, 'Dear sir or madam') or more formality is required is 'Yours faithfully'.</p>
Z	
zone or Zone	<p>Lower case when used alone. Capitalised when used with zone numbers. Zone numbers are shown as numerals. Which zone are you travelling to? Are you travelling to Zone 1 or Zone 2?</p>

Plain language

Instead of this ...	try substituting this ...
a large proportion of	many
accede	agree, allow
access	catch, use
accomplish	do
accordingly	so
accustomed to	used to
additional	more, extra
adequate number of	enough
adjacent	next to, nearby
alight	leave, get off
amended	changed
amongst	among
appropriate measures	steps
approximately	about, around
ascertain	find out, learn, discover
assist, assistance	help
at about	at or about – not both
at this moment in time	now
attain	reach
board	catch, get on
bona fide	good faith, genuine, honest
by means of	by
by virtue of the fact that	because
cease	stop, end
close scrutiny	scrutiny
commence	start, begin
component	part
concerning	about
consensus of opinion	consensus, most people think ...
consequently	so
constitute	make up, form
construct	build
customers	you
customers should ...	please ...
defer	postpone
depart	leave
despite the fact that	despite
determine	decide
discontinue	stop
disembark	leave
disseminate	send out, distribute
due to the fact that	because
during such time	while

Plain language (cont.)

Instead of this ...	try substituting this ...
each day	daily
each night	nightly
enable	allow, permit
endeavour	try
establish	set up, create, find out
et al	and the others, the rest
excessive number of	too many
exit	leave
expedite	speed up, hasten
expire, expiration	end
facilitate	make easier, help
following	after
for the duration of	during, while
for the purpose of	to
formulate	work out, devise, form
forthwith	immediately, now - or state a time limit
forward	send, give
future plans	plans
generate	make
grant	give
henceforth	from now on
in accordance with	as, in line with
in conjunction with	and, with
in lieu of	instead of
in order to	to
in respect of	for
in the absence of	without
in the event that	if
in the majority of cases	most cases, usually
in view of the fact	because
initially	at first
institute	begin, start
it is probable that	probably
it would appear that	apparently
journey time	travel time
leaves much to be desired	poor
locality	place
manufacture	make
may experience delays (passive)	may be delayed (active)
minor/infant	child
modify	change
notify	tell
notwithstanding the fact that	although

Plain language (cont.)

Instead of this ...	try substituting this ...
numerous	many
obtain	get, receive
on account of the fact that	because
on behalf of	for
on the part of	by
optimum	best, greatest, most
peak times, peak periods	peak hours
per annum	a year, every year
possesses	has, owns
purchase	buy
regarding	about, on
rehabilitate	repair, improve, restore
request	ask
requires	needs
revert back	revert
signage	signs
signalised	has traffic lights
strategise	plan
subsequent to	after
subsequently	later
terminate	end, stop, last stop
therefore	so
travelling	going
under the provisions of	under
undertake	carry out
until such time	until, till
utilise	use
verify	check, prove
was of the opinion that	thought
whilst	while
with a view to	to
with reference/regard/respect to	about, concerning
with the exception of	except
works	work



Transport
for NSW

Environmental Incident / Non-compliance Report

Only record factual information that you know to be correct. Do not make assumptions, be succinct and avoid speculation.

For guidance in completing this form refer to [Environmental Incident Classification and Reporting - 9TP-PR-105](#). This form shall be filled out when the INX or PECOMS system is not available and shall be submitted to Planning and Environment Services (PES) Planning and Environment Manager within 48 hours of observing the incident/non-compliance. The details of the incident or non-compliance shall be transfer into INX or PECOMS respectively once the systems become available.

Section 1	
Project:	PES reference no.: (PES to insert)
Alliance/contractor:	Alliance/contractor reference no.:
Date and time of incident/non-compliance	Date: _____ Time: _____
Date and time of verbal notification to PES	Date: _____ Time: _____
Notification made by:	Name: _____ Position: _____
Notification made to:	Name: _____ Position: _____
Section 2: Location and classification	
Exact location and extent: (address, chainage, nearest cross street, landmarks etc; attach sketch if appropriate.)	
Activity occurring at the location	
Environmental conditions: (immediately prior to and during incident)	
Incident type: (tick as many as appropriate)	<input type="checkbox"/> Water (e.g. discharge to any onsite or offsite waterway) <input type="checkbox"/> Spill/leak of any hazardous or polluting liquid substance (fuel, oil, chemical, waste) <input type="checkbox"/> Air pollution (e.g. dust or odour emission, excessive exhaust from plant or equipment) <input type="checkbox"/> Erosion/sediment (e.g. exceed capacity of controls, inadequate or no controls) <input type="checkbox"/> Land contamination (e.g. spill/deposit material causing contamination) <input type="checkbox"/> Noise/vibration emission

	<input type="checkbox"/> Waste (e.g. disposal causing environmental harm) <input type="checkbox"/> Heritage (e.g. damage/disturbance to heritage item/object/place)	<input type="checkbox"/> Flora/fauna (damage/harm to species /habitat/ecological community) <input type="checkbox"/> Other (provide details)
--	--	---

Incident classification: (tick as many as appropriate)	<input type="checkbox"/> Incident	
	<input type="checkbox"/> Non-compliance	Note relevant approval/license and condition(s):
	<input type="checkbox"/> Notifiable event	Section 8 must be completed

Section 3: Cause (outline the cause(s) of the incident/non-compliance, if known. Leave blank or incomplete if investigation is ongoing)

--

Section 4: Observation and notification (record the events in chronological order up until corrective action was implemented, including any relevant activity prior to observation and how incident/non-compliance was observed and notified)

Time	Description

Section 5: Corrective action and mitigation (record the immediate corrective actions and mitigation measures implemented to rectify the incident and minimise or prevent environmental harm or pollution from occurring or continuing)

Time	Description

Section 6: Preventive action (record the preventive actions and any follow-up actions that were or will be taken to prevent any recurrence)

Description	Actioned Date

Section 7: Community notification (only required if potential safety or community impacts resulted from the incident)

Safety team notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Who was notified?	Time
State reason(s) for notification:		
Communications team notified? <input type="checkbox"/> Yes <input type="checkbox"/> No	Who was notified?	Time
State reason(s) for notification:		

Report prepared by:

Name:		Position:	
Signature:		Date:	

If notification to OEH or other authority was made by the alliance/contractor Section 8 must be completed

**Section 8: Notifiable events
 This section to be completed by the organisation that made the notification(s)**

Only complete this section if verbal notification to the OEH pollution line was made

Notification to OEH made by:	Name:	Position:
Date and time of notification:	Date:	Time:
Is a written report required to be submitted to OEH?	<input type="checkbox"/> Yes, must be submitted by (date):	
	<input type="checkbox"/> No (state reason report is not required)	
Any follow up action as a result of notification (site inspection, investigation, reporting etc.):		
Notification to other regulatory authorities		
Authority notified (or to be notified):		
Form of notification (verbal, written):		
Reason for notification:		
Notification by:	Name:	Position:
Date and time of notification:	Date:	Time:

Section 8: Notifiable events

This section to be completed by the organisation that made the notification(s)

Any follow up action as a result of notification (site inspection, investigation, reporting etc.):

This section completed by:

Name:		Position:	
Signature:		Date:	

Section 9 (to be completed by Infrastructure & Services Delivery Office only)

Follow up action required as a result of this incident	Action by	Action date

Environment & Planning Manager / Senior Manager Environment:

(acknowledges that the incident/non-compliance has been entered into the register):

Name: _____ Signature: _____
 Date: _____

This report must be forwarded to the compliance reporting manager when complete and copy of report should also be forwarded to the relevant Infrastructure and Services project manager and project director.

Environmental Incident Classification and Reporting

9TP-PR-105/17.0

Procedure – Applicable to Infrastructure and Services

Divisional Management System

Status:	Approved
Version:	17.0
Branch:	Planning and Environment Services
Business unit:	Environmental Management
Date of issue:	17 November 2017
Review date:	17 November 2018
Audience:	Project Delivery/External TSR
Asset classes:	<input checked="" type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input checked="" type="checkbox"/> Multi Sites; <input checked="" type="checkbox"/> Systems; <input checked="" type="checkbox"/> Fleets
Project delivery model:	I&S Project/Alliance/Novo Rail
Project type:	Not Applicable
Project lifecycle:	<input type="checkbox"/> Feasibility; <input type="checkbox"/> Scoping; <input type="checkbox"/> Definition; <input checked="" type="checkbox"/> Construction readiness; <input checked="" type="checkbox"/> Implementation; <input checked="" type="checkbox"/> Finalisation; <input type="checkbox"/> Not applicable
Process owner:	Director Planning and Environment Services

Document history

Version	Date of approval	Desksite no.	Notes
3.0	August 08	631781	
4.0	23 Dec 09	696779_4	This document is updated to reflect the new document owner.
5.0	13 Aug10	867157	Reformatted for TCA transition and revised governance structure.
6.0	01 Oct 11	835272	This document is updated to include Incident classification Legislative requirements Incident and non-compliance reporting procedure.
7.0	21 Oct 11	867157_9	Definitions and Environmental Incident Sections – amend definition of environmental incident to read “...impact has occurred, is occurring, or is likely to occur.” This is consistent with POEO Act. 6.2 – update to reflect changes to SA-FO-002 6.3 – remove “or a contract/alliance-specific report form that is consistent with 9TP-FO101.” 7 – update title of SA-FO-002
8.0	1 Nov 11	867157_12	Reformatted for Transport Projects transition and revised governance structure.
9.0	2 Feb 12	1750099_1	Updated to include new legislative requirements as a result of changes to the Protection of the Environment Operations Act 1997.
10.0	1 Aug 12	867157_22	Revised section 6 and figure 1 of the document to reflect the use of the Incident Management System in incident/non-compliance reporting.
11.0	21 Mar 14	867157_23	A paragraph on incidents related to the discovery of asbestos is added to clarify that such incidents are to be reported as safety incidents in the INX.
12.0	29 May 14	867157_25	Inclusion of incident investigation process and root cause analysis.
13.0	14 Apr 15	867157	Updated to be published to TfNSW website
14.0	28 Apr 16	867157_31	Updated to reflect for I&S transition and revised governance structure.
15.0	15 Nov 16	867157_33	Re-branded to I&S (cover page only)
16.0	27 September 2017	867157_35	Flowchart updated to reflect position title change. Dead hyperlink removed.
17.0	17 November 2017	867157_37	The name of the system updated to INX.

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1. Purpose and scope

The purpose of this document is to identify the process and procedure to be followed when classifying and reporting an environmental incident or non-compliance that has occurred during work being undertaken by, or on behalf of, Infrastructure and Services (I&S) and defines I&S standard.

This procedure applies specifically to the reporting of environmental incidents and non-compliances to I&S and relevant regulatory authorities, particularly the NSW Environment Protection Authority. It does not provide guidance on management responses or corrective actions required in response to those incidents, which should be detailed in the relevant environmental management plan or other management document as required for the project.

2. Accountabilities

The Director Planning and Environment Services is accountable for this Procedure. Accountability includes authorising the document, monitoring its effectiveness and performing a formal document review.

Project directors are accountable for ensuring the requirements of this document are implemented within their area of responsibility.

Project directors who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this document where required under TfNSW Standard Requirements (TSR).

Contractors are accountable for compliance with this document, where this document forms a part of their contract.

3. Definitions and acronyms

All terminology in this procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

ADEM	Associate Director Environmental Management
Environmental incident	An environmental incident is an occurrence or set of circumstances, as a consequence of which pollution (air, water, noise, or land) or an adverse environmental impact has occurred, is occurring, or is likely to occur. Adverse environmental impact includes contamination, harm to flora and fauna (either individual species or communities), damage to heritage items and adverse community impacts.
Environmental non-compliance	A non-compliance with any condition of approval, license condition or any other statutory approval or requirement relevant to the activity and/or area where the activity occurs.
Environmental issue	Any occurrence or set of circumstances that has the potential to cause or lead to an environmental incident or non-compliance if not rectified.
EM	Alliance/contractor environmental manager
EMR	Environment management representative
EPA	NSW Environment Protection Authority
EPL	Environment protection license
EPM	Environment and planning manager

ERM	Event report manager
INX	INX system
Investigation	The process by which the cause(s) of an incident, non-compliance, issue or event is examined and identified.
Material harm to the environment	<p>Has the meaning as defined in Section 147 of the POEO Act.</p> <p>Harm to the environment is material if:</p> <ul style="list-style-type: none"> (i) it involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or (ii) it results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (or such other amount as is prescribed by the regulations), and <p>loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment.</p>
Moderator	Person assigned with a lead role under an incident investigation, to determine it's scope etc.
Notifiable event	Any environmental incident or non-compliance that triggers a specific statutory requirement to notify a regulatory authority.
PD	I&S Project director
PM	Alliance/contractor project manager
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Pollution	Pollution, air pollution, water pollution, noise pollution and land pollution all have the meanings as defined in the Dictionary to the POEO Act.
Pollution incident	<p>Has the meaning as defined in the Dictionary to the POEO Act:</p> <p>an incident or set of circumstances during or as a consequence of which there is or is likely to be a leak, spill or other escape or deposit of a substance, as a result of which pollution has occurred, is occurring or is likely to occur. It includes an incident or set of circumstances in which a substance has been placed or disposed of on premises, but it does not include an incident or set of circumstances involving only the emission of any noise.</p>
SME	I&S Senior Manager Environment
TfNSW	Transport for New South Wales
TSR	TfNSW Standard Requirement

4. Legislative requirements

There are a number of Acts and Regulations that include a specific requirement to notify a regulatory authority as a result of pollution, contamination or environmental harm occurring, including impacts to heritage items. Infrastructure and Services (I&S) has defined such incidents as notifiable events.

4.1. Notifiable events

A notifiable event is:

Any environmental incident or non-compliance that triggers a specific statutory requirement to notify a regulatory authority.

For further guidance on the statutory requirements for the notification of environmental harm or pollution refer to the I&S EMS document [Environmental Legislation Summary – 2TP-SD-090](#). Some event types are summarised in Table 1 below.

Table 1 Examples of notifiable events

Event type	Legislation		Notification to
Pollution incident	POEO Act	Part 5.7	Immediately after becoming aware of the incident to each relevant authority: <ul style="list-style-type: none"> EPA Environment Line Local Council Ministry of Health (via the Local Public Health Unit) WorkCover Authority Fire and Rescue NSW
	POEO (General) Regulation 2009	Section 101	
Land contamination	<i>Contaminated Land Management Act 1997</i>	Section 60(1)	EPA in writing as soon as practicable after becoming aware of the contamination, where required as prescribed in the EPA ‘Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997’
Discover aboriginal relic	<i>National Parks and Wildlife Act 1974</i>	Section 89A	Director-General of the Department of Premier and Cabinet in writing within a reasonable time after becoming aware
Discover Aboriginal Remains	<i>Commonwealth Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>	Section 20	Commonwealth Minister of Environment in writing as soon as practicable after becoming aware
Discover relic	<i>Heritage Act 1977</i>	Section 146	Heritage Council in writing within a reasonable time after becoming aware

Further information on reporting pollution incidents to EPA is provided in section 6.4.

5. Incident classification

5.1. Environmental incident

Infrastructure & Services has defined an environmental incident as:

An occurrence or set of circumstances, as a consequence of which pollution (air, water, noise, and land) or an adverse environmental impact has occurred, is occurring, or is likely to occur.

Adverse environmental impact includes contamination, harm to flora and fauna (either individual species or communities), damage to heritage items and adverse community impacts.

Table 2 Examples of environmental incidents

Type	Example incident
Air	Odour that travels beyond the site boundary
Air	Dust exceeding reasonable levels without active management measures in place

Type	Example incident
Air	Operation or maintenance of plant in a manner that causes or is likely to cause air pollution
Water	Discharge of water on or off site in a manner that causes or is likely to cause water pollution
Noise	Noise that travels beyond the site boundary as a result of poorly maintained plant or operation of plant in an inefficient manner
Noise	Failure to comply with the approved hours of work
Land	Cause any substance to leak, spill or otherwise escape (whether or not from a container) in a manner that harms or is likely to harm the environment
Land	Spill/deposit material or allow material to be deposited on land in a manner that causes or is likely to cause land pollution
Land	Cause contamination of land
Land	Dispose of waste in a manner that harms or is likely to harm the environment
Flora/ Fauna	Harm or "pick" a threatened species, endangered population or endangered ecological community
Flora/ Fauna	Damage to vegetation, fauna or habitat including watercourses
Heritage	Damage, disturbance, destruction or works to heritage items/relics
Heritage	Damage, disturbance, or destruction of Aboriginal objects or places

Note: an environmental incident may also be an environmental non-compliance.

5.2. Environmental non-compliance

An environmental non-compliance is a non-compliance with any condition of approval, license condition or any other statutory approval relevant to the activity and/or area where the activity occurs.

Examples of environmental non-compliances are given in the Table 3 below.

Table 3 Examples of environmental non-compliance.

Example non-compliance
Works without the required planning approval
Failure to comply with a condition of approval
Works without the required EPL
Failure to comply with an EPL condition
Works undertaken without any other required statutory approval
Failure to comply with any other statutory requirement that does not result in an adverse environmental impact or pollution

Note: an environmental non-compliance is not necessarily an environmental incident.

5.3. Environmental issue

An environmental issue is any occurrence or set of circumstances that has the potential to cause or lead to an environmental incident or non-compliance if not rectified.

Environmental issues may be identified during formal or informal inspections undertaken by an alliance, contractor, I&S employee or environmental management representative/environmental representative. Issues identified during inspections (i.e. those conducted by I&S employees or representatives) should be documented using the form: [Environmental Site Inspection Report Template – 9TP-FT-307](#).

For any issues raised, a priority is to be given for action to be implemented, in accordance with the following:

Priority	Action required
Immediate	Immediately and closed out on day of inspection
High	Within 24 hours
Medium	Within 3 working days
Low	Within 5 working days
Other	By the date noted

If any issues raised during an inspection are also considered to constitute an environmental incident and/or non-compliance then this must be noted on the inspection report, including reference to then relevant condition of approval or other requirement. Any such incidents or non-compliances must also be reported separately in accordance with Section 6.

6. Incident and non-compliance reporting

All environmental incidents and non-compliances must be reported to I&S. The environmental incident/non-compliance reporting procedure is illustrated in Figure 1, which includes requirements for verbal notification, recording the incident in the INX system and notification to the regulatory authority for a notifiable event, and EPA in the case of a notifiable pollution incident.

The [Environmental Incident/Non-compliance Report – 9TP-FT-101](#) may be used for reporting in the following circumstances:

- where access to the INX system is not available
- for reporting non-compliances that do not require reporting in the INX system.

6.1. Verbal notification

The I&S EPM and project manager must be notified verbally immediately after the alliance/contractor becomes aware of the incident or non-compliance. The EPM or SME should provide advice to the alliance/contractor on the classification of the incident/non-compliance and whether notification to any regulatory authority is required.

6.2. Incident reporting

Environmental incidents must be reported to I&S within 4 hours of occurring or first being observed. The INX system is accessed via <https://tfnsw.inxsoftware.com>. Additional details of the incident are to be recorded in the INX system within 48 hours of the incident/non-compliance first being observed. Step by step guidance on how to use the INX system is provided in the I&S document [Guide to Environmental Incident and Non-compliance Reporting – Using the INX System – 9TP-SD-005](#).

The event moderator (generally the SME) shall review the details and assign the incident to the EPM and/or relevant contractor's personnel (generally their environmental manager) to

manage the incident and complete the preventative/follow-up actions and investigation. Details and completion dates of the actions are to be recorded by the SME and/or EPM and/or the contractor's personnel who have been assigned the incident/non-compliance in the INX system. The alliance/contractor shall input details and findings for the incident investigation in the INX system if required. The SME shall review the report and close the incident when all the actions are completed.

For an incident related to the discovery of asbestos, the incident is to be recorded in the INX as a safety incident.

A senior safety officer is to assign the incident to both the EPM and the safety officer of the project in order to manage both the safety and environmental aspects of the incident and any associated actions (see Figure 2 on page 14). It is the senior safety officer's responsibility to close the incident if all actions are completed.

6.3. Notification to regulatory authorities

If an incident or non-compliance is a notifiable event then a report must be provided to the relevant regulatory authority within the timeframe(s) specified by the relevant legislation. For notifiable events other than pollution incidents the alliance/contractor should seek advice from I&S on whether the notification is to be made by I&S or the alliance/contractor.

Requirements for reporting pollution incidents to EPA and other authorities are identified below in Section 6.4.

6.4. Reporting pollution incidents to EPA and other authorities

Pollution incidents which are causing or threatening material harm to the environment must be reported to each of the following authorities immediately after becoming aware of the incident, as required by Section 148 of the POEO Act. The contact numbers for these authorities are:

- EPA Environment Line 131 555
- Local Authority Local Council (specific to area)
- Ministry of Health Public Health Unit via 1300 066 055
(full local area contact details are available on the [Public Health Units pages of the NSW Health website](#))¹
- Workcover Authority 131 050
- Fire and Rescue NSW 1300 729 579

Note: If the situation warranted calling 000 as a first point of notification, you do not need to ring Fire and Rescue NSW again.

Relevant information required to be given to EPA when making a notification is specified in Section 150 of the POEO Act as follows:

- (a) the time, date, nature, duration and location of the incident
- (b) the location of the place where pollution is occurring or is likely to occur
- (c) the nature, the estimated quantity or volume and the concentration of any pollutants involved

¹ <http://www.health.nsw.gov.au/Infectious/Pages/phus.aspx>

- (d) the circumstances in which the incident occurred (including the cause of the incident, if known)
- (e) the action taken or proposed to be taken to deal with the incident and any resulting pollution or threatened pollution
- (f) other information prescribed by the regulations.

You are required to report the information known at the time of making the notification. If the information required by (c), (d) or (e) above is not known at the time of initial notification but becomes known afterwards it must be reported to each authority immediately after it becomes known. Verbal notification must be followed by notification in writing within 7 days of the date on which the incident occurred.

You are not required to report a pollution incident if:

- (a) you are aware that the incident has already come to the notice of each of the notification authorities
- (b) the incident is an ordinary result of action required to be taken to comply with an environment protection licence, an environment protection notice or other requirement of or made under the POEO Act
- (c) the pollution incident involves only the emission of an odour.

Failure to report a pollution incident as required by the POEO Act is an offence.

Where any work or activity is regulated by an EPL, notification of a pollution incident must be made by the licensee. Thus, where the alliance/contractor holds the EPL for the project, notification shall be made by the alliance/contractor.

For any work or activity that is not regulated by an EPL, notification of pollution incidents to EPA shall be made by I&S, unless the alliance/contractor is instructed otherwise by I&S. This includes pollution incidents that occur as a result of pre-construction activities which may be undertaken prior to an EPL being required for a project. Pre-construction activities are determined by the planning approval and may include, for example, geotechnical investigations, surveys or fencing.

6.5. Incident investigations

Incident investigation should be completed for all environmental incidents logged in the INX system. The scope of the investigation is determined by the moderator of the incident in the INX system.

6.5.1. Incident investigation

Incident investigation is to be completed using the Investigation tab in the INX system, with reference to any investigation reports, attached using the document tab. The Investigation tab includes four sections.

1. Sequence of events

This section is to record the sequence of events that led to the incident.

2. Findings

Given the sequence of events, what are the key findings of the investigation (i.e. what are the main causes of the incident).

3. Management methods

Used to record the management methods to be changed and/or implemented to avoid the incident reoccurring.

4. Key learnings

What can we learn from this investigation into the incident? Are there any elements of this incident investigation that can be or need to be shared with other projects or the wider I&S as a Lessons Learned process, environmental alert or similar?

Further guidance is provided in [Guide to Environmental Incident and Non-compliance Reporting – using the INX System – 9TP-SD-005](#)

6.5.2. Root cause analysis

Root cause analysis must be undertaken for incidents with a risk rating of high and above, and for other lower risk incidents where determined by the incident moderator. The Root Cause Analysis Checklist is presented in Appendix 1 and is located as a template checklist in the Procedures section of the INX system.

The Root Cause Analysis Checklist is designed to assist in the identification of the causal factors that contributed to the incident and provides the information to be included in the Findings section of the Investigation tab.

When this template is completed it must be attached to the Document tab of the INX system.

Further guidance is provided in [Guide to Environmental Incident and Non-compliance Reporting - using the INX System – 9TP-SD-005](#).

6.6. Relationship to I&S Crisis Management Procedure

- Incidents which are likely to cause major damage to the environment will be managed in accordance with the [Significant Incident Management Procedure - I&S Delivered Infrastructure & Fleet Projects 1TP-PR-008](#). Determination of whether the environmental incident requires the activation of a crisis management team will be made by I&S in accordance with the assessment process and activation/escalation triggers identified in Sections 6.1-6.3 of the Crisis Management procedure.

7. Related documents and references

Related documents and references

[Environmental Management System Manual – 1TP-ST-052](#)

[Environmental Site Inspection Report Template – 9TP-FT-307](#)

[Environmental Incident/Non-compliance Report – 9TP-FT-101](#)

[Guide to Environmental Incident and Non-compliance Reporting – using the INX System – 9TP-SD-005](#)

[Safety and Environmental Incident Report 90-FT-002](#)

[Significant Incident Management Procedure - I&S Delivered Infrastructure & Fleet Projects 1TP-PR-008](#)

[Environmental Legislation Summary – 2TP-SD-090](#)

EPA 'Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997*'

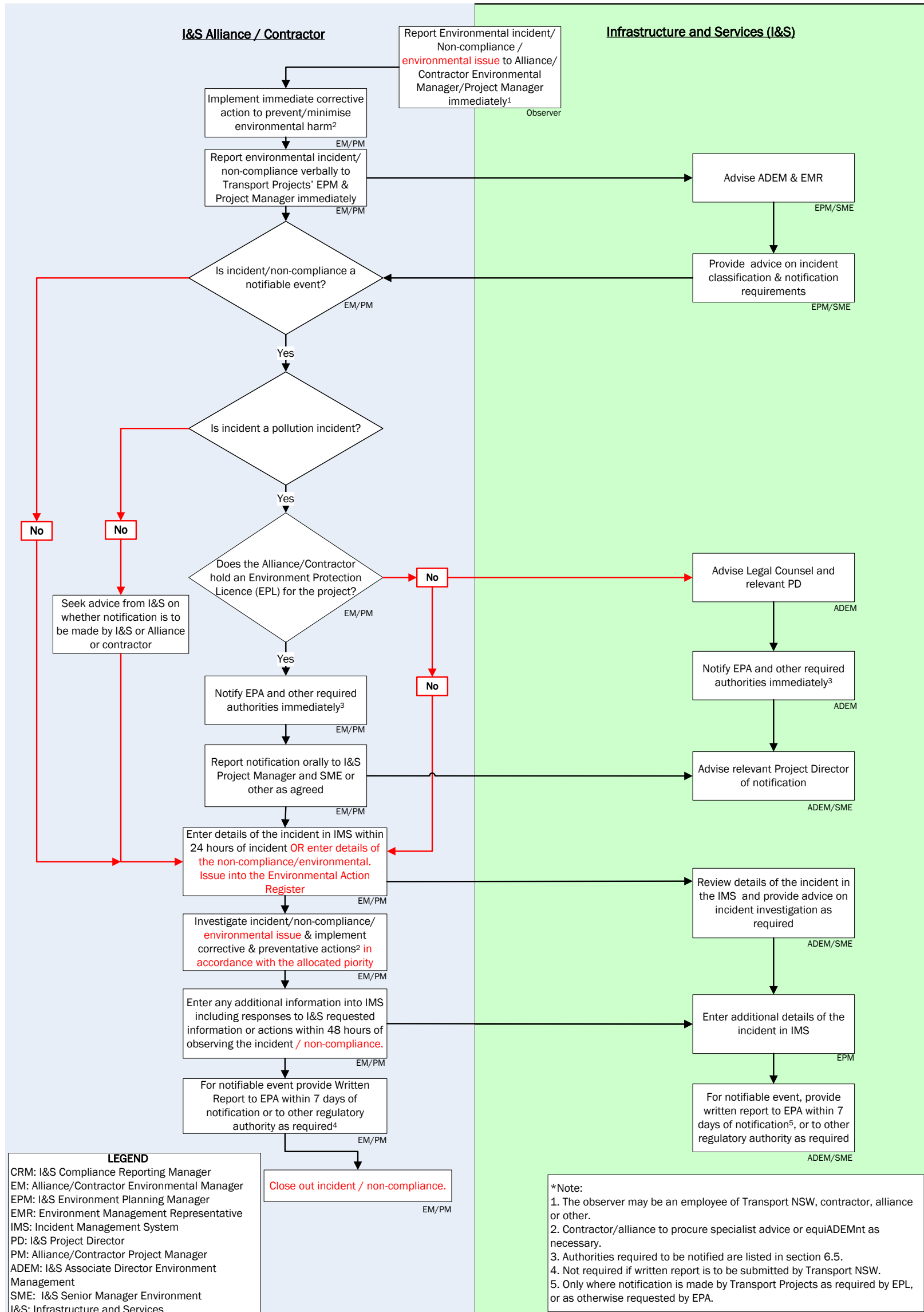


Figure 1 Environmental incident/non-compliance reporting procedure

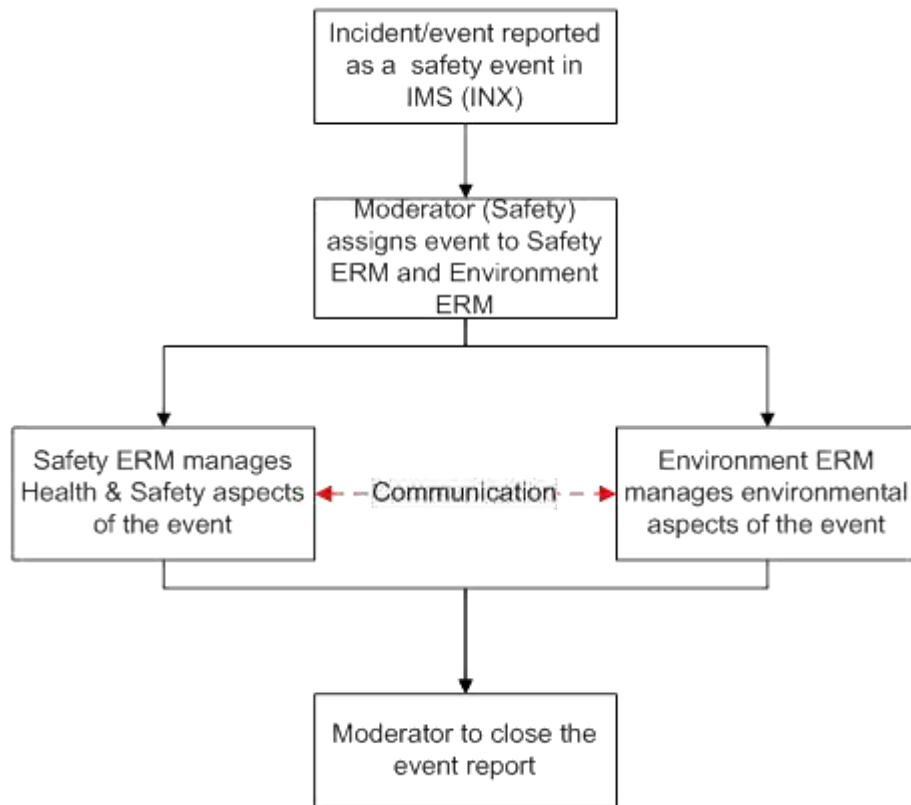


Figure 2 Reporting asbestos find process

Appendix 1 Root Cause Analysis Checklist

Environmental factors / work site description (Tick all that apply)					
A description of the immediate and surrounding environment that are contributing factors to the incident or event					
Sensitive receptors / receiver	<input type="checkbox"/>	High winds	<input type="checkbox"/>	Vibration	<input type="checkbox"/>
Lighting/ light levels	<input type="checkbox"/>	Snow / Ice	<input type="checkbox"/>	Noise	<input type="checkbox"/>
Surface water / storm water or natural drainage	<input type="checkbox"/>	Rain	<input type="checkbox"/>	Vegetation or ecology	<input type="checkbox"/>
Groundwater	<input type="checkbox"/>	Heat/humidity	<input type="checkbox"/>	Fauna or fauna habitat	<input type="checkbox"/>
Geology and soils	<input type="checkbox"/>	Slippery surface	<input type="checkbox"/>	Trip hazard	<input type="checkbox"/>
Access and transport	<input type="checkbox"/>	Signage	<input type="checkbox"/>	Other (specify)	<input type="checkbox"/>
Specifically describe how the factor contributed to the occurrence.					
Equipment / tools (Tick all that apply)					
Identify what equipment was being used and how it contributed to the incident occurrence					
Type of equipment 1 (Specify make and model)	<input type="checkbox"/>	Type of equipment 2 (Specify make and model)	<input type="checkbox"/>	Type of equipment 3 (Specify make and model)	<input type="checkbox"/>
Equipment malfunction	<input type="checkbox"/>	Inappropriate equipment	<input type="checkbox"/>	Pre-operation checks	<input type="checkbox"/>
Faulty equipment	<input type="checkbox"/>	Maintenance schedule	<input type="checkbox"/>	Incorrect use	<input type="checkbox"/>
Instruction/training on use on equipment	<input type="checkbox"/>	Safety device bypassed / lack of guarding	<input type="checkbox"/>	Unsafe equipment use	<input type="checkbox"/>
Operated beyond specifications	<input type="checkbox"/>	Difficult to use	<input type="checkbox"/>	Not trained on equipment	<input type="checkbox"/>
Inappropriate / inadequate storage or stowage	<input type="checkbox"/>	Design / controls site layout problem	<input type="checkbox"/>	Operator not familiar with equipment	<input type="checkbox"/>
Other (specify)					

Specifically describe how the factor contributed to the occurrence

Communication and training (Tick all that apply)

Identify what training, information and communication occurred or did not occur that contributed to the incident

Appropriate formal training	<input type="checkbox"/>	Refresher training	<input type="checkbox"/>	Pre start briefing or tool box talk	<input type="checkbox"/>
Shift debriefing / handover	<input type="checkbox"/>	Risks and hazards identified / communicated	<input type="checkbox"/>	Induction	<input type="checkbox"/>
Confusing message	<input type="checkbox"/>	Incomplete message	<input type="checkbox"/>	Hand signals	<input type="checkbox"/>
Language barrier	<input type="checkbox"/>	Accent difficulties	<input type="checkbox"/>	No communication	<input type="checkbox"/>
Communication method / type	<input type="checkbox"/>	Speech issues	<input type="checkbox"/>		

Other (specify)

Specifically describe how the checked factor contributed to the occurrence

Procedures / task instructions (Tick all that apply)

What procedures applied to the task, were they appropriate and were they understood and followed?

Procedure not correct for task or non existent	<input type="checkbox"/>	Procedure not documented	<input type="checkbox"/>	Procedure not communicated	<input type="checkbox"/>
Deviated from procedure	<input type="checkbox"/>	Procedure not trained	<input type="checkbox"/>	Procedure or training not reinforced	<input type="checkbox"/>
Not familiar with procedure	<input type="checkbox"/>	Procedure / Task too difficult	<input type="checkbox"/>	New procedure or task or recent task change	<input type="checkbox"/>
Failed to plan for task	<input type="checkbox"/>		<input type="checkbox"/>	Other (specify)	<input type="checkbox"/>

Specifically describe how the checked factor contributed to the occurrence (point form) (mandatory if box ticked)

Individual factors (Tick all that apply)					
Fatigue	<input type="checkbox"/>	Stress	<input type="checkbox"/>	Peer pressure	<input type="checkbox"/>
Body size or strength	<input type="checkbox"/>	Personal event	<input type="checkbox"/>	Workplace distraction / interruption	<input type="checkbox"/>
Memory lapse (forgot)	<input type="checkbox"/>	Situational awareness (failed to identify hazard or risk)	<input type="checkbox"/>	Time constraints	<input type="checkbox"/>
Failure to adhere to policies or procedures	<input type="checkbox"/>	Job / task experience	<input type="checkbox"/>	Physical health / medical condition (hearing / sight / other)	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>				
Specifically describe how the checked factor contributed to the occurrence (point form) (mandatory if box ticked)					
Leadership / supervision (Tick all that apply)					
Identify what leadership or supervision factors were relevant or contributed to the incident occurrence					
Planning / organisation of task	<input type="checkbox"/>	Prioritisation of task	<input type="checkbox"/>	Delegation of task	<input type="checkbox"/>
Unrealistic attitude or expectation	<input type="checkbox"/>	Amount or availability of supervision	<input type="checkbox"/>	Responsibility not assigned to task	<input type="checkbox"/>
Communication of requirements	<input type="checkbox"/>	Coordination of task	<input type="checkbox"/>	Workload management	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>				
Specifically describe how the checked factor contributed to the occurrence					
Organisational/culture factors (Tick all that apply)					
Identify if any organisational / organisation cultural factors were relevant o the incident.					
Provision of resources – people	<input type="checkbox"/>	Provision of resources – other	<input type="checkbox"/>	Corporate change or restructure	<input type="checkbox"/>
Previous corrective / preventive actions or other audit findings	<input type="checkbox"/>	Normal or accepted practice	<input type="checkbox"/>	Complacency with work processes	<input type="checkbox"/>
Other I&S policies or directives (specify)	<input type="checkbox"/>	Conflicting policies or procedures	<input type="checkbox"/>	Risk / hazards not properly identified	<input type="checkbox"/>
Financial constraints	<input type="checkbox"/>				

Specifically describe how the checked factor contributed to the occurrence



Transport
for NSW

Infrastructure & Services Environmental Management System Framework



Release 9.0

Document Control

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Transport
for NSW

Infrastructure & Services Environmental Management System Framework



Release 9.0

1 Introduction

This environmental management system (EMS) manual sets out the approach of Infrastructure and Services I&S) to environmental management throughout the lifecycle of I&S projects. The EMS applies to all I&S employees and contractors and all I&S projects, services and corporate activities. I&S projects include construction and replacement of transport infrastructure, procurement and disposal of vehicles, vessels and rolling stock, and installation of technology and system upgrades.

The I&S EMS operates within the framework of the I&S Divisional Management System (DMS) and the EMS procedures and processes are integrated with this overarching system.

Appendix 1 presents the QMS structure including key processes. The I&S EMS is embedded into this DMS system and follows the same structure and numbering protocol.

The I&S EMS is consistent with the requirements of the ISO14001:2004 Standard and includes a commitment to sustainable development, continual improvement, prevention of pollution, policy commitments, objectives, goals and targets and identifies I&S regulatory and operational management requirements. Appendix 2 presents an overview of the EMS manual and its compatibility to ISO14001:2004.

Following the EMS requirements set out in ISO14001:2004 the EMS Manual comprises:

Environmental Policy and Vision (section 2)

Planning (section 3), including:

- aspects, impacts and risks
- project screening assessment, risk assessment tools and templates
- general legal compliance, project legal compliance tracking and reporting

- objectives and targets including strategic plan and sustainability

Implementation and Operation (section 4) including:

- resources, roles, responsibility and authority
- competence, training and awareness
- communication, leadership and governance
- document management

Operational Control (section 5) including:

- contract management
- sustainable design guidelines
- planning and development
- environmental impact assessment
- environmental management
- project completion, asset handover and vesting
- emergency preparedness and incident response

Checking (section 6), including:

- monitoring and reporting (inspections, environmental determinants)
- evaluation of compliance (audit, corrective and preventative actions, Lessons Learned, and Hazard Alerts)

Management Review (section 7) of the Management System.

The EMS Road Map in Figure 1 sets out the key parts to the I&S EMS to be applied across the business and is a series of interactive buttons that link to specific sections in this manual and associated EMS documents. It has been developed to facilitate navigation of the EMS for all users based upon their specific project needs and/or corporate responsibilities. The interactive buttons are grouped in a way that is intuitive for

our business and generally follows the structure of ISO14001:2004. The headings and numerical reference in the road map below are those headings and section numbers taken from ISO14001:2004.

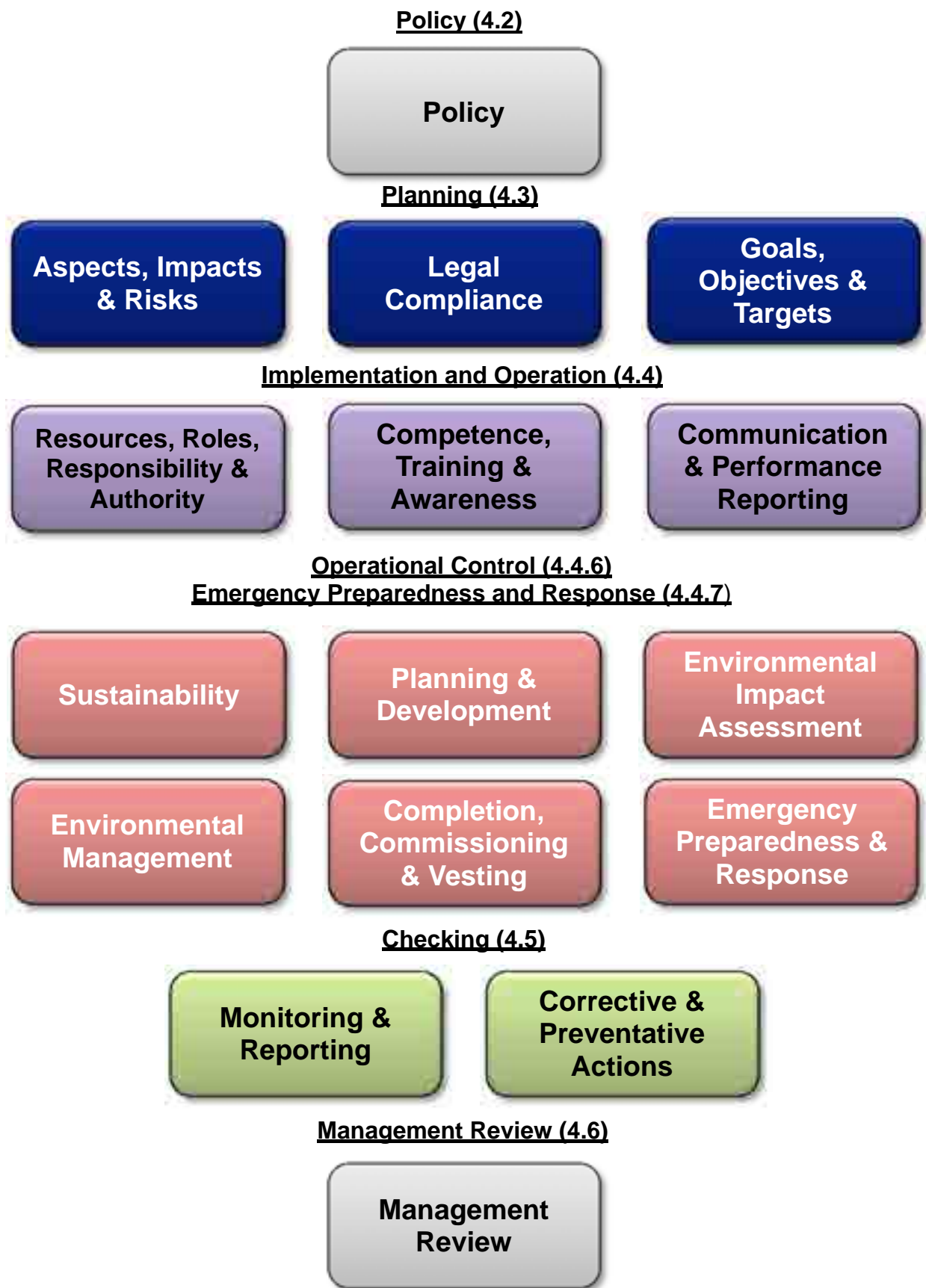


Figure 1. EMS Road Map

2 Policy & Vision

2.1 Statement of Commitment

The I&S Environmental Statement of Commitment (SoC) applies to all I&S activities and projects and meets the requirements of ISO14001:2004. The SoC is based on the [TfNSW Environment and Sustainability Policy Statement](#) and has been reviewed and benchmarked against other similar government and industry policies.

The I&S [Environmental Statement of Commitment – 1TP-PO-002](#) is the document which defines and drives the I&S approach to environmental management and sustainability and sets out the key I&S environmental management commitments.

The policy demands that a comprehensive system of environmental protection be established and maintained which addresses regulatory obligations, risk identification, assessment and management, resource conservation and pollution prevention, sustainability and climate change. The SoC also identifies a commitment to continual improvement by setting objectives, goals and targets, incident management and tracking, training, stakeholder engagement, and purchasing.

This manual sets out how the I&S EMS translates SoC requirements into practical applications across our projects.

2.2 Vision

The Planning and Environment Services (PES) Team Vision is a key element of the I&S PES Strategic Plan (refer 3.3.1). It provides a point of reference for PES within I&S and articulates in simple terms the PES approach to doing business at I&S:

“As leaders in planning and environment we are integral to the development and delivery of public transport infrastructure and assets. We work as a collaborative team to provide:

- *Trusted technical advice*
- *Sustainable outcomes*
- *Innovative solutions”*

The vision is reviewed as part of the Strategic Plan.

3 Planning

The planning element of the I&S EMS sets out the footprint and determining factors of the I&S business in terms of environmental management, environmental planning and sustainability. The I&S PES risk framework includes the key elements outlined below.

3.1 Aspects, Impacts and Risk

Aspects, impacts and risk are identified and managed using the I&S PES risk framework, based on the overarching requirements of TfNSW and I&S risk policies, standards and processes.

3.1.1 [Project Screening Assessment](#)

The [Planning & Environment Project Screening Assessment – 4TP-FT-355](#) is to be used when projects are first handed to I&S. This document provided an initial high-level overview of the project and documents how key elements of the EMS will apply and the resources that are required for the project including:

- The pathway for environmental impact assessment
- Key aspects, impacts and risks

- Specific regulatory approvals and key dates critical for the project
- Allocation of PES resources
- Need for an internal/external Environmental Management Representative (EMR)
- Representation of the project in the I&S PES compliance management system

The Project Screening Assessment is completed by the PES Senior Managers in consultation with the Principal Manager(s) and is provided to the I&S planning or environmental resource allocated as responsible for the project's ongoing risk tracking and communication. This document is linked with the [Planning & Environment Project Handover Checklist - 4TP-FT-354](#) that is completed as it proceeds through the I&S project cycle.

3.1.2 [Risk Assessment](#)

A risk assessment of the project, change or aspect in question must be completed when it becomes the responsibility of I&S PES team and must be reviewed and updated when the project becomes sufficiently changed and/or when the project is handed over to another team at I&S or the client or another organisation. The [Environmental Risk Assessment Procedure – 3TP-PR-206](#) sets out the requirements for PES environmental related risk assessments.

The [Environmental Risk Assessment Template – 3TP-FT-216](#) is to be used by PES for the purposes of identifying environmental risks and to identify those risks that are the responsibility of I&S. The template is used to document both who is responsible for the management of the risk and how this risk will be managed. The completed environmental risk assessment templates are provided to the PES environmental compliance manager,

and used to populate the Aspects, Impacts and Risks Library and keep this library up to date with I&S aspects and impacts as per the requirements of ISO14001:2004.

3.1.3 [Aspects, Impacts and Risks Library](#)

The [Environmental Aspect, Impact and Risks Library – 9TP-FT-239](#) identifies both I&S project and office aspects and impacts as required by ISO14001:2004 and also provides a reference library of identified risks across I&S projects.

The Aspects, Impacts and Risks library is exactly compatible with the environmental risk assessment template and enables relevant library risks to be directly copied into the risk assessment template in order to expedite the risk assessment process.

The library is populated by the I&S Compliance Manager with risks that are identified from completed project environmental risk registers, as required by the [Environmental Risk Assessment Procedure – 3TP-PR-206](#) and so building a database of key environmental and planning related aspects, impacts and risks across the PES business.

3.1.4 [PES CURA Risk Register](#)

This is a risk register that identifies I&S risks both from a corporate and project level. These are identified risks that are rated high and above, and / or need to be monitored and managed at a corporate level from a business liability perspective. The CURA risk register is updated at regular intervals in accordance with the requirements of the I&S [Project Risk Management – 3TP-PR-086](#).

The CURA risk register is updated using the information from PES project environmental risk registers, the [Environmental Aspect, Impact and Risk Library – 9TP-FT-239](#) and from knowledge and experience of the Principal Managers and the Technical Director PES. This risk register is used by executives at I&S to monitor and manage more serious corporate risk and liability matters.

3.1.5 [Other Environmental Risk Assessment Requirements](#)

Other important documents or processes that require an assessment of environmental and related risks include:

- INX incident management system where each incident entry requires an assessment of risk using the I&S risk management procedure: [Project Risk Management – 3TP-PR-086](#).
- [TSR E](#) requires contractors to undertake a comprehensive and site specific environmental risk assessment. However, there is no requirement for contractors to use I&S methodologies).
- I&S compliance reporting applies an assessment of risk using the I&S risk management procedure: [Project Risk Management – 3TP-PR-086](#) for all environmental and planning non-compliances identified on a I&S project.
- The I&S [Project Development Standard – 4TP-ST-170](#) requires an environmental risk assessment to be completed, for which the [Environmental Risk Assessment Template – 3TP- FT-216](#) is to be used by PES employees to identify environmental and related risks at an early stage in the project development.

3.2 Legal Compliance

A wide range of environmental and planning laws and regulations apply to I&S and the projects that it is responsible for delivering. I&S has a family of reference documents that are used to identify the legal and regulatory obligations of I&S at a corporate and project level. The project-specific obligations are initially identified during the planning and development phase of a project (refer 5.3) and are considered in detail as part of the environmental impact assessment (refer 5.4).

3.2.1 [Legal Registers](#)

I&S is committed to complying with all applicable environmental legislation. The environmental regulatory requirements that apply to I&S's activities and services are identified in the following documents, which are updated on a quarterly basis by an external legal firm:

- [Summary of Environmental Legislation Notification Requirements – 2TP-SD-019](#)
- [Summary of Commonwealth and NSW Environmental Legislation – 2TP-SD-021](#)
- [Summary of Legislative Approval and Consent – 2TP-SD-022](#)

Where legislative or other important changes are identified and are required to be communicated to the business the procedure [Changes to Planning and Environmental Legislations, Regulations and Aspects – 9TP-PR-067](#) is to be followed.

I&S also adheres to the requirements of non- legislative NSW Government requirements including Premiers Memoranda and Circulars. The list of these requirements that are relevant to the EMS and is updated quarterly by the I&S Compliance Manager review of released government circulars and included in the:

- [Summary of Mandatory and Voluntary Requirements – 2TP-SD-020](#)

A supporting document titled [EMS Register of Other Requirements – 9TP-SD-059](#) outlines other requirements that are not specified in the abovementioned documents.

3.2.2 [Project Compliance and Reporting](#)

All I&S projects that operate to a set of conditions of approval or an environmental protection license are required to follow the tracking and reporting process for environmental compliance. This process requires that a compliance report is provided to the I&S Executive and management team that outlines key compliance risk and activities and actions to mitigate these risks. I&S has a software package that tracks compliance for each project, and is updated on a quarterly basis. A compliance report is prepared using the compliance software also on a quarterly basis, when the projects have updated their entries in the compliance software. This report is prepared and presented for endorsement by the I&S Deputy Director General.

When a new project becomes the responsibility of I&S, the [Planning & Environment Project Screening Assessment – 4TP-FT-355](#) is used to identify how each project is represented in the compliance software. See section 3.1.1.

Where an environmental management representative (EMR) (either an internal EMR using a I&S employee or an independent / external EMR), is allocated to a project, they are responsible for monitoring compliance on behalf of I&S and validating project compliance using the I&S compliance software in accordance with the compliance procedures below and the [Environmental Management Representative Guideline – 5TP-ST-050](#).

The procedure for reporting environmental compliance for project specific requirements is covered by a suite of documents as follows:

- [Managing Planning and Environmental Compliance – 9TP-PR-068](#) is the overarching document that details the roles, responsibilities and requirements for setting up, completing and reporting on project compliance to senior management and TP executive.
- [Environmental Compliance Management – 9TP-PR-064](#) sets out the main procedural requirements for identifying the compliance tracking needs for a project
- [Environmental Compliance Reporting Process – 9TP-PR-062](#) sets out the main procedural requirements for completing the compliance tracking process.

3.3 Objectives, Goals and Targets

PES has a number of key documents that describe the objectives, goals and targets for different aspects of the I&S business and its role within the TfNSW business cluster. Documents that provide the strategic direction for I&S PES include:

- TfNSW 2012 – 2017 Corporate Plan – “Connections”. Key elements include energy management, environmental sustainability and minimising the impact of transport on the environment.
- Transport Projects Business Plan 2014-2015. Key elements include providing and promoting sustainable transport options, with sustainability considerations as part of the procurement process and sustainability embedded early in the project lifecycle. Part of the Transport Projects Business Plan is a series of Key Performance indicators (KPI’s) for each operational division of I&S.

I&S technical services group’s KPIs include:

- responsibilities relating to planning approval
- minimising environmental and community impact and Integration of sustainability

tools in project delivery

- development of processes that deliver sustainable procurement, and
- a zero target for major environmental incidents or penalty infringements

3.3.1 Strategic Plan – Goals and Targets

The [Planning and Environment Services Strategic Plan 2014 – 1TP-SD-095](#) is developed annually and reviewed every six months through workshops to which all PES employees are invited to attend. The strategic plan is a requirement of the I&S Environmental Policy and is the way I&S meets its obligations under the ISO14001:2004 requirement for environmental objectives and targets.

The Strategic Plan identifies the key objective areas that the PES team will focus on over a 12-month period to enable continual improvement. Each objective area has associated goals and targets, an objective area team leader responsible for delivery and a team to assist with implementation of required actions. The team leader and the team are generally employees drawn from the PES team, however may include representatives from other areas of I&S where the team leader determines that this would be beneficial.

A working group with representation for each current objective area meets regularly to discuss report on progress against targets and to communicate key management matters. The progress of the [Planning and Environment Services Strategic Plan 2014 – 1TP-SD-095](#) and performance against objective areas is reported in the PES team meeting and the internal PES monthly Newsletter.

3.3.2 I&S Sustainability Targets

Our approach to sustainability is based on the [Transport Project's Sustainability Framework](#), which aims to deliver the NSW Government's environmental and sustainability agenda across the Transport Cluster of which I&S is a part. [I&S's Sustainability Framework: Key Performance Indicators and Targets](#) sets out both corporate and project level sustainability targets to be applied from 2013 to 2015.

Sustainability targets address eight themes:

- 1) Energy Management
- 2) Pollution Control
- 3) Climate Change Resilience
- 4) Resource Management
- 5) Biodiversity
- 6) Heritage
- 7) Liveable Communities
- 8) Corporate Sustainability

Linking operational environmental management at the project level and responding to the [Transport Projects Division Sustainability Framework: Key Performance Indicators and Targets](#) are the [NSW Sustainable Design Guidelines – 7TP-ST-114](#) which are applied typically at the feasibility and early design development stage of a project.

The I&S performance against the stated sustainability targets is reported internally to the I&S Executive annually.

3.3.3 Sustainable Procurement

I&S has developed a [Sustainable Office Procurement – 7TP-ST-145](#) which sets out the key social and environmental considerations in the procurement of materials, goods and services for projects, fleets and related assets. This document

sets out the tender requirements for all office and project procurement.

4 Implementation and Operation

The successful implementation of the EMS requires I&S commitment, competence and awareness at all levels. This is a function of the delegated roles and responsibilities, authorisations, training and awareness and appropriate communication at the right time and at the right level of the organisation.

4.1 Resources, Roles, Responsibility and Authority

Table 1 identifies the key management roles and responsibilities for the delivery of EMS-related functions across I&S. Other day-to-day operational business roles and responsibilities are described further in this document and in specific EMS documents.

A key aspect of the roles and responsibilities at I&S is that of [non-financial delegations](#) as laid out in the TfNSW Non-Financial Delegations Schedule. The authorisations in the non-financial delegations should be read in conjunction with the responsibility and authorisations table below.

Typical responsibilities in the non-financial delegations include:

- Determine planning approval documents (Principal Manager Planning and Development and Principal Manager Environmental Impact Assessment)
- Acceptance of environmental compliance records (Principal Manager Environmental Management)
- Approve contractor environmental management plans (Senior Manager Environment)

- Make applications under the *Heritage Act 1977* (Technical Director Planning and Environment Services)

Table 1 below also identifies the formal communication processes relevant to the particular role, which are utilized in the implementation of the EMS. For further detail on communication, refer to section 4.3.

**Table one – Responsibility and Authority –
Corporate Environmental Management**

Role	Activity	Communication Process
<p>I&S Deputy Secretary</p> <p>Executive Management Committee</p> <p>Health, Safety, Environment & Sustainability Council</p>	<ul style="list-style-type: none"> • Remain informed about PES performance and compliance in all areas of I&S operations, including risk and liability • Provide leadership, direction and governance on planning, environment and sustainability matters at I&S • Represent I&S in planning environment and sustainability with other agencies and stakeholders • Provide information on strategic matters, new projects and changes to the I&S business which may have an impact on the PES area of operation • Approve PES Policy documents 	<p>Executive Meetings</p> <p>Management Meetings</p> <p>Significant Issue papers</p> <p>Monthly Report</p>
<p>Director Program Management Office</p>	<ul style="list-style-type: none"> • Remain informed about PES Corporate, Programme and Project performance and compliance, including risk and liability and provide direction in regards to these matters • Approve PES EMS Standards and other key or strategic documents 	<p>TSG Management meetings</p> <p>Issue papers</p> <p>Monthly Report</p> <p>TSG Information sessions</p>
<p>Director Planning and Environment services</p>	<ul style="list-style-type: none"> • Ensure resources are allocated to projects and programmes according to the risk profile • Provide leadership and direction in the development and review of the I&S EMS including: management review and performance reporting, strategic planning, goals and targets, sustainability strategy and implementation, continual improvement and compliance trends and management • Ensure that appropriate PES related training programmes are developed and delivered to I&S • Respond to PES corporate and programme level risks and liabilities, including incidents and emergencies • Approve I&S PES EMS documents and ensure that the EMS is established, maintained and reviewed in accordance with business requirements 	<p>TSG Management meetings</p> <p>PES Associate Directors meetings</p> <p>PES Team meetings</p> <p>EMS Working group</p> <p>Strategic Plan Working Groups</p> <p>Issue papers</p> <p>Compliance reports</p> <p>Monthly Report</p> <p>TSG information sessions</p> <p>Quality approvals process</p>
<p>Associate Directors</p>	<ul style="list-style-type: none"> • All Principal Managers reporting to the Technical Director Planning and Environmental Services have the following common roles and responsibilities: • Develop and maintain systems and processes that provide the required standards for operational control in accordance with TP Environmental Policy • Contribute to, review and approve all new and amended EMS documents in accordance with their area of business operations • Provide direction and leadership, including the establishment, review and continual improvement of the I&S EMS 	<p>PES Associate Directors Meetings</p> <p>PES Team meetings</p> <p>EMS Working group</p> <p>Strategic Plan Working Groups</p> <p>Issue papers Monthly Report</p>

Table 1 – Responsibility and Authority – Corporate Environmental Management, continued

Role	Activity	Communication Process
Associate Directors (cont.)	<ul style="list-style-type: none"> Identify, procure and allocate resources necessary to manage project delivery depending on the project risk profile and associated aspects and impacts Maintain systems, processes and practices that enable, track and report on legal compliance and appropriately respond to non-compliance Respond to and manage the communication of PES project incidents and emergencies in accordance with project specific roles and responsibilities Ensure that appropriate awareness and training programmes are developed and delivered in accordance with their area of business operations Ensure that communication is maintained with key stakeholders in accordance with their area of business operations, including regulatory authorities and other TfNSW and Government entities 	<p>TSG Information sessions</p> <p>Quality approvals process</p>
Associate Director Sustainability, Planning & Development	<ul style="list-style-type: none"> Provide direction, leadership, communication and the development and implementation of the TP Sustainability Strategy Oversight and coordination of the implementation, maintenance and continual improvement of the EMS Provide leadership and direction on corporate EMS requirements and programs Sustainability advisor to I&S project development and project delivery phase Report on I&S performance against sustainability indicators on a regular basis 	<p>Executive Sustainability Performance Report</p>
Associate Director Sustainability, Planning & Development, Associate Director Environmental Impact Assessment	<ul style="list-style-type: none"> Provide strategic planning advice in the concept and development stages of projects including risk and liability assessment, fatal flaw analysis, concept and options assessments, preliminary EIA, sustainability strategy and options, stakeholder identification and communication Liaise with TfNSW Planning and Programs Division on projects that are in development and to be handed to I&S for management and delivery Identify and advise on aspects, impacts and risks at the planning and development stage of a project and mitigation measures proposed to manage adverse impacts 	<p>Issue papers</p> <p>Significant issue papers</p> <p>EMS Strategic Planning and Project Development and associated documentation</p> <p>Project meetings</p>
Associate Director Environmental Impact Assessment	<ul style="list-style-type: none"> Identify and advise on aspects, impacts and risks at the EIA stage of a project and document mitigation measures for adverse impacts Identify and document the statutory/regulatory planning pathway for each project and any required statutory requirements or approvals Undertake project EIA, including modifications and associated assessments, and deliver planning approvals Manage stakeholder communication through the EIA process 	<p>Issue papers</p> <p>Significant issue papers</p> <p>EMS Impact Assessment and associated documentation</p> <p>Project meetings</p>

Table 1 – Responsibility and Authority – Corporate Environmental Management, continued

Role	Activity	Communication Process
Associate Director Environmental Management	<ul style="list-style-type: none"> Identify and advise on aspects, impacts and risks during the delivery stage of a project Identify and advise on the compliance obligations during project delivery, including statutory approvals, legal and EMS requirements Supervise reporting on contractor and project performance for I&S goals, objectives and targets Provide leadership and direction on project environmental management and monitoring, including inspections, compliance tracking, incident management and emergency preparedness and response Liaise with and advise I&S audit team on auditing strategies and relevant issues Coordinate knowledge sharing and continual improvement process for environmental management Advise on vesting and handover of project environmental management information to client/operator 	<p>Issue papers Significant issue papers</p> <p>EMS Environmental Management and Project Delivery and associated documentation</p> <p>Project meetings</p>
Senior Manager Systems and Sustainability	<ul style="list-style-type: none"> Develop and maintain systems and processes that provide the required standards for operational control in accordance with TP Environmental Policy. Work with the PES team to establish, maintain, review and upgrade EMS in accordance with ISO14001 and identified business needs. Report corporate and project performance in relation to objectives, goals and targets and other key performance indicators Manage and administer the compliance management system (CMS) and incident reporting systems (IMS) Annual review of PES training calendar Ensure that appropriate EMS related training programmes are developed and delivered and continuously improved 	<p>EMS working group</p> <p>PES Monthly Report.</p> <p>Strategic Plan working group</p> <p>Reports for CMS, EMS and IMS.</p>
Compliance Reporting Manager	<ul style="list-style-type: none"> Administer and manage assistance with all aspects of the EMS and the INX system Prepare reports and analysis of trends from the INX system and sustainability data and information as required. Administer key training records. 	<p>Monthly Reports and ad hoc reports</p>
Senior Manager Environment or Planning	<ul style="list-style-type: none"> Complete impact assessment documentation suitable for internal or external planning approval Undertake risk assessment and identify and monitor risk management activities for projects <p>Advise TP project team and Delivery Partner(s) on environmental management obligations, including EIA, statutory and TP EMS requirements</p>	<p>EMS working Group</p> <p>PES Monthly Report</p> <p>Strategic Plan working group</p>

Table 1 – Responsibility and Authority – Corporate Environmental Management, continued

Role	Activity	Communication Process
<p>Senior Manager Environment or Planning (cont.)</p>	<ul style="list-style-type: none"> Identify and monitor legal compliance on projects, report to project line management on non-compliance matters and associated risks Assist with stakeholder engagement on projects as required or instructed by Project Managers or Project Communications team. Identify training requirements for the project team and undertake training as required or indicated by line managers Apply the TP sustainability principles to TP projects as appropriate Administration, monitoring and reporting on the performance of environmental management contracts including external environmental management representatives and other environmental management or related specialist contractors on designated projects. Delivery of projects and programmes environmental planning and sustainability objectives, goals and targets in line with TfNSW and TP requirements. 	<p>Reports for EMS</p>
<p>Environment and Planning Manager or Officer</p>	<ul style="list-style-type: none"> Assist with the completion of impact assessment documentation suitable for internal or external planning approval Assist with risk assessment identification and monitor and report on risk management activities for projects Advise TP project team and Delivery Partner(s) on environmental management obligations, including EIA, statutory and TP EMS requirements Assist with the monitoring and checking of legal compliance on projects and report to project line management on non-compliance matters and associated risks Assist with stakeholder engagement on projects as required or instructed by Project Managers or Project Communications team. Identify and undertake training as required or indicated by line managers Assist with the application of TP sustainability principles to TP projects as appropriate Assist with the monitoring and reporting of performance of environmental management contracts including external environmental management representatives and other environmental management or related specialist contractors on designated projects. Assist with the delivery of project and program environmental planning and sustainability objectives, goals and targets in line with TfNSW and TP requirements. 	<p>EMS working Group PES Monthly Report Strategic Plan working group Reports for EMS</p>

4.2 Competence, Training and Awareness

I&S has identified and documented the skills, awareness knowledge and understanding that employees need to have in order to perform tasks on its behalf.

4.2.1 Competencies and Performance Review

The competencies and skills requirements for each TfNSW employee are set out in their position descriptions. Employee performance and development reviews are undertaken in accordance with the Transport Projects Division Performance Development System and this process contributes to the assessment of an employee's ongoing competency for the role. It also provides opportunities for employees and their managers to identify and determine specific training needs. Annual and mid-year reviews are conducted for all employees.

PES maintains a Skills Matrix (Desksite number 2129501) that sets out the competence and skills for each I&S PES employee. It is used to identify expertise for particular projects and provision of training and to highlight departmental technical gaps. The skills matrix also identifies opportunities to develop the skills and experience of PES employees to help foster career satisfaction and diversity. The skills matrix is reviewed and updated on a six-monthly basis.

4.2.2 Annual Training Calendar

PES has undertaken a training needs analysis, based on an assessment of the level of specific planning, environment, sustainability and other relevant knowledge and competency required to perform certain key roles within the organisation. The training needs analysis based on the PES Skills Matrix was used to derive the [Training Calendar for Planning and](#)

[Environment Services – 6TP-SD-072](#) which identifies training courses to be delivered across the business at various times throughout the year.

The Skills Matrix is updated on a six-monthly basis and is a self-assessment of competency in a range of planning and environmental management skill areas and other general management skill areas.

The processes for facilitating training and reviewing training courses and the Training Calendar are provided in the [Environmental Training Procedure – 6TP-PR-205](#).

4.2.3 Project Training and Awareness

Project specific environmental management competencies and awareness requirements are set out in the contracts applicable to the project and the Project Management Plan, along with the suite of environmental management plans and risk assessments relevant to the project. Where I&S identifies a need for specific training that may be provided to the Delivery Partner, this is specified in [TSR](#). The Delivery Partner is responsible for identification and provision of all other project specific environmental management training for their employees.

4.3 Communication and Performance Reporting (Leadership and Governance)

I&S has a number of established forums to allow Senior Managers and Executive to understand and have control of operational business matters including: project and corporate standards of performance, audit and certification findings, corrective actions and legal compliance, stakeholder matters and the management and communication thereof, changes to the business and the function and efficacy of I&S management systems.

Forums that are relevant to the communication and management of the EMS include the following:

- 1) TfNSW Executive Health, Safety and Environment Committee meetings where the I&S Planning and Environmental Services (PES) monthly performance report is circulated
- 2) Executive Meetings where PES is represented by the General Manager of the I&S Technical Service Group and PES matters included on the agenda as required.
- 3) TSG meetings where PES is represented by the Technical Director PES
- 4) PES internal meetings, PES departmental meetings
- 5) EMS Working Group Meetings
- 6) Strategic Plan Working Group Meetings

4.3.1 I&S PES Monthly Performance Report

This report provides information on incidents complaints, sustainability indicators, legislation updates and other key PES business functions performed. This report is provided to TfNSW Executive Health, Safety and Environment Committee, I&S Executive Committee, I&S Management Committee and PES. The procedure [Planning and Environment Services Monthly Reporting – 9TP-PR-244](#) sets out the requirements and timing of the monthly report.

4.3.2 EMS Review Report

The PES EMS Working Group addresses the continual improvement and enhancement of the I&S EMS. The EMS review report is generated for I&S Principal Managers identifying required actions and the implementation thereof. This document can be accessed at Desksite number 3391838.

4.3.3 Weekly Safety and Environmental Incident / Event Report

This report is provided to I&S Directors by the Technical Director Safety and Quality and identifies all incidents, including environmental incidents, and associated corrective actions on all I&S Projects that occurred and were logged into the system in the previous week. PES representatives including Principal Managers and the Senior Manager Sustainability and Systems are also included in the distribution list.

4.3.4 Environmental Compliance Report

An environmental compliance report is provided to the Deputy Secretary and other I&S Executive and management employees on a quarterly basis. This report identifies any non-compliance that has occurred on I&S managed projects in relation to all statutory Conditions of Approval (CoA) and environmental protection licenses (EPL). An assessment of risk is provided in these reports on each area of non-compliance. This report is produced in accordance with the [Environmental Compliance Reporting Process – 9TP-PR-062](#) and further detail is provided in section 6.1.4.

4.4 Document Management

EMS documents and the required version control and approvals process are managed by I&S quality department and the EMS is part of a wider quality management system administered by I&S and dedicated PES staff. The key documents in this regard that identify the required processes are:

- [QMS Document Development and Review – 7TP-PR-124](#) sets out the QMS framework and key documents, document development process and lifecycle

Documents and records are managed by the I&S document management system Desksite, which is structured so that each project and functional area has a separate directory. Corporate documents are saved to the I&S Management Files directory. PES folders are established under the **09M Planning and Environment folder** within this directory. Project directories are included in the I&S Program directory and each project directory includes folders for PES documents, generally **09 Planning and Environment** and **15 Environmental Management**.

Projects may also establish a separate project-specific document management system.

5 Operational Control

During the lifecycle of any project managed by I&S there are two key internal documents that are used to track key decisions with regard to how the EMS applies and will be implemented on each project. These are the Project Screening Assessment (see section 3.1.1) and the Project Handover Checklist.

The [Planning & Environment Project Handover Checklist – 4TP-FT-354](#) is used to check the status of the EMS requirements associated with the project and allocate responsibility for any requirements that have not yet been completed or have been identified as the project moves forward. The checklist is generally completed when a project transitions from one stage to another as follows:

- planning and development to EIA
- EIA to environmental management (delivery) phase.

5.1 Contract Management

The key requirements for environmental management on I&S projects are included in the TfNSW Standard Requirements [TSR E Environmental Management – 5TP-FT-304](#) and associated [Annexure A](#). TSR E describes the minimum mandatory environmental management requirements and processes with which I&S Delivery Partners must comply and how the I&S EMS shall be applied to the project. [TSR](#) is part of and must be read in conjunction with the project contract. [TSR Annexure A](#) provides for scalability and flexibility to add additional environmental management requirements depending upon the size, scale, impacts and risks of each project.

[TSR E](#) is generally prepared by the I&S Project Manager in consultation with the PES Senior Manager and EPM / EPO allocated to the project. Consultation with the Sustainability team is also required to determine applicable sustainability requirements for the project. [TSR](#) is generally reviewed by the relevant Project Director and the Principal Manager Sustainability and Systems and approved by the Principal Manager Environmental Management.

For all other contract related matters, the [Contract Manual Guideline – 5TP-ST-077](#) should be adhered to.

5.2 Sustainability

Corporate sustainability objectives and targets, project procurement and energy management form an important part of the sustainability picture for I&S. These aspects of our project and corporate role in project development and delivery are described in section 3.3 above.

5.2.1 Sustainable Design Guidelines

For development and construction projects, the following documents should be used to shape the developing project design and identify the key sustainability elements that will be incorporated as the project progresses.

- [NSW Sustainable Design Guidelines – 7TP-ST-114](#)
- [NSW Sustainable Design Guidelines Checklist version 3](#)
- In addition, as project design is developed the [Greenhouse Gas Inventory Guide for Construction Projects – 7TP-ST-035](#) is used to identify the greenhouse gas baseline and projected decreases in greenhouse emissions in the design phase development.

5.3 Planning and Development

Projects managed by Planning and Development are typically those that are undergoing scoping and project definition and require guidance on environmental and planning risk and liability assessment, sustainable procurement strategy, strategic planning, options assessment, feasibility, concept design and legal framework definition. Advice is provided early on in the project lifecycle and typically for infrastructure development and construction projects. Advice at this stage is also related to scope and specifications for procurement projects related to vehicles, vessels and rolling stock.

At the planning and development stage, PES typically works closely with TfNSW Planning and Programs division and I&S Project Development section, who administer the [Project Development Standard – 4TP-ST-170](#), which is the overarching guideline document for I&S at this stage, including responsibilities for

sustainability assessment, risk assessment and impact assessment.

5.3.1 Sustainability

Refer to Section 5.2 above.

5.3.2 Risk Assessment

Refer to Section 3.1 above.

The initial Project Environmental Risk Assessment should identify the legal framework that will govern the project, no matter what the project scope and including procurement projects and how it will apply to the project as it develops, given the information available. The documents as described in section 3.1 above should be used to complete the environmental risk assessment at this stage of the project.

5.3.3 Legal Compliance

Refer to section 3.2 above.

The identification of the statutory planning pathway, and or the statutory approvals process or options applicable to the project should be identified at this stage. This includes the full range of projects at the development stage including procurement of vehicles, vessels and rolling stock and infrastructure development and construction.

I&S [Guide to Planning and Environment Approval – 2TP-ST-051](#) provides detailed guidelines and requirements on the statutory planning process and I&S duties as a determining authority.

5.3.4 Technical Guidelines

I&S has a wide variety of technical guidance documents (refer to 5.5.6) that are of relevance in the planning and development stage. However, the following technical

guidance documents are of particular relevance to this stage of the works:

Where vegetation is required to be removed: [Vegetation Offset Guide – 9TP-ST-149](#) and the associated [Vegetation Offset Calculator – 9TP-SD-067](#).

Where surface or groundwater is to be affected and as part of an impact assessment: [Guide to Water Balance Studies – 9TP-SD-096](#).

Where construction works are involved and have the potential to generate noise: [Construction Noise Strategy – 7TP-ST-157](#).

5.3.5 [Stakeholder Engagement](#)

Stakeholder engagement begins at this stage and lays the groundwork for the rest of the project and will focus on identifying any stakeholders where early consultation is required. This may include authorities responsible for providing statutory approvals, other government entities with particular interests in the project, and representatives of affected communities.

Community engagement at this stage is undertaken in conjunction with the I&S Communications department, in accordance with TfNSW Standard Requirements TSR C - Communications.

5.4 Environmental Impact Assessment

Projects managed at the Environmental Impact Assessment phase are typically those with impact assessment and planning approval requirements in accordance with the NSW Environmental Planning and Assessment Act and related regulations. Critical inputs relating to the EMS process include:

5.4.1 [Sustainability](#)

Refer to Section 5.2 above.

5.4.2 [Risk Assessment](#)

Refer to Section 3.1 above.

The [Planning & Environment Project Screening Assessment – 4TP-FT-355](#) may have been completed at an earlier stage of the project and may require updating as the project progresses to reflect the increasing level of knowledge and information surrounding the project scope. In addition, the environmental risk assessment should be updated or developed to identify the main risk management methods to be employed for this phase of the project. This should be documented in the [Planning & Environment Project Handover Checklist – 4TP-FT-354](#).

5.4.3 [Legal Compliance](#)

Refer to section 3.2 above

1. Statutory Planning Pathway

The identification of the statutory planning pathway and the type of environmental impact assessment as defined by legislation is set out in the [Guide for Planning and Environment Approvals – 2TP-ST-051](#). This is a comprehensive step-by-step guide and provides template documents for the environmental impact assessment and planning approvals process. It includes the internal documents used by I&S in the role of determining authority.

The [Environmental Assessment – 9TP-PR-063](#) procedure identifies the required method of assessment, the approval and exhibition process and the organisation responsible for approvals. The required planning pathway is dependent upon the proposed impact and resultant risk of the proposed project.

[Planning Approval Process Documentation Checklist – 9TP-FT-195](#) provides a document to record the planning pathway chosen for a particular project.

2. Exempt Development

The [Checklist for Exempt Development under SEPP \(Infrastructure\) 2007 – 9TP-FT-111](#) is used to assess the statutory approvals required for a project that meets the requirements of the State Environmental Planning Policy (SEPP) Infrastructure.

3. Project Change

Where design changes are proposed for a project where an environmental impact assessment has been completed the [Checklist for Environmental Consistency Assessment – 9TP- FT-112](#) must be completed. This checklist identifies the degree of change to the design of a project and how this affects the existing environmental impact assessment. The checklist will advise the need for amendments to the original environmental impact assessment, or justify that there is no need to amend the existing environmental impact assessment or if a different statutory approvals process applies. The accompanying document: [Approval to Assess Design Change – 9TP-FT-213](#), provides the trigger for use of the consistency assessment.

4. Approvals and Determinations

As the statutory Determining Authority, the [Planning Approval Determination/Submission Report Template – 2TP-FT-348](#) is used by I&S to communicate the formal authorisation of the project to commence to the next stage.

The [Conditions of Approval Template – 2TP-FT-351](#) provides the standard template and minimum mandatory conditions of approval required for I&S projects that are self-determined under the Environmental

Planning and Assessment Act. The [Supplementary Conditions of Approval 2TP-FT-399](#) is a document which sets out a wider range of Conditions of Approval with standard wording that can be selected for self-determined projects. The Conditions of Approval contained in this document are those that are in addition to the minimum mandatory approval requirements. These additional requirements are categorised depending upon impact type and should be selected for each project according to the impact assessment and associated risk rating for the project activities.

In the case where minor works are required in order to progress the design phase or to complete the environmental impact assessment the [Pre-Construction Minor Works Approval – 9TP-FT-202](#) is used to allow these works to proceed.

5.4.4 Technical Documents

Technical documents should be considered during the environmental impact assessment stage to allow for these requirements to be included in the future delivery and operation of the project (refer 5.5.6). Of particular relevance to this stage of the works are the following technical guidance documents:

Where vegetation is required to be removed: [Vegetation Offset Guide – 9TP-ST-149](#) and the associated [Vegetation Offset Calculator – 9TP-SD-067](#)

Where surface or groundwater is to be affected and as part of an impact assessment: [Guide to Water Balance Studies – 9TP-SD-096](#)

Where construction works are involved and have the potential to generate noise: [Construction Noise Strategy – 7TP-ST-157](#)

In addition, as part of the environmental impact assessment process, an environmental control map (ECM) may be

required at this stage. The ECM identifies the main aspects and important features in regards to the environmental management of the site. The [Guide to Environmental Control Map – 3TP-SD-015](#) presents the requirements for this important document.

5.4.5 Stakeholder Engagement

Stakeholder engagement will focus on identifying key issues as part of the environmental impact assessment process in accordance with the requirements of the Environmental Planning and Assessment Act as set out in the [Guide to Planning and Environment Approval – 2TP-ST-051](#). Any previous engagement with key stakeholders should be reviewed and consultation carried forward to address identified issues as part of the EIA process.

Community engagement at this stage is undertaken in conjunction with the I&S Communications department, in accordance with the TfNSW Standard Requirements [TSR Communications and Community Liaison – 5TP-FT-333](#).

5.5 Environmental Management

The environmental management stage of the project lifecycle typically involves the delivery, completion, handover and vesting of the project. I&S's role in environmental management also includes the provision of advice and the development of specifications for the procurement of vehicles, vessels and rolling stock and technology projects.

5.5.1 Project Handover to Environmental Management

This is an important event in the I&S project lifecycle. The environmental risk assessment (Refer to Section 3.1 above) for the project must be updated as the delivery phase of the project commences and as it further develops through each project stage. The risk assessment at the initial handover stage should include all information and findings from the project environmental impact assessment and any other relevant environmental management or environmental risk documents pertinent to the project.

All relevant project documentation should be reviewed as part of the project handover, including the [Planning & Environment Project Screening Assessment – 4TP-FT-355](#), EIA, [Environmental Risk Assessment Procedure – 3TP-PR-206](#) - contract and [TSR](#) (if established). The handover must be documented using the [Planning & Environment Project Handover Checklist – 4TP-FT-354](#)

5.5.2 Environmental Management Representative

An EMR may be required by the Conditions of Approval to assist I&S with the supervision and verification of project environmental performance against the compliance and operational control requirements. Appointment and management of EMR's is undertaken in accordance with the [Environmental Management Representative Guideline – 5TP-ST-050](#) TP has established an EMR panel and the [Environmental Management Representative Panel Procedure - 5TP-PR-136](#) identifies the procurement process when an EMR is to be appointed from the panel.

The PES project representative (Senior Manager / EPM / EPO) must ensure that the EMR is engaged in a timely manner in line with the project schedule.

5.5.3 Early Works

In the case where early works are required prior to the commencement of construction the [Pre-Construction Minor Works Approval – 9TP-FT-202](#) is used to allow these works to proceed. Construction is defined in the Conditions of Approval for the project, including those activities that are not considered construction and thus may be undertaken as early works.

5.5.4 Review and Approval of Documentation

Where required by the contract and [TSR](#), or the Conditions of Approval, environmental management and sustainability documents produced by the Delivery Partner will require review and endorsement or approval by the EMR, I&S and / or the Director General, Department of Planning and Environment. The Conditions of Approval may also specify that documents be prepared in consultation with, or require endorsement or approval, from other government entities (e.g. EPA).

The PES project representative (Senior Manager / EPM / EPO) must assist and advise the project team to facilitate any reviews and endorsements / approvals as required.

5.5.5 Authority to Stop Work

The authorisation to stop work on a project based on the likelihood of significant risk or the potential for harm to occur is set out in the following procedure:

- [Stop Work Notice – 9TP-PR-082](#)

The procedure is triggered where illegal activities are observed or an incident likely to result in prosecution and it is the Principal Manager Environment who would recommend the works to stop in consultation with the Project Director.

5.5.6 I&S Technical Documents

In accordance with I&S Environmental policy, an approach to environmental management procedures and guidelines has been developed to address environmental aspects, impacts and risks. These documents should be applied to the project dependent upon the identified and potential project impacts and risks.

Water Management

- [Water Discharge and Reuse Guideline – 7TP-SD-024](#)
- [Approval to Discharge or Reuse Water – 9TP-FT-207](#)
- [Concrete Washout Guideline – 3TP-SD-112](#)

Noise Management and Monitoring

- [Construction Noise Strategy – 7TP-ST-157](#)
- [Out-of-Hours Work Application Form \(EPL Requirements\) – 9TP-FT-080](#)
- [Out-of-Hours Work Application Form \(EPL Variation NOT Required\) – 9TP-FT-079](#)
- [Register of Out-of-Hours Work Applications – 9TP-FT-082](#)
- [Sound Measurement Field Data Form – 9TP-FT-150](#)
- [Rion NL-31 Sound Meter Calibration Procedure – 9TP-PR-015](#)
- [Sound Meter Calibration Register – 9TP-FT-151](#)

Flora and Fauna Management

- [Vegetation Offset Guide – 9TP-ST-149](#)
- [Application for Removal or Trimming Vegetation \(not identified in the Environmental Approval\) – 9TP-FT-078](#)
- [Fauna Management Guideline – 3TP-SD-113](#)
- [Vegetation Management Guidelines – 9TP-SD-111](#)
- [Weed Management and Disposal Guideline – 3TP-SD-110](#)

Chemicals Management

- [Pesticides Application Record form – 9TP-FT-160](#)
- [Chemical Storage and Spill Response Guidelines – 9TP-SD-066](#)
- [Site Chemical and Waste Storage Checklist – 9TP-FT-248](#)

Air Quality

- [Air Quality Management Guideline – 9TP-SD-107](#)

Heritage

- [Unexpected Heritage Finds Guideline – 3TP-SD-115](#)

5.5.7 Stakeholder Engagement

Consultation requirements with regulatory stakeholders (such as Environment Protection Authority, Department of Planning & Environment) may be specified in the Conditions of Approval for the project and any other licenses or approvals required for the project. Liaison may be undertaken by I&S or the Delivery Partner, as specified in the contract. The PES Senior Manager allocated to the project will generally lead or facilitate

consultation with the regulatory authorities. However, the relevant Principal Manager may lead consultation depending upon the matter to be addressed and the relevant regulatory authority involved. The TfNSW [non-financial delegations](#) set out the requirements for decision-making and regulatory authority engagement on projects.

Community engagement at this stage is undertaken in conjunction with the I&S Communications department, in accordance with the TfNSW Standard Requirements ([TSR](#)) [Communications and Community Liaison – 5TP-FT-333](#)

5.6 Project Completion, Asset Handover and Vesting

At the completion of the project, the closing out of project requirements is required, including conditions of approval, using the following documents:

- [Recommendation to Close out Conditions of Approvals, Licences and Permits at Completion of Construction – 9TP-FT-137](#)
- [Closure of Conditions of Approvals, Licences and Permits at the Completion of Construction – 9TP-PR-127](#)

Asset handover is the process by which I&S hands over the control of assets for their ongoing operation and maintenance, and not vesting which concerns the ownership of assets and related rights and liabilities, although the two are very closely linked in most circumstances. The required information and stages of asset handover is set out in the [Asset Handover - 4TP- ST-188](#)

The [Vesting Management Procedure](#) deals with the transfer of assets, rights and liabilities from I&S to an asset owner by a written order made by the Minister for Transport under Section 94 of the *Transport Administration Act 188 (NSW)*.

At the asset handover and vesting stage, all project specific operational and legacy documents must be provided to the owner / operator of the project.

Where there are operational requirements specified in the Conditions of Approval or elsewhere in the EIA documents or any other ongoing or latent requirements that need an allocation of responsibility, they must be included in the asset handover and / or the vesting documentation.

Information that would need to be considered in the asset handover and vesting process includes:

- Construction and operational environmental management documents: EIA, risk Assessment, CoA, EPL, other regulatory approvals and licences
- Operational requirements, such as ongoing environmental management monitoring and reporting
- Stakeholder engagement information and agreements
- Reporting to regulators formal or informal such as DP&E
- Lessons Learned either formal or informal
- Contractor environmental management records

5.7 Emergency Preparedness and Incident Response

5.7.1 [Crisis Management](#)

The TP [Crisis Management Procedure – 1TP-PR-008](#) sets out the guidelines for I&S Executive team to manage critical incidents. The procedure details the corporate level response to a designated crisis at I&S.

5.7.2 [Emergency Response Plans](#)

The Delivery Partner is required to develop an approach to emergency planning and response in accordance with the contract

In addition, the Delivery Partner is generally required to develop and implement a program of environmental incident simulation drills as part of the Project Construction Environmental Management Plan (CEMP).

5.7.3 [Pollution Incident Response Management Plan \(PIRMP\)](#)

Where a project is regulated by an Environment Protection License issued under the *Protection of the Environment Operations Act* (POEO Act), a PIRMP is required to be developed, implemented and tested in accordance with the *POEO Act*.

5.7.4 [Incident Reporting](#)

Incidents are recorded in the TfNSW's INX system. The system provides an end-to-end recording and reporting tool for all environmental incidents including risk assessment allocation and incident investigations. Where the INX software is not accessible or is inoperable, the paper based reporting system should be used: [Environmental Incident/Non-Compliance Report – 9TP-FT-101](#)

A step-by-step guide to the INX system is provided in the following document: [Guide to Environmental Incident Reporting - Using the Incident Management System – 9TP-SD-005](#)

The definition and classification of environmental related incidents and the notification requirements for environmental incidents is set out in [Environmental Incident Classification and Reporting – 9TP-PR-105](#). This document includes a general summary of required notifications to environmental regulatory bodies in the case of environmental incidents and other similar events. In addition, this document sets out the requirements for investigating incidents including a root cause analysis to be applied in the case of high-risk incidents.

6 Checking

This part of the management system sets out the requirements for checking, monitoring and reporting on project and corporate performance as well as corrective and preventative actions.

6.1 Monitoring and Reporting

Monitoring and reporting covers both the in-field measurements and equipment that I&S employs on projects, and the inspection and audit function that I&S maintains for all projects.

6.1.1 [Monitoring of Environmental Determinants](#)

I&S does not regularly engage in compliance monitoring of environmental determinants for regulatory or general purposes. However, where required, samples may be taken and processed for validation purposes, or to respond to a complaint or query.

I&S maintains a noise monitor which can be booked out and is subject to a calibration and checking process in accordance with the following documentation:

- [Rion NL-31 Sound Meter Calibration Procedure – 9TP-PR-015](#)
- [Sound Measurement Field Data Form – 9TP-FT-150](#)
- [Sound Meter Calibration Register – 9TP-FT-151](#)

6.1.2 [Site Inspections](#)

Site inspections are carried out on projects as identified by project schedules and needs. The I&S site inspection template is to be used by all employees where a site inspection undertaken in regards to environmental management: [Environmental Site Inspection Report Template – 9TP-FT-307](#). Inspections are also undertaken by the EMR (refer 5.5.2) on a regular basis (typically weekly) and reported to I&S in accordance with the EMR Guideline.

6.1.3 [Audit](#)

Project audits are managed and conducted by the I&S internal audit department using a collaborative approach to schedule audits throughout the year on a risk priority basis. The audit guidance documents used by the I&S external audit department include:

- [The Compliance and Assurance Standard](#)
- [The Compliance and Assurance Manual](#)

Regular internal and external compliance and ISO14001 certification audits are completed by the I&S internal audit department in accordance with an annually agreed audit schedule.

Audit reports containing required corrective and preventative actions are provided to I&S

PES Principal Managers for review and action.

PES uses the following procedures to track audit actions from the internal audit driven process:

- [Tracking of Internal Audit Actions – 9TP-PR-259](#)
- [Tracking of Project Audit Actions – 9TP-PR-121](#)

6.1.4 Evaluation of Compliance and Reporting

Where conditions of approval or an environmental protection licence (EPL) have been issued for a project, there is a requirement to report to I&S on the compliance with these requirements on a quarterly basis (refer section 3.2.2 above: Project Compliance and Reporting).

In addition to the project specific compliance and regulatory requirements that will be identified for each project individually, I&S has a procedure to assist with the provision of information required for the annual environmental protection licence return: [Guide to Environmental Protection Licence Annual Return – 2TP-SD-017](#).

6.2 Corrective and Preventative Actions

All corrective actions raised through inspections, audits or incidents, should be identified and tracked on a project specific environmental actions register [Environmental Action Register – 9TP-FT-236](#).

6.2.1 Lessons Learned, Environmental Alerts and Hazard Alerts

Lessons Learned, Environmental Alerts and Hazard Alerts can result from any situation or project scenario; however, the following events or project milestones are particularly important in this regard:

- Incident or a series of incidents of a similar nature or from the same Delivery Partner or project
- After a project is handed over to the client / operator
- Handover between project stages
- Stakeholder or community feedback
- Regulatory change or regulatory interest in a project
- Audit and inspection findings

A regular meeting is held to review incidents and events recorded in the Incident Management System database INX, involving the PES Principal Manager Environmental Management, Senior Manager Sustainability and Systems and Compliance Reporting Manager. The review meeting focuses on trends, risks and opportunities for lessons learned.

The Principal Manager Environmental Management is primarily responsible for determining when a Lessons Learned or Environmental / Hazard Alerts should be prepared and distributed. However, other Principal Managers may also prepare or request their preparation. Alerts are issued and authorised by the Technical Director - Planning and Environmental Services.

Lessons Learned, Environmental Alerts and Hazard Alerts generated by PES are circulated by email and stored and accessed on the [I&S Learnings Central Database](#):

[Lessons Learned – 9TP-PR-034](#), managed by the I&S QMS department has useful information on completing the Lessons Learned process.

7 Management Review

The EMS is subject to two formal review processes as well as a continual feedback and improvement process.

- New project types
- Changes to legislation, codes of practice, government guidelines or industry standards
- New technologies and innovations

7.1 EMS Working Group Review

PES Principal Managers, the Technical Director PES and the Senior Manager Systems and Sustainability meet regularly as the EMS working group to discuss and develop the EMS. This working group has the objective to maintain the alignment of the EMS with the ever-changing I&S business. The output of this working group is the EMS Review Project Deliverable Tracking Schedule.

7.2 EMS Annual Review

On an annual basis, usually at the end of the calendar year, a formal management review is conducted with members of the PES team to provide feedback on the EMS. This meeting will be recorded and findings fed back to the EMS Working Group.

7.3 Continual Improvement

The EMS Working group and associated EMS Review Report (refer section 4.3) is the main forum and document used to drive the continual improvement process of the EMS and associated corporate and operational performance.

The EMS Working group considers the following feedback mechanisms in order to identify the required updates to the EMS or parts of the EMS:

- Lesson Learned
- Incident and non-compliances
- Feedback from Delivery Partners, Clients, Authorities

8 Appendix 1 - I&S Quality Management System

Transport for New South Wales is committed to providing consistently high quality service to the customer. International standard, ISO 9001:2008 - Quality Management System places the customer at the centre of business outputs and outcomes. Transport Projects (I&S) has adopted this structured approach to achieve the outputs and outcomes expected. This standard has been shaped into a framework within I&S for consistency and uniformity throughout all its functions and deliverables.

The result is a method of integrated process management, called the Quality Framework (refer below). It is codified, meaning that all I&S processes, and systems, are documented using the nine elements of the framework.

Each I&S document starts with a number from the nine elements. This includes all the documents within systems like the TfNSW Safety Management System.

Accessing the Quality Framework via any one of the nine elements will introduce the reader to the documented process that assures that particular element. Element 4, central to the framework enables the reader to view the entire documented process of Transport Projects.

- [Element 1: Leadership, Commitment, Planning and Responsibility](#)
- [Element 2: Governance and Business Framework](#)
- [Element 3: Risk Management](#)
- [Element 4: Customer Delivery Transport Projects](#)
- [Element 5: Procurement, Contractors, Alliances and Partners](#)
- [Element 6: Our People and Resources](#)
- [Element 7: Documentation, Knowledge Management and Information Management](#)
- [Element 8: Communication and Engagement](#)
- [Element 9: Measure, Audit, Review and Improve](#)



Last updated 17 December 2013

9 Appendix 2 - Map of EMS Manual and Its Compatibility to the ISO 14001:2004 Standard

ISO 14001:2004		TP EMS	
Section	Topic	Section	Topic
4	Environmental management system requirements (title only)		
4.1	General requirements	1	Introduction
4.2	Environmental Policy	2	Policy
4.3	Planning (title only)		
4.3.1	Environmental aspects	3.1	Aspects, Impacts and Risks
4.3.2	Legal and other requirements	3.2	Legal Compliance
4.3.3	Objectives, targets and programme(s)	3.3	Objectives, Goals and Targets
4.4	Implementation and operation (title only)		
4.4.1	Resources, roles, responsibility and authority	4.1	Resources, roles, Responsibility and Authority
4.4.2	Competence, training and awareness	4.2	Competence, Training and Awareness
4.4.3	Communication	4.3	Communication and Performance Reporting
4.4.4	Documentation	4.4	Document Management
4.4.5	Control of documents	4.4	Document Management
4.4.6	Operational control	5	Operational Control
4.4.7	Emergency preparedness and response	5.7	Emergency Preparedness and Incident Response
4.5	Checking (title only)		
4.5.1	Monitor and measurement	6.1	Monitoring and Reporting
4.5.2	Evaluation of compliance	6.1.4	Evaluation of Compliance and Reporting
4.5.3	Nonconformity, corrective and preventive action	6.2	Corrective and Preventative Actions
4.5.4	Control of records	6.2.1	Lessons Learned, Environmental Alerts and Hazard Alerts
4.5.5	Internal audit	6.1.3	Audit
4.6	Management review	7	Management review



Transport
for NSW



Transport
for NSW

Fatigue Management Standard

ST-011

Applicable to:

Transport for NSW

TfNSW Integrated Management System
Element 9: Fitness for Work

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1. Purpose and Scope

The purpose of this standard is to outline the requirements of the TfNSW Fatigue Management program which manages the risk of fatigue. The standard also outlines support mechanisms by which all TfNSW workers experiencing fatigue-related problems can obtain assistance.

Specifically this standard addresses the requirements of:

- Rail Safety (Adoption of National Law) Act 2012
- Work Health and Safety Act 2011
- Safe Work Australia, Guide for Managing The Risk Of Fatigue At Work (2013)

2. Definitions

All terminology in this standard is taken to mean the generally accepted or dictionary definition, with the exception of the following terms which have a specifically defined meaning:

Fatigue	Fatigue is more than feeling tired and drowsy. In a work context, fatigue is a state of mental and/or physical exhaustion, which reduces a person's ability to perform work safely and effectively. Fatigue can arise from both work and non-work related activities that can affect a person's state of alertness with consequential impacts on work performance and well being.
Safety Critical Tasks	Tasks where the consequences of a mistake or error in judgment could cause serious injury,
Rail Safety Workers (RSW)	Persons who are carrying out Rail Safety Work as defined within the Rail Safety (Adoption of National Law) Act 2012
Worker	As defined by the Work Health and Safety Act 2011 the term "worker" includes an employee, labour hire staff, volunteer, apprentice, work experience student, sub-contractor, contractor, apprentice, trainee and outworker

3. Accountabilities

The Director Safety, Quality and Environment is accountable for this standard, including authorising the standard, monitoring its effectiveness and performing a formal document review.

Direct reports to the Secretary TfNSW are accountable for ensuring the requirements of this standard are implemented within their area of authority.

The direct reports to the Secretary TfNSW who are accountable for ensuring contractors comply with the requirements of this standard.

4. Standard Requirements

4.1. Our Commitment

TfNSW is committed to providing a workplace where workers can carry out work without risk to their health and safety. This commitment includes ensuring the risks associated with fatigue are managed effectively.

TfNSW acknowledges fatigue as being an identifiable and potential workplace hazard and manages fatigue risk by:

- consulting with workers to understand and identify impact of workloads and work schedules, including work related travel and work outside normal hours.
- positively encouraging workers to report when they feel fatigued and assessing the risks of injury from fatigue
- controlling risks by implementing effective controls that are reasonably practical, such as rest periods, alternative work, leave or by other means.
- Review of implemented controls to ensure adequate

All TfNSW workers are responsible for ensuring that any potential impairment or health and safety issue arising from fatigue is reported and managed in accordance with this standard.

4.2. Fatigue Management Risk Assessment

The best way to control fatigue is to eliminate the factors that cause it at the source. Where this is not possible a risk management approach must be adopted to manage the risks associated with fatigue.

Managers are responsible for applying a risk management approach to fatigue related risks. It is important to recognise that each situation has its own characteristics and that the individual circumstances should be assessed to decide the most effective way to control identified risks in line with the [Safety Risk Management Procedure PR-097](#).

Risk management is achieved through a staged consultative process that includes:

- identifying potential hazards
- assessing the severity, consequence and likelihood of those hazards causing injury or illness
- selecting and implementing risk-control measures.

In addition to the general requirements set out in this Standard, where TfNSW workers may be required to operate rolling stock there is a specific set of controls that must be complied with. These requirements are set out in [Schedule 2 Rail Safety \(Adoption of National Law\) Act 2012](#) and include specific work hours and scheduling practices.

4.3. Workers Obligation to Present Fit For Duty

TfNSW workers have a responsibility to present to work fit for duty. TfNSW workers, who are experiencing fatigue related problems, are required to raise their concerns with their manager.

All information regarding these discussions shall be treated as confidential.

Workers must advise their manager of:

- instances in which they experience debilitating fatigue at work
- excessive workload requiring prolonged periods of excessive hours of work
- any physiological conditions and medications that could cause fatigue
- home and lifestyle factors that could result in fatigue at work.

In addition, workers must:

- recognise signs of fatigue and other circumstances where fatigue is impacting on wellbeing and workplace safety – regardless of whether the causes are work-related, family or personal.
- report circumstances in which fatigue and lack of sleep are impacting on individual wellbeing and workplace safety
- report all incidents arising from hazards related to extended hours and on-call working arrangements
- understand the implications of secondary employment (including volunteer work) that has the potential to increase risks to individual and organisational health and safety. Ref: [Conflicts of Interest Policy](#).

4.4. Identifying potential fatigue hazards

Managers must identify fatigue hazards associated with safety critical tasks which are tasks that require a high level of concentration, alertness and/or coordination and where the consequences of a mistake or error in judgement could cause a serious injury. For example:

- Driving a road vehicle or other high-risk plant
- Working at heights
- Other types of hazardous work, such as electrical work
- Working with flammable or explosive substances
- Working around or near moving vehicles

Some workers are at higher risk of fatigue due to their work activities. For example shift workers, night workers, on call and call back workers.

Methods to identify potential fatigue risks include:

- Consulting with workers and observing work practices

- Examining work practices and systems of work to review work scheduling. For example work and rest periods, time on tasks and rest opportunities in shifts, deadlines
- Examine workers records. For example extended hours, overtime and sick leave records
- Consider the physical environment in which work is carried out. For example extreme heat, noise or lighting
- Review workplace incident records
- Consider work that requires significant physical exertion or high cognitive demand
- Consider tasks that have a degree of monotony, boredom or low cognitive task demand of the work

4.4.1. Signs of potential fatigue

Listed below are some sign and symptoms to indicate a worker is fatigued:

- Excessive yawning or falling asleep at work
- Short-term memory problems and an inability to concentrate
- Impaired decision making and judgement
- Reduced hand eye coordination
- Changes in minimize e.g. repeatedly arriving late for work or increased absences from work

A fatigued worker may also experience symptoms

- Feeling drowsy
- Headaches
- Dizziness
- Blurred vision
- A need for extended sleep during days off

4.5. Assessing the risk

Assessing the risk should take into consideration:

- Where, which and how many workers are likely to be at risk
- The potential harm which may result from fatigue
- Determine existing controls measures and their effectiveness
- Determine further actions that need to be undertaken to control the risk of fatigue
- Prioritising actions to control risks

Risk factors that could contribute to fatigue and should be considered when applying the risk assessment process. Ref. Safe Work Australia, Guide for Managing, The Risk Of Fatigue At Work (2013)

Risk Profile			
Risk Factors	<div style="display: flex; justify-content: space-between; align-items: center;"> Lower Risk ➔ Higher risk </div>		
Work scheduling and Planning			
Average weekly hours	35-40 hrs	48hrs	56hrs
Shift length	<10hrs	10-12 hrs	Exceeds 13hrs
Night work			
Sequential night shifts	No night shifts		6 or more 8 hrs shifts 5 or more 10 hr shifts 4 or more 12 hr shifts
Breaks			
Frequency of breaks during work	Adequate and regular breaks	Infrequent breaks	No breaks
Job Demands (Mental/Physical)	Minimal physical work		Highly physically Demanding Work that results in muscle fatigue
Environmental Conditions			
Noise	Low level noise		Exposure for long duration
Extreme temperatures	Short period of exposure		Long period of exposure
Individual and Lifestyle			
Sleep	Night sleep		Day sleep
Health & Wellbeing	Adequate time to fulfil family responsibilities		Poor diet, recent illness/injury
Family responsibilities			Inadequate time to fulfil family responsibilities
Other work commitments	No other work commitments		Additional work commitments ie: second job

4.6. Controlling the risks

Managers must ensure for identified risks, control measures are put in place in consultation with affected workers to manage fatigue related hazards.

The most effective way to control risks arising from fatigue is to eliminate the factors causing fatigue at the source. If this is not reasonably practicable, the risks must be minimised by considering the following:

Risk Profile	
Fatigue risk factors	Fatigue risk minimisation
Work Scheduling and planning	<p>Scheduling safety critical work outside 2am-6am</p> <p>Where possible structure work so that demands are highest towards the middle of shift and decrease at the end of shift</p> <p>If workers new to shift work allow for acclimatisation if returning after an extended period away from work by first commencing on day shift before returning to night work</p>
Shift work and rosters	<p>Limit night shifts aiming for no more than:</p> <ul style="list-style-type: none"> • 6 or more 8 hrs shifts • 5 or more 10 hr shifts • 4 or more 12 hr shifts <p>Use forward rotation roster systems (day-evening-night)</p> <p>Avoid quick shift change overs ie: finishing at 11pm and starting again at 7am</p> <p>Minimise the requirement to exceed 12hr shift</p> <p>No more than 48hrs per week including overtime</p>
Breaks	<p>At least a 12hr break between shifts</p> <p>Ensure adequate sleep opportunity and recovery where workers are required to work on call</p> <p>Allow for adequate frequent breaks. Breaks may be rostered or managed informally dependent on contractual or award arrangements</p> <p>Ensure suitable rest environments provided eg: rest/break areas or overnight accommodation for long distance work travel</p>
Job demands	<p>Vary tasks or redesign jobs to avoid excessive or physical or mental demands to maintain alertness</p>
Environmental	<p>Where possible avoid working during periods of extreme</p>

Risk Profile	
Fatigue risk factors	Fatigue risk minimisation
Conditions	temperatures or ensure adequate hydration, rest periods and Personal Protective Equipment Ensure the workplace is well lit to perform work tasks
Individual and Lifestyle	Consult with workers and redesign shift rosters that allow workers to also meet work and personal commitments Encourage employee participation in health and well being programs Providing workers with awareness on fatigue risks factors and their responsibilities Refer workers who may be experiencing personal issues that could contribute to fatigue risks to the Employee Assistance Program

4.6.1. Rail Safety Worker Fatigue Minimisation Controls

TfNSW shall apply the following fatigue minimisation controls to TfNSW workers who are Rail Safety Workers who may, in the normal course of their duties, be required to work extended hours on site, such as during rail possessions:

- except in an declared incident, no more than 12 hours will be worked at a time not including travel time to and from work
- in a declared incident, work can be performed up to a maximum of 16 hours at a time, providing workers are not required to drive a motor vehicle or operate heavy plant or equipment between the 13th and 16th hour
- rest periods must ensure 11 hours rest away from work
- maximum number of work days not to exceed 12 work days in 14 consecutive days
- minimize to 5 consecutive occasions where 8 hours are worked at night (i.e. after normal office hours) or 4 consecutive occasions where 10 hours are worked at night or 3 consecutive occasions where 12 hours are worked at night without a 48 hour rest break
- ensure workers receive a minimum of 48 consecutive hours free of work in a 14-day period
- have the capacity to replace or relieve workers where unplanned or unavoidable extended hours have created a risk to workers health and safety.

For TfNSW Rail Safety Workers who are not at work on site (i.e. office workers/hours) or not engaged in extended work hours (such as a rail possession or a declared incident requiring work outside normal office hours) the following controls should apply when undertaking Rail Safety Work:

- no more than 12 hours work at a time

- workers must be ensured of 11 hours rest away from work
- ensure workers receive a minimum of 48 consecutive hours free of work in a 14-day period.

In all situations where extended hours are required, managers must consider all practicable solutions to reduce these hours to a minimum.

4.7. Reasonable Assistance

TfNSW is committed to providing all reasonable assistance through the TfNSW Employee Assistance Program and leave arrangements to those suffering or could potentially suffer from fatigue.

4.8. Fatigue Management Training

Provision of training in fatigue management creates an awareness of issues that may affect fitness for duty. It supports workers in recognising their responsibilities when balancing the requirements of their job, social life and domestic responsibility. The program also facilitates the process of self-assessment.

Each division is responsible for identifying their fatigue training needs based on a risk assessment.

All TfNSW workers receive WHS Induction which outlines potential fatigue hazards. Rail Safety Workers and workers conducting high risk activities outlined in section 4.5, Table 1 must complete further fatigue management training coordinated through Organisation Development and available via the Learning Management System.

4.9. Monitor and Review of Fatigue

Implemented control measures should be monitored and reviewed to ensure they continue to be effective. Control measures should be reviewed when:

- there is any indication risks controls are not working
- new tasks, rosters or schedules are introduced
- there is a fatigue related incident
- new information regarding fatigue becomes available

4.10. Record Keeping

Related records should be kept in accordance with the State Records Act 1998.

Records should include (but not limited to) the following information:

- the worker's name and contact details;
- records of the worker's planned and actual hours of work

- the worker's timesheet records (where existing);
- records of any fatigue related incidents in accordance with [Incident Reporting, Recording and Investigation Standard ST-001](#) and [Incident Investigations Procedure PR-003](#).

5. Related Documents and References

Related Documents and References

[Conflicts of Interest Policy](#)

[Hours of Work and Attendance Policy](#)

[Managing Sick Leave and Fitness for Work Policy](#)

[Human Factors Standard ST-017](#)

[Incident Reporting, Recording and Investigation Standard ST-001](#)

[Incident Investigations Procedure PR-003](#)

[Safety Risk Management Procedure PR-097](#)

[Project Safety Risk Management Procedure PR-126](#)

6. Superseded Documents

Superseded Documents

There are no documents superseded as a result of this document.

7. Document History

Version	Date of approval	Doc. Control No.	Notes
1.0	1 Nov 2011		First review
2.0	6 July 2012	2000536	Minor updates to referenced documents
3.0	October 2014		Updated to include requirements for non-rail safety workers.
4.0	July 2016		Organisation restructure and Risk Profile checklist added
4.0	February 2017		Version number corrected on cover page, formatting revised.



Fatigue Risk Profile

Instructions: <i>This profile must be completed by managers, in consultation with workers, where fatigue has been identified as a potential risk factor (eg: shift work, extended hours)</i> <i>The profile must be reviewed if there is any change in work practices.</i>			<ol style="list-style-type: none"> 1. Consider each risk factor and tick NO or YES as appropriate. 2. For any YES answers, document the risk controls to be implemented (YES answers indicate a higher risk of fatigue). 3. Consider effectiveness of current controls and assess if additional controls required (Use TfNSW Fatigue Management Standard to assist with assessing and managing potential risk factors identified) 4. Managers sign the profile to acknowledge and accept implementation of actions required 		
Division/Branch:		Workgroups groups covered by profile:		Date completed: DD/MM/YYYY	
Completed by:		Employees consulted:		Review date: DD/MM/YYYY	
Risk Factors			Controls		
Work Scheduling and Planning	NO	YES			
Are there unpredictable deadlines or changing priorities?	<input type="checkbox"/>	<input type="checkbox"/>			
Are there less than 2 consecutive days off per week or equivalent?	<input type="checkbox"/>	<input type="checkbox"/>			
Does the work involve anyone being recalled to duty?	<input type="checkbox"/>	<input type="checkbox"/>			
Are shifts swapped/ exchanged without management approval?	<input type="checkbox"/>	<input type="checkbox"/>			
Are 12 hour shifts rostered?	<input type="checkbox"/>	<input type="checkbox"/>			
Do operational requirements extend shifts beyond usual finishing times?	<input type="checkbox"/>	<input type="checkbox"/>			

Do average working hours exceed 48 hours a week?	<input type="checkbox"/>	<input type="checkbox"/>	
Is anyone involved in on-call work?	<input type="checkbox"/>	<input type="checkbox"/>	
Night Work	NO	YES	
Is work performed at night or in the early morning (12am – 6am)?	<input type="checkbox"/>	<input type="checkbox"/>	
Do rosters include 4 or more consecutive night shifts of 12 hours?	<input type="checkbox"/>	<input type="checkbox"/>	
Do rosters include 5 or more consecutive night shifts of 10 hours?	<input type="checkbox"/>	<input type="checkbox"/>	
Do rosters include 6 or more consecutive night shifts of 8 hours?	<input type="checkbox"/>	<input type="checkbox"/>	
Breaks	<input type="checkbox"/>	<input type="checkbox"/>	
Are breaks between shifts less than 12 hours?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work performed without regular breaks?	<input type="checkbox"/>	<input type="checkbox"/>	
Job demands	NO	YES	
Does the work involve highly repetitive tasks?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the work involve little or no interaction with others?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the work involve constant, intense physical effort?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the work involve constant, intense mental effort?	<input type="checkbox"/>	<input type="checkbox"/>	
Work environment	NO	YES	

Does the work involve being exposed to loud noise?	<input type="checkbox"/>	<input type="checkbox"/>	
Does the work involve operating plant or machinery that vibrates?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the work performed under hot, cold or humid conditions?	<input type="checkbox"/>	<input type="checkbox"/>	
Non-work factors	NO	YES	
Is anyone engaged in secondary employment or voluntary work?	<input type="checkbox"/>	<input type="checkbox"/>	
Is anyone reporting difficulty in obtaining sleep?	<input type="checkbox"/>	<input type="checkbox"/>	
Is anyone reporting inadequate time to fulfil family responsibilities?	<input type="checkbox"/>	<input type="checkbox"/>	
List other specific risk factors if not addressed above			

Generic WHS Operational Risk Register 30-SD-101/3.0

Updated: January 2013

PURPOSE

The Generic WHS Operational Risk Register provides guidance to projects when undertaking rail safety risk assessments.

The Generic WHS Operational Risk Register is to be used by the Project to identify, select, expand on and assess safety risks according to the scope and context of the project.

The risks included are not exhaustive and do not take in to consideration project scope, location or other project specific aspects.

The risk evaluations (Consequences, Likelihood and Risk Rating) contained within this register are not intended to represent the actual risk rating applicable to individual projects.

PROCESS

When reviewing the register for Project applicability, the following process is to be followed:

- Use this Generic WHS Operational Risk Register (the Register) to identify risks applicable to the Project.
- Complete a copy of the Register, rename as "**Project Name**, REVIEWED, Generic WHS Operational Risk Register, **Date**", keep on record within the Project and provide a copy to the Safety Systems and Risk Administrator.
- Determine hazards applicability in line with the scope and context of the Project. Where a generic hazard is identified as not applicable to the Project, justification of this decision is to be provided within column "Justification for exclusion or Reference to the Project Risk Register Hazard ID applicable to this risk".
- Where a generic hazard is relevant and applicable to the project the hazard shall be referenced and transferred to the Project Specific Safety Risk Register.
*Reference of the generic risk applicable to the Project is to be entered in the Project Specific Safety Risk Register.
- Use the "Project Specific Safety Risk Register Template" to create the risk register specific to the Project.

RELATED DOCUMENTS

- Transport Enterprise Risk Management (TERM) Standard 30-ST-164
- Project Safety Risk Management Procedure 31P-PR-126
- Safety Risk Management Procedure 30-PR-097
- Project Specific Risk Register Template 30-SD-001

NOTE:

INHERENT RISK INFORMATION

In compliance with the Transport Enterprise Risk Management (TERM) Standard - 30-ST-164 a risk assessment of the "Inherent Risks" was conducted (refer #2252487 - Generic WHS Operational Risk Register 30-SD-101-Inherent Risk Assessment) and as it resulted consistently in risks being rated as "Severe" the information is not displayed in this register.

FOR ASSISTANCE WITH THIS DOCUMENT, CONTACT THE
TRANSPORT PROJECTS SAFETY SYSTEMS AND RISK ADMINISTRATOR (02) 9200 0961.

REVIEW DETAILS

The review of the Generic Rail Safety Risk Register for the [insert: Project Name, Code etc.] was conducted by [insert: Name; Role; Organisation]

Date:

The generic risks identified to be applicable to the scope of work conducted on the above project have been transferred to the [insert: Project Risk Register title] and referenced within this register accordingly.

Related Project Information relevant to this risk assessment:
[insert: Project context, assumptions etc.]

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE1	Working at Height Greater than 2m	Fall from plant during access/ egress Fall from height while working in close proximity to open penetration Fall from height while working on elevated work platform Fall from height Fall from ladder	Inappropriate / Unsafe plant access Unguarded access to open penetration Work platform failure (e.g. scaffold or plant) Work within fall zone/ unprotected edge Unsafe work practices / Insufficient safety training Failure of fall arrest/ restraint system Failure to wear or incorrect use of working at height safety equipment	a) Permanent injury to worker, b) Worker fatality, c) Suspended worker, d) Non-permanent injury to workers e) Legal action
Op TE2	Working at Height less than 2m	Slip, Trip or Fall from elevated section Fall from ladder Fall from plant including mobile scaffold Fall up/down stairs	Work on ladder not properly planned and organised Work at height not properly planned and organised Slip or trip	a) Fatality, b) Non-permanent injury to worker, c) Permanent injury to worker
Op TE3	Falling object	Plant rollover/ collapse Dropped demolition/ construction material Suspended load dropped (crane) Suspended load dropped (mech lifting device) Structural collapse Dropped tool/ object	Poor planning, maintenance, operation, worker competency Failure to secure materials / equipment Failure of sling/equipment, poor planning of loading, failure of load Failure of sling/equipment, poor planning of loading, failure of load Structural collapse Failure to secure tools / equipment while working at height	a) Near miss/ dangerous event, b) Fatality, c) Multiple fatality d) Injury to public, e) Permanent injury to worker, f) Non-permanent injury to worker, g) Damage to property
Op TE4	Slip, Trip, Fall from non-elevated position	Slip, Trip, Fall from non-elevated position	Use of unsuitable footwear Non compliant access and egress Inadequate floor surface design Inadequate housekeeping Inadequate maintenance during defect works Unstable and uneven ground	a) Permanent injury/ illness to worker, b) Non-permanent injury/ illness to worker, c) Injury/ illness to public
Op TE5	Contact with moving parts	Contact with moving parts	Inadequate interlock system Inadequate plant/ equipment guarding Unguarded equipment Inadequate warning system Failure to positively isolate energy Inadequate HF design considerations/ ability to circumvent system	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public
Op TE6	Struck by moving plant/ vehicle	Struck by moving plant/ vehicle	Operator error Lack of area detection devices Inadequate isolation/ segregation Inadequate warning systems Inadequate traffic control/ including competency of TCs Inadequate plant site movement controls Lack of situational awareness/ experience/ competency	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public
Op TE7	Struck by Projectile/ ejected item from mechanical failure	Struck by Projectile/ ejected item from mechanical failure	Unsafe operation/ method Inadequate plant design Inadequate guarding system Faulty equipment/ plant Plant/ equipment unfit for purpose	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage
Op TE8	Fire/ explosion	Fire/ explosion	Inappropriate storage of Hazardous Chemicals Electrical fault in temporary supply Failure to remove fuel source/ vent Uncontrolled ignition source Inadequate hot work practice Equipment/ plant failure Strike on services Strike on pipeline Inappropriate handling of Hazardous Chemicals/Hazardous Chemicals Inappropriate transport, handling, storage of explosives (detonators only at this stage)	a) Non-Permanent Injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker
Op TE9	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Noise levels unknown/not assessed Exposure Inadequate plant maintenance/ specification Inadequate segregation of high noise activities Inadequate/lack of hearing protection	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation
Op TE10	Contact with Live Electricity (low voltage less than 1000vAC)	Contact with Live Electricity (low voltage less than 1000vAC)	Inadequate identification of electrical sources Inadequate safe work/permit procedure Work within overhead approach zone Non-compliant electrical installation Faulty plant/ equipment Inadequate ground penetration method in vicinity of underground services Failure to isolate/ re-energise effectively when undertaking electrical work Damaged equipment/ exposed parts Non compliance with approved work methods/permit when performing electrical work	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical Fire/ explosion

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE11	Contact with high voltage current (>1000vAC or > or equal to 1500vDC)	Contact with high voltage current (>1000vAC or > or equal to 1500vDC)	Inadequate identification of electrical sources Inadequate HV safework procedures Work within HV overhead approach zone (contact or arcing) Non-compliant electrical installation including HV genset Faulty plant/ equipment Inadequate work excavation method in vicinity of underground services Failure to isolate effectively Induced voltage (inc touch potential) from HV transmission	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage
Op TE12	Exposure to asbestos	Exposure to asbestos	Inadequate 3rd party advice Insufficient warning and communication of hazard Inadequate safe removal practice vs. agreed method Inadequate identification of ACM - including contaminated sites Inadequate safe work procedures/Removal work plan around ACM practice Incorrect use of / or inadequate protective equipment Uncontrolled demolition Lack of Legal compliance requirements Unlicensed provider engaged Workers not competent	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness
Op TE13	Exposure (Inhalation) to Hazardous Substance	Exposure (Inhalation) to Hazardous Substance	Inadequate substance handling, storage and transportation Insufficient warning and communication of hazard Unknown substance and/or hazardous nature Substance spill SDS instructions not followed for use (where applicable) Incorrect use of protective equipment Uncontrolled demolition/construction activities Inappropriate training, instruction and work methods Inadequate hazardous substances risk assessment Non-compliant or inadequate SDS Inadequate hazardous substance risk assessment (e.g. use of competent person, correct interpretation of SDS, etc)	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker
Op TE14	Exposure (Dermal) to Hazardous Substance	Exposure (Dermal) to Hazardous Substance	Inadequate substance handling and transportation Insufficient warning and communication of hazard Unknown substance and/or hazardous nature Substance leak/ loss of containment SDS instructions not followed for use (where applicable) Incorrect use of protective equipment Non-compliant SDS Inadequate hazardous substance risk assessment (e.g. use of competent person, correct interpretation of SDS, etc)	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker
Op TE15	Ingestion of chemicals/ substances	Ingestion of chemicals/ substances	Inadequate substance handling and transportation Insufficient warning and communication of hazard Unknown substance and/or hazardous nature Poor personal hygiene/ hand washing practices Inadequate decontamination protocol/s Incorrect use of / or inadequate protective equipment SDS instructions not followed for use (where applicable) Inadequate hazardous substance risk assessment (e.g. use of competent person, correct interpretation of SDS, etc)	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker
Op TE16	Exposure to Ionising Radiation	Exposure to Ionising Radiation	Inadequate handling and transportation of NDT radiation source Nuclear Density Testing (NDT) equipment malfunction Inadequate plant specification (NDT) Inadequate isolation controls during NDT Exposure to contaminated sites Insufficient warning and communication of hazard	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (e.g. radiation sickness, dermal affects, etc)

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE17	Exposure to Non-Ionising Radiation	Exposure to Ionising Radiation	Inadequate skin protection Inadequate eye protection Inadequate protection from welding arc Inadequate isolation of RF sources Failure to observe laser safety precautions Insufficient warning and communication of hazard Unknown substance and/or hazardous nature	a) Prosecution/criminal/formal Legal action b) Permanent illness/ health effect to worker (e.g. scarring, cataracts, etc) c) Fatal chronic disease (e.g. skin cancer) d) Non permanent illness/ health effect to worker (e.g. sunburn, etc) e) Civil Legal action/ damages
Op TE18	Exposure to Contaminated Land and/or Water (exc asbestos)	Exposure to Contaminated Land and/or Water (exc asbestos)	Inadequate substance handling and transportation Insufficient warning and communication of hazard Unknown substance and/or hazardous nature Substance leak/ loss of containment Incorrect use of /or inadequate protective equipment Poor or inadequate advice / assessment Procedural breach	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker
Op TE19	Working whilst impaired by fatigue	Working whilst impaired by fatigue	Secondary employment Insufficient training in awareness of fatigue risk Inadequate or lack of Fatigue Management systems Failure to comply with Fatigue Management program Poor work planning / Lack of resources Plant equipment design inadequate Medication Mundane repetitive tasks Hot / cold conditions Pressure and stress	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage
Op TE20	Worker under the influence of Alcohol and/or Drugs	Worker under the influence of Alcohol and/or Drugs	Lack of awareness of AOD risk Lack of AOD Management Failure to comply with AOD program Medication Pressure and stress Inadequate lighting assessment / design Power outage Lack of task specific light Poor planning Lack of emergency lighting Work at night Inclement weather	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely
Op TE21	Work under Insufficient Lighting	Work under Insufficient Lighting	Inadequate lighting assessment / design Power outage Lack of task specific light Poor planning Lack of emergency lighting Work at night Inclement weather	a) Fatal incident b) Legal action c) Permanent injury d) Non-permanent injury e) Asset damage f) Work stopped
Op TE22	Release of Stored Energy	Release of Stored Energy	Failure to identify all energy sources Unsafe operation/ method Inadequate plant design Inadequate guarding system Faulty equipment/ plant Plant/ equipment unfit for purpose Failure of lockout system Poor maintenance practices	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury
Op TE23	Exposure to workplace Bullying and/or Harassment	Exposure to workplace Bullying and/or Harassment	Pressure and stress Poor management Lack of policy / procedures Failure to apply policy / procedures Poor workplace culture Failure to communicate expectations	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Failure to retain staff
Op TE24	Workplace Violence and/or Assault	Workplace Violence and/or Assault	Pressure and stress Poor management Lack of policy / procedures Failure to apply policy / procedures Failure to communicate expectations Poor security management Workplace design TNSW worker exposed at public meeting/private property	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE25	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Inadequate 3rd party advice to TINSW Insufficient warning and communication of hazard Inadequate safe removal practice Unknown agent and/or hazardous nature Inadequate safe work procedures Incorrect use of or inadequate protective equipment Uncontrolled demolition /excavation Lack of contractual Legal compliance requirements Poor personal hygiene practices	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier
Op TE26	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Poor personal hygiene practices Insufficient warning and communication of hazard Unknown agent and/or hazardous nature Inadequate safe work procedures Incorrect use of /or inadequate protective equipment First Aid Officer exposure	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier
Op TE28	Lifting and/or manual handling of heavy, unstable, awkward loads	Lifting and/or manual handling of heavy, unstable, awkward loads	Inadequate safe work procedures Poor work planning Poor task design Poor workplace design Lack of Mechanical Handling Equipment Lack of awareness of manual handling techniques/ hazards Ageing workforce	a) Permanent injury b) Non permanent injury c) Legal action
OP TE29	Static and/or Awkward Work Postures	Static and/or Awkward Work Postures	Inadequate safe work procedures Poor work planning Poor task design Poor plant design Ageing workforce Lack of awareness of ergonomic hazards Work stress/pressure TINSW staff Poor workstation layout	a) Permanent injury b) Non permanent injury c) Legal action
Op TE30	Bites/ Stings (animals, insect, spider, etc)	Bites/ Stings (animals, insect, spider, etc)	Lack of safe work procedures Lack of awareness	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE31	Contact/ exposure to needlestick and/or sharps	Contact/ exposure to needlestick and/or sharps	Lack of safe work procedures Lack of awareness Incorrect use of protective equipmen	a) Fatal illness b) Non fatal illness c) Laceration d) Legal action e) Amputation
Op TE32	Repetitive movements	Repetitive movements	Inadequate safe work procedures Poor work planning Poor task design Poor workplace/plant design Ageing / modified plant Lack of awareness of ergonomic hazards Ageing workforce	a) Permanent injury b) Non permanent injury c) Legal action
Op TE34	Exposure to excessive vibration	Exposure to excessive vibration	Inadequate safe work procedures Poor work planning Poor task design Poor plant design Ageing / modified plant Lack of awareness of vibration hazards Failure to provide/wear PPE	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage
Op TE35	Fall into or inundation of water/ liquid	Fall into or inundation of water/ liquid	Inadequate safe work procedures Plant rollover/ collapse Failure to isolate work area from water sources Failure to identify water sources Excavation integrity Structural collapse of cofferdam, sheet piling etc Failure to provide/wear PPE Out of control plant Strike service	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage
Op TE36	Exposure to extreme ambient temperatures	Exposure to extreme ambient temperatures	Poor planning Lack of safe work procedures Lack of awareness of hazards Failure to respond to change in conditions Incorrect/ inadequate protective equipment Plant design/condition Client imposed limitations (e.g. response times to rectify issues may force working in very hot weather)	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE38.1	TINSW office biohazard contamination	Exposure to biohazards	Exposure to biohazards	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.2	Hazardous Chemicals in TINSW office	Exposure to Hazardous Chemicals	Inappropriate storage and labeling of chemicals	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.3	Elevated storage in TINSW office	Falls from height <2m	Inappropriate access to items stored on elevated shelving.	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.4	Electrical hazard in TINSW office	Contact with high voltage electricity	Electrical faults in equipment.	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.5	Use of fire stairs in TINSW office building	Falls using fire stairs	Slip/trip	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.6	Visitors safety in TINSW office	Visitor not evacuated	Visitors induction and sign in/out process not followed	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.7	Slip hazards in TINSW office	Slipping on wet floor	Inappropriate floor covering, Poorly maintained floor surfaces	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.7A	Obstruction of walkways in TINSW office	Slips, trips and falls on same level	Inappropriate storage of items / work area layout	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.8	TINSW office worker injury/incident	TINSW office worker injury/incident	Lack of awareness of First Aid/emergency management process	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.9	Use of instant hot water systems in TINSW office	Burns/scalds from kitchen appliances	Fault in equipment/incorrect use of equipment	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE38.10	Visiting worksites	TINSW office worker injury/incident	Travel incident	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action
Op TE39	Demolition work	Person injured during demolition Damage or disruption to services Falls from heights Unplanned structural collapse Plant / equipment failure	Lack of dilapidation/hazardous materials survey Failure to identify, isolate / make safe all existing services Failure to install fall prevention mitigation Lack of demolition work plan as per AS2601 Insufficient or inaccurate maintenance Lack of training of operator Unsafe demolition method Unlicensed demolition company Lack of supervision of demolisher	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage
Op TE40	Tilt up / precast concrete construction	Person injured during tilt up / precast concrete construction	Failure to design / Work not completed in accordance with AS3850 Failure to inspect and certify to approved design Structural collapse Plant / equipment failure Approved erection sequence not followed Not competent company Lack of supervision	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage
Op TE41	Construction involving temporary structural support	Person injured during construction involving temporary structural support	Failure to design / Work not completed in accordance with AS3850, AS2601, AS1576, AS3610, AS4744 Design by not competent persons Falling objects Falls from heights Failure to inspect and certify to approved design Plant and equipment failure Approved work method not followed Not competent company Lack of supervision	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE42	Working in confined space	Person(s) injured during construction involving confined space	Poor work planning Failure to identify confined spaces Failure to design out confined spaces Failure to prevent unauthorised entry Lack of permit to work system Failure to comply with permit to work system Failure to follow approved work method Plant and equipment failure Untrained/ incompetent personnel Lack of competent standby person Lack of supervision Lack of signage Work method not compliant with AS2865 No rescue plan/equipment Failure to respond to changed conditions	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action
Op TE43	Excavation work	Person(s) injured during excavation	Poor work planning Failure to identify buried services Failure to isolate services Failure to provide safe access / egress Failure to control excavation work (i.e. by use of permit) Failure to prevent falls of people into excavation Plant and equipment falls into excavation Collapse of excavation Inappropriate stockpiling of materials Lack of supervision Lack of signage Work method not compliant with CoP No rescue plan/equipment Failure to respond to changed conditions Failure to inspect excavation on daily basis (where deeper than 1m) Lack of training/competence in relation to excavation safety Failure to design or install shoring system to AS4744 Failure to identify contaminated soil Failure to obtain geotechnical engineering advice Inappropriate 3rd party advice	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage
Op TE44	Construction involving telecomm towers	Person(s) injured during construction involving telecomm towers	Poor work planning Failure to isolate work beneath working at height location Failure to isolate energy sources Failure to provide safe access / egress Failure to control access (permit) Plant and equipment failure Manual handling injury Collapse of tower Failure to comply with AS1891 and/or AS4488 Lack of supervision Lack of signage Failure to obtain engineering/ rigging advice No rescue plan/equipment Failure to respond to changed conditions Inappropriate 3rd party advice Lack of training/ competence	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage
Op TE45	Construction involving diving	Person(s) injured during construction involving diving	Poor work planning Failure to develop diving work plan as per AS2299 Not competent divers Failure to provide safe access / egress Failure to control access (permit) Plant and equipment failure Manual handling injury Failure to provide rescue means and plan, including decompression facility Failure to comply with AS2299 Lack of supervision Failure to respond to changed conditions No rescue plan/equipment Failure to manage diving work loads (bends and/or nitrogen in blood)	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE46	Construction involving blasting with explosives	Person(s) injured during construction involving blasting with explosives	Poor work planning Failure to store explosives adequately Inadequate storage of explosives Failure to transport explosives safely Failure to control sources of ignition Failure to establish exclusion zones Failure to use correct quantity of explosives Failure to handle explosives safely Structural collapse caused by blast Flying shrapnel Lack of supervision Lack of signage Explosives used by incompetent persons Failure to obtain necessary licences/approvals Failure to respond to changed conditions Inappropriate 3rd party advice Security breach leads to theft of explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality
Op TE47	Tunnelling work	Person(s) injured during tunneling	Poor work planning Failure to identify buried services Failure to isolate services Failure to provide safe access / egress Failure to control entry Failure to prevent falls into shafts Plant and equipment collision restricted space Worker struck by mobile plant Worker caught in plant or equipment (e.g. conveyor) Collapse of tunnel Inappropriate removal of materials Lack of supervision Lack of signage Tunnelling not compliant with CoP No/failure to maintain rescue plan/equipment Failure to respond to changed conditions Lack of training/competence Failure in design of tunnel support system Failure to identify contaminated soil Failure to obtain geotechnical engineering advice Inappropriate 3rd party advice Failure to provide clean air and extract foul air Fire in tunnel environment Ineffective emergency procedures PPE inadequate/not worn Inundation of water/sludge Harsh working environment - heat, mud, noise Recruitment of inappropriate underground workers - claustrophobia	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality
Op TE48	Construction work on or near pressurised gas distribution mains and consumer piping	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	Poor work planning Failure to identify buried services Failure to isolate/purge contents from pipeline Inadvertent strike (dropped load, mobile plant out of control, etc) Failure to control work in vicinity (permit) Lack of supervision Lack of signage No rescue plan/equipment Failure to respond to changed conditions Lack of training /competence in relation to high risk work 3rd party damage caused by asset owner or maintainer on TNSW project (not construction related) Failure to respond to changed conditions Corrosion by stray current Security breach/terrorist attack Inappropriate 3rd party advice Failure to protect pipeline	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply
Op TE49	Construction work on or near chemical, fuel or refrigerant lines	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	Poor work planning Failure to identify buried services Failure to isolate/purge contents from pipeline Inadvertent strike (dropped load, mobile plant out of control, etc) Failure to control work in the vicinity (permit) Lack of supervision Lack of signage No rescue plan/equipment Lack of training/competence in relation to high risk work 3rd party damage caused by asset owner or maintainer on TNSW project (not construction related) Failure to protect pipeline Corrosion by stray current Security breach/terrorist attack	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply

GENERIC WHS OPERATIONAL TOP EVENTS

Hazard Ref.	Hazard	Hazard Event	Potential causes	Potential consequence(s)
Op TE50	Construction work on or near railway lines or roads	Person(s) injured during construction work on or near railway lines or roads	<ul style="list-style-type: none"> Poor work planning Lack of safe work procedures Failure to plan worksite protection/traffic control Failure to provide safe access / egress Failure to control work in the vicinity (permit) Lack of supervision Lack of signage Failure to respond to changed conditions Lack of training/ competence Inappropriate 3rd party advice Strike by train, vehicle, plant or equipment Worksite/traffic control plan not compliant to codes/legislation/ owner rules 	<ul style="list-style-type: none"> a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage
Op TE51	Exposure to trauma whilst Travelling to and from worksite	Exposure to trauma whilst travelling to and from worksite	<ul style="list-style-type: none"> Road/rail traffic collision Assault Inability to render First Aid to injured TINSW worker TINSW not aware of medical conditions Fatigue related incident Lone work by TINSW staff 	<ul style="list-style-type: none"> a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE1.1	Working at Height Greater than 2m	Inappropriate / Unsafe plant access	Fall from plant during access/ egress	a) Permanent injury to worker; b) Worker fatality; c) Suspended worker; d) Non-permanent injury to workers e) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Likely - L3	B - High		
			Op TE1.2	Working at Height Greater than 2m	Unguarded access to open penetration	Fall from height while working in close proximity to open penetration	a) Permanent injury to worker; b) Worker fatality; c) suspended worker; d) Non-permanent injury to workers e) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Unlikely - L4	B - High		
			Op TE1.3	Working at Height Greater than 2m	Work platform failure (e.g scaffold or plant)	Fall from height while working on elevated work platform	a) Permanent injury to worker; b) Single worker fatality; c) Multiple worker fatality; d) Suspended worker; e) Non-permanent injury to workers f) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Likely - L3	B - High		
			Op TE1.4	Working at Height Greater than 2m	Work within fall zone unprotected edge	Fall from height	a) Permanent injury to worker; b) Worker fatality; c) suspended worker; d) Non-permanent injury to workers e) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Unlikely - L4	B - High		
			Op TE1.5	Working at Height Greater than 2m	Unsafe work practices / insufficient safety training	Fall from ladder	a) Permanent injury to worker; b) Worker fatality; c) suspended worker; d) Non-permanent injury to workers e) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Likely - L3	B - High		
			Op TE1.6	Working at Height Greater than 2m	Failure of fall arrest/ restraint system	Fall from height	a) Permanent injury to worker; b) Worker fatality; c) suspended worker; d) Non-permanent injury to workers e) Legal action	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident Management/Response Plan	Major - C3	Unlikely - L4	B - High		
			Op TE1.7	Working at Height Greater than 2m	Failure to wear or incorrect use of working at height safety equipment	Fall from height	a) Permanent injury to worker; b) Worker fatality; c) suspended worker; d) Non-permanent injury to workers e) Legal action	i) SWMS review ii) Consultative Inspections iii) Incident Management/Response Plan	Major - C3	Unlikely - L4	B - High		
			Op TE2.1	Working at Height less than 2m	Slip or trip	Slip, Trip or Fall from elevated section	a) Fatality; b) Non-permanent injury to worker; c) Permanent injury to worker	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Provision of First Aid Officers	Moderate - C4	Likely - L3	B - High		
			Op TE2.3	Working at Height less than 2m	Work on ladder not properly planned and organised	Fall from ladder	a) Fatality; b) Non-permanent injury to worker; c) Permanent injury to worker	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Provision of First Aid Officers	Moderate - C4	Likely - L3	B - High		
			Op TE2.4	Working at Height less than 2m	Work at height not properly planned and organised	Fall from plant including mobile scaffold	a) Fatality; b) Non-permanent injury to worker; c) Permanent injury to worker	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Provision of First Aid Officers	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE2.5	Fall from Height less than 2m	Slip or trip	Fall up/down stairs	a) Fatality; b) Non-permanent injury to worker; c) Permanent injury to worker	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) WHS communications at induction regarding stair use at TNSW offices v) Provision of First Aid Officers	Moderate - C4	Unlikely - L4	C - Moderate		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE3.1	Falling object	Poor planning, maintenance, operation, worker competency	Plant rollover/ collapse	a) Near miss/ dangerous event, b) Fatality, c) Multiple fatality, d) Injury to public, e) Permanent injury to worker, f) Non-permanent injury to worker, g) Damage to property	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE3.2	Falling object	Failure to secure materials / equipment	Dropped demolition/ construction material	a) Near miss/ dangerous event, b) Fatality, c) Injury to public, d) Permanent injury to worker, e) Non-permanent injury to worker, f) Damage to property	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Critical - C2	Unlikely - L4	B - High		
			Op TE3.3	Falling object	Failure of sling/equipment, poor planning of loading, failure of load	Suspended load dropped (crane)	a) Near miss/ dangerous event, b) Fatality, c) Multiple fatality, d) Injury to public, e) Permanent injury to worker, f) Non-permanent injury to worker, g) Damage to property	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Critical - C2	Unlikely - L4	B - High		
			Op TE3.4	Falling object	Failure of sling/equipment, poor planning of loading, failure of load	Suspended load dropped (mesh lifting device)	a) Near miss/ dangerous event, b) Fatality, c) Injury to public, d) Permanent injury to worker, e) Non-permanent injury to worker, f) Damage to property	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE3.5	Falling object	Structural collapse	Structural collapse	a) Near miss/ dangerous event, b) Fatality, c) Multiple fatality, d) Injury to public, e) Permanent injury to worker, f) Non-permanent injury to worker, g) Damage to property	i) Engineering Management Manual 4TP-ST-095 ii) CHAIR risk studies iii) SSMP and SWMS Review iv) consultative inspections v) Incident/ emergency planning and procedures	Catastrophic - C1	Rare - L5	B - High		
			Op TE3.6	Falling object	Failure to secure tools / equipment while working at height	Dropped tool/ object	a) Near miss/ dangerous event, b) Fatality, c) Injury to public, d) Permanent injury to worker, e) Non-permanent injury to worker, f) Damage to property	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE4.1	Slip, Trip, Fall from non-elevated position	Use of unsuitable footwear	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker, b) Non-permanent injury/ illness to worker, c) Injury/ illness to public	i) PPE Site Standard ii) Consultative inspections	Minor - C5	Unlikely - L4	C - Moderate		
			Op TE4.2	Slip, Trip, Fall from non-elevated position	Non compliant access and egress	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker, b) Non-permanent injury/ illness to worker, c) Injury/ illness to public	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections	Minor - C5	Unlikely - L4	C - Moderate		
			Op TE4.3	Slip, Trip, Fall from non-elevated position	Inadequate floor surface design	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker, b) Non-permanent injury/ illness to worker, c) Injury/ illness to public	i) CHAIR reviews (design hazard log) ii) Quality audit process	Minor - C5	Likely - L3	C - Moderate		
			Op TE4.4	Slip, Trip, Fall from non-elevated position	Inadequate housekeeping	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker, b) Non-permanent injury/ illness to worker, c) Injury/ illness to public	i) SSMP and SWMS review ii) Consultative inspections	Minor - C5	Frequent - L1	B - High		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE4.5	Slip, Trip, Fall from non-elevated position	Inadequate maintenance during defect works	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker b) Non-permanent injury/ illness to worker c) Injury/ illness to public	i) Quality audit process ii) Consultative inspections	Minor - C5	Likely - L3	C - Moderate		
			Op TE4.6	Slip, Trip, Fall from non-elevated position	Unstable and uneven ground	Slip, Trip, Fall from non-elevated position	a) Permanent injury/ illness to worker b) Non-permanent injury/ illness to worker c) Injury/ illness to public	i) PO briefings in rail corridor ii) Consultative inspections	Minor - C5	Probable - L2	B - High		
			Op TE5.1	Contact with moving parts	Inadequate interlock system	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss/ dangerous event	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE5.2	Contact with moving parts	Inadequate plant/ equipment guarding	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss/ dangerous event	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE5.3	Contact with moving parts	Unguarded equipment	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss/ dangerous event	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE5.4	Contact with moving parts	Inadequate warning system	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss/ dangerous event	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Probable - L2	A - Severe		
			Op TE5.5	Contact with moving parts	Failure to positively isolate energy	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss/ dangerous event	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Major - C3	Probable - L2	A - Severe		
			Op TE5.6	Contact with moving parts	Inadequate HF design considerations/ ability to circumvent system	Contact with moving parts	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) Consultative inspections ii) Incident/ emergency planning and procedures	Major - C3	Probable - L2	A - Severe		
			Op TE6.1	Struck by moving plant/ vehicle	Operator error	Struck by moving plant/ vehicle	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Frequent - L1	A - Severe		
			Op TE6.2	Struck by moving plant/ vehicle	Lack of area detection devices	Struck by moving plant/ vehicle	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE6.3	Struck by moving plant/ vehicle	Inadequate isolation/ segregation	Struck by moving plant/ vehicle	a) Fatality b) Non Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) SSMP and SWMS review ii) Incident/ emergency planning and procedures	Critical - C2	Likely - L3	A - Severe		

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TPD	TS (CR/N)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE6.4	Struck by moving plant/ vehicle	Inadequate warning systems	Struck by moving plant/ vehicle	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) TSR S1 requirements ii) Consultative Inspections iii) Incident/ emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE6.5	Struck by moving plant/ vehicle	Inadequate traffic control including competency of TCs	Struck by moving plant/ vehicle	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) TSR requirements relating to Traffic Management ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE6.6	Struck by moving plant/ vehicle	Inadequate plant site movement controls	Struck by moving plant/ vehicle	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) TSR S1 requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE6.7	Struck by moving plant/ vehicle	Lack of situational awareness/ experience/ competency	Struck by moving plant/ vehicle	a) Fatality b) Non-Permanent injury to worker c) Permanent injury to worker d) Near miss to worker or member of public e) Injury to member of public	i) Consultative Inspections ii) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE7.1	Struck by Projectile/ ejected item from mechanical failure	Unsafe operation/ method	Struck by Projectile/ ejected item from mechanical failure	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage	i) SSMP and SWMS review ii) Consultative Inspections iii) Incident/emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE7.2	Struck by Projectile/ ejected item from mechanical failure	Inadequate plant design	Struck by Projectile/ ejected item from mechanical failure	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Rare - L5	C - Moderate		
			Op TE7.3	Struck by Projectile/ ejected item from mechanical failure	Inadequate guarding system	Struck by Projectile/ ejected item from mechanical failure	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE7.4	Struck by Projectile/ ejected item from mechanical failure	Faulty equipment/ plant	Struck by Projectile/ ejected item from mechanical failure	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE7.5	Struck by Projectile/ ejected item from mechanical failure	Plant/ equipment unfit for purpose	Struck by Projectile/ ejected item from mechanical failure	a) Near miss incident b) Non-permanent injury to persons c) Fatality d) Permanent injury to persons e) Asset/ property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Unlikely - L4	B - High		
			Op TE8.1	Fire/ explosion	Inappropriate storage of Hazardous Chemicals	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Critical - C2	Likely - L3	A - Severe		

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Applicable to agency		Hazard Information				Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project	
TPD	TS (CRN)	WVPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE8.2	Fire/ explosion	Electrical fault in temporary supply	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE8.3	Fire/ explosion	Failure to remove fuel source/ vent	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE8.4	Fire/ explosion	Uncontrolled ignition source	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE8.5	Fire/ explosion	Inadequate hot work practice	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Likely - L3	A - Medium		
			Op TE8.6	Fire/ explosion	Equipment/ plant failure	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE8.7	Fire/ explosion	Strike on services	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Likely - L3	A - Medium		
			Op TE8.8	Fire/ explosion	Strike on pipeline	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Catastrophic - C1	Rate - L5	B - High		
			Op TE8.9	Fire/ explosion	Inappropriate handling of Hazardous Chemicals/Hazardous Chemicals	Fire/ explosion	a) Non-Permanent injury to worker b) Injury to public c) Fatality d) Damage to property e) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	WVPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE8.10	Fire/ explosion	Inappropriate transport, handling, storage of explosives (detonators only at this stage)	Fire/ explosion	a) Non-Permanent injury to worker b) injury to public c) Fatality d) Multiple fatality e) Damage to property f) Permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) incident/ emergency planning and procedures	Major - C3	Rate - L5	C - Moderate		
			Op TE9.1	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Noise levels unknown/not assessed	Excessive noise level	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation	i) Consultative inspections	Major - C3	Probable - L2	A - Severe		
			Op TE9.3	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Exposure to noise	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation	i) TSR requirements ii) SSMP review	Major - C3	Likely - L3	B - High		
			Op TE9.4	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Inadequate plant maintenance/ specification	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE9.5	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Inadequate segregation of high noise activities	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE9.6	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	Inadequate/lack of hearing protection	Exposure to Noise >WES (85dBA 8hr TWA, 140dBC peak)	a) Permanent health effect/ illness b) Non-permanent health effect/ illness c) Criminal Prosecution/ Legal action d) Civil action/ compensation	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections	Major - C3	Unlikely - L4	B - High		
			Op TE10.1	Contact with Live Electricity (low voltage less than 1000VAC)	Inadequate identification of electrical sources	Contact with Live Electricity (low voltage less than 1000VAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.2	Contact with Live Electricity (low voltage less than 1000VAC)	Inadequate safe work/permit procedure	Contact with Live Electricity (low voltage less than 1000VAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.3	Contact with Live Electricity (low voltage less than 1000VAC)	Work within overhead approach zone	Contact with Live Electricity (low voltage less than 1000VAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.4	Contact with Live Electricity (low voltage less than 1000VAC)	Non-compliant electrical installation	Contact with Live Electricity (low voltage less than 1000VAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		

Project Code		Project Name			Issue Date	Review Date	Rev. No.						
GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE10.5	Contact with Live Electricity (low voltage less than 1000vAC)	Faulty plant/ equipment	Contact with Live Electricity (low voltage less than 1000vAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.6	Contact with Live Electricity (low voltage less than 1000vAC)	Inadequate ground penetration method in vicinity of underground services	Contact with Live Electricity (low voltage less than 1000vAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.7	Contact with Live Electricity (low voltage less than 1000vAC)	Failure to isolate/ re-energise effectively when undertaking electrical work	Contact with Live Electricity (low voltage less than 1000vAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE10.8	Contact with Live Electricity (low voltage less than 1000vAC)	Damaged equipment/ exposed parts	Contact with Live Electricity (low voltage less than 1000vAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE10.9	Contact with Live Electricity (low voltage less than 1000vAC)	Non compliance with approved work methods/permit when performing electrical work	Contact with Live Electricity (low voltage less than 1000vAC)	a) Fatality b) Permanent injury (burn, organ damage etc) c) Non-permanent injury (shock) d) Electrical fire/ explosion	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE11.1	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Inadequate identification of electrical sources	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Critical - C2	Unlikely - L4	B - High		
			Op TE11.2	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Inadequate HV safework procedures	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Critical - C2	Rare - L5	B - High		
			Op TE11.3	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Work within HV overhead approach zone (contact or arcing)	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Critical - C2	Unlikely - L4	B - High		
			Op TE11.4	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Non-compliant electrical installation including HV genset	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative Inspections iv) Incident/ emergency planning and procedures	Critical - C2	Rare - L5	B - High		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRIN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE11.5	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Faulty plant/ equipment	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE11.6	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Inadequate work excavation method in vicinity of underground services	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Likely - L3	A - Severe		
			Op TE11.7	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Failure to isolate effectively	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Unlikely - L4	B - High		
			Op TE11.8	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	Induced voltage (etc touch potential) from HV transmission	Contact with high voltage current (>1000vAC or > or equal to 1500VDC)	a) Multiple fatality b) Fatality c) Permanent injury (burn, organ damage etc) d) Non-permanent injury (shock) e) Fire/ explosion f) Property damage	i) Engineering Management standards ii) Reliability inspections iii) Consultative inspections iv) Incident/ emergency planning and procedures.	Critical - C2	Rate - L5	B - High		
			Op TE12.1	Exposure to asbestos	Inadequate 3rd party advice	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) Contractor selection and management by TNSW ii) ACM remediation/ incident response plan iii) Medical surveillance for TNSW staff only	Major - C3	Rate - L5	C - Moderate		
			Op TE12.2	Exposure to asbestos	Insufficient warning and communication of hazard	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Unlikely - L4	B - High		
			Op TE12.3	Exposure to asbestos	Inadequate safe removal practice vs agreed method	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP, Removal Work Plan and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Likely - L3	B - High		
			Op TE12.4	Exposure to asbestos	Inadequate identification of ACM - including contaminated sites	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Likely - L3	B - High		
			Op TE12.5	Exposure to asbestos	Inadequate safe work procedures/Removal work plan around ACM practice	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Rate - L5	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details	Risk Rating		Applicability to scope and context of project			
TPD	TS (CRN)	WVPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE12.6	Exposure to asbestos	Incorrect use of / or inadequate protective equipment	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Likely - L3	B - High		
			Op TE12.7	Exposure to asbestos	Uncontrolled demolition	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Incredible - L6	C - Moderate		
			Op TE12.8	Exposure to asbestos	Lack of Legal compliance requirements	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Rare - L5	C - Moderate		
			Op TE12.9	Exposure to asbestos	Unlicensed provider engaged	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Rare - L5	C - Moderate		
			Op TE12.10	Exposure to asbestos	Workers not competent	Exposure to asbestos	a) Industrial action/ significant project delays b) Prosecution/ Legal action c) Permanent illness (non fatal) d) Fatal illness	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) ACM remediation/ incident response plan v) Medical surveillance for TNSW staff only	Major - C3	Unlikely - L4	B - High		
			Op TE13.1	Exposure (Inhalation) to Hazardous Substance	Inadequate substance handling, storage and transportation	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.2	Exposure (Inhalation) to Hazardous Substance	Insufficient warning and communication of hazard	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.3	Exposure (Inhalation) to Hazardous Substance	Unknown substance and/or hazardous nature	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.4	Exposure (Inhalation) to Hazardous Substance	Substance spill	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE13.5	Exposure (Inhalation) to Hazardous Substance	SDS instructions not followed for use (where applicable)	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.6	Exposure (Inhalation) to Hazardous Substance	Incorrect use of protective equipment	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.7	Exposure (Inhalation) to Hazardous Substance	Uncontrolled demolition/construction activities	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.8	Exposure (Inhalation) to Hazardous Substance	Inappropriate training, instruction and work methods	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.9	Exposure (Inhalation) to Hazardous Substance	Inadequate hazardous substances risk assessment	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.10	Exposure (Inhalation) to Hazardous Substance	Non-compliant or inadequate SDS	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE13.11	Exposure (Inhalation) to Hazardous Substance	Inadequate hazardous substance risk assessment (eg use of competent person, correct interpretation of SDS, etc)	Exposure (Inhalation) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.1	Exposure (Dermal) to Hazardous Substance	Inadequate substance handling and transportation	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.2	Exposure (Dermal) to Hazardous Substance	Insufficient warning and communication of hazard	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE14.3	Exposure (Dermal) to Hazardous Substance	Unknown substance and/or hazardous nature	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.4	Exposure (Dermal) to Hazardous Substance	Substance leak/ loss of containment	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Rare - L5	C - Moderate		
			Op TE14.5	Exposure (Dermal) to Hazardous Substance	SDS instructions not followed for use (where applicable)	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.6	Exposure (Dermal) to Hazardous Substance	Incorrect use of protective equipment	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) SSMP and SWMS review iii) Consultative inspections iv) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.7	Exposure (Dermal) to Hazardous Substance	Non-compliant SDS	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE14.8	Exposure (Dermal) to Hazardous Substance	Inadequate hazardous substance risk assessment (eg use of competent person, correct interpretation of SDS, etc)	Exposure (Dermal) to Hazardous Substance	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) TSR requirements ii) Incident/ emergency planning and procedures	Moderate - C4	Likely - L3	B - High		
			Op TE15.1	Ingestion of chemicals/ substances	Inadequate substance handling and transportation	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	D - Low		
			Op TE15.2	Ingestion of chemicals/ substances	Insufficient warning and communication of hazard	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	D - Low		
			Op TE15.3	Ingestion of chemicals/ substances	Unknown substance and/or hazardous nature	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	D - Low		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project	
TPD	TS (CRN) / WPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
		Op TE15.4	Ingestion of chemicals/ substances	Poor personal hygiene/ handwashing practices	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	B - Low		
		Op TE15.5	Ingestion of chemicals/ substances	Inadequate decontamination protocols	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	B - Low		
		Op TE15.6	Ingestion of chemicals/ substances	Incorrect use of / or inadequate protective equipment	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	B - Low		
		Op TE15.7	Ingestion of chemicals/ substances	SDS instructions not followed for use (where applicable)	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	B - Low		
		Op TE15.8	Ingestion of chemicals/ substances	Inadequate hazardous substance risk assessment (eg use of competent person, correct interpretation of SDS, etc)	Ingestion of chemicals/ substances	a) Fatal exposure (acute) b) Prosecution/ Legal action c) Permanent injury/illness to worker d) Fatal disease (chronic) e) Non permanent injury/illness to worker	i) SSMP and SWMS review ii) Consultative inspections iii) Incident/ emergency planning and procedures	Minor - C5	Incredible - L6	B - Low		
		Op TE16.1	Exposure to Ionising Radiation	Inadequate handling and transportation of NDT radiation source	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	i) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
		Op TE16.2	Exposure to Ionising Radiation	Nuclear Density Testing (NDT) equipment malfunction	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	i) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
		Op TE16.3	Exposure to Ionising Radiation	Inadequate plant specification (NDT)	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	i) Incident/ emergency planning and procedures	Major - C3	Rare - L5	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWBCL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE16.4	Exposure to Ionising Radiation	Inadequate isolation controls during NDT	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	i) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE16.5	Exposure to Ionising Radiation	Exposure to contaminated sites	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	Environmental and Planning controls	Major - C3	Rare - L5	C - Moderate		
			Op TE16.6	Exposure to Ionising Radiation	Insufficient warning and communication of hazard	Exposure to Ionising Radiation	a) Prosecution/ Legal action b) Fatal injury/illness to worker (carcinogenic effect) c) Permanent injury/illness (Mutagenic or teratogenic effect) to worker d) Non permanent injury/illness to worker (eg radiation sickness, dermal affects, etc)	i) Incident/ emergency planning and procedures	Major - C3	Likely - L3	B - High		
			Op TE17.1	Exposure to Non-Ionising Radiation	Inadequate skin protection	Exposure to Ionising Radiation	a) Prosecution/criminal/civil Legal action b) Permanent illness/ health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/ health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) TSR requirement ii) SWMS review iii) SSSMP review iv) Consultative inspections v) Skin cancer checks available for TNSW staff	Moderate - C4	Likely - L3	B - High		
			Op TE17.2	Exposure to Non-Ionising Radiation	Inadequate eye protection	Exposure to Ionising Radiation	a) Prosecution/criminal/civil Legal action b) Permanent illness/ health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/ health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) TSR requirement ii) SWMS review iii) SSSMP review iv) Consultative inspections	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE17.3	Exposure to Non-Ionising Radiation	Inadequate protection from welding arc	Exposure to Ionising Radiation	a) Prosecution/criminal/civil Legal action b) Permanent illness/ health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/ health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) TSR requirement ii) SWMS review iii) SSSMP review iv) Consultative inspections	Minor - C5	Rare - L5	D - Low		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE17.4	Exposure to Non-ionising Radiation	Inadequate isolation of RF sources	Exposure to Ionising Radiation	a) Prosecution/criminal/legal action b) Permanent illness/health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) Incident/ emergency planning and procedures	Insignificant - C6	Incredible - L6	D - Low		
			Op TE17.5	Exposure to Non-ionising Radiation	Failure to observe laser safety precautions	Exposure to Ionising Radiation	a) Prosecution/criminal/legal action b) Permanent illness/health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) TSR requirement ii) SWMS review iii) SSSMP review iv) Consultative inspections	Insignificant - C6	Incredible - L6	D - Low		
			Op TE17.6	Exposure to Non-ionising Radiation	Insufficient warning and communication of hazard	Exposure to Ionising Radiation	a) Prosecution/criminal/legal action b) Permanent illness/health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) Incident/ emergency planning and procedures	Moderate - C4	Incredible - L6	D - Low		
			Op TE17.7	Exposure to Non-ionising Radiation	Unknown substance and/or hazardous nature	Exposure to Ionising Radiation	a) Prosecution/criminal/legal action b) Permanent illness/health effect to worker (eg scarring, cataracts, etc) c) Fatal chronic disease (eg skin cancer) d) Non permanent illness/health effect to worker (eg sunburn, etc) e) Civil Legal action/ damages	i) Incident/ emergency planning and procedures	Insignificant - C6	Rare - L5	D - Low		
			Op TE18.1	Exposure to Contaminated Land and/or Water (exc asbestos)	Inadequate substance handling and transportation	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE18.2	Exposure to Contaminated Land and/or Water (exc asbestos)	Insufficient warning and communication of hazard	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE18.3	Exposure to Contaminated Land and/or Water (exc asbestos)	Unknown substance and/or hazardous nature	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE18.4	Exposure to Contaminated Land and/or Water (exc asbestos)	Substance leak/ loss of containment	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE18.5	Exposure to Contaminated Land and/or Water (exc asbestos)	Incorrect use of or inadequate protective equipment	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE18.6	Exposure to Contaminated Land and/or Water (exc asbestos)	Poor or inadequate advice / assessment	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE18.7	Exposure to Contaminated Land and/or Water (exc asbestos)	Procedural breach	Exposure to Contaminated Land and/or Water (exc asbestos)	a) Environmental incident b) Legal action c) Permanent injury/illness to worker d) fatal chronic disease e) Non permanent injury/illness to worker	i) TSR requirement ii) SWMS review iii) EMP / SSSMP review iv) Consultative / 3rd party inspections v) Emergency Management Plan vi) Environmental response plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE19.1	Working whilst impaired by fatigue	Secondary employment	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TNSW policy ii) Fatigue Management for Rail Safety Workers Standard 60-ST-011 iii) Standard iv) Positive Safety culture	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE19.2	Working whilst impaired by fatigue	Insufficient training in awareness of fatigue risk	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Rare - L5	C - Moderate		
			Op TE19.3	Working whilst impaired by fatigue	Inadequate or lack of Fatigue Management systems	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011 v) Positive Safety Culture	Moderate - C4	Rare - L5	C - Moderate		
			Op TE19.4	Working whilst impaired by fatigue	Failure to comply with Fatigue Management program	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Likely - L5	B - High		
			Op TE19.5	Working whilst impaired by fatigue	Poor work planning / Lack of resources	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Likely - L5	B - High		
			Op TE19.7	Working whilst impaired by fatigue	Plant equipment design inadequate	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE19.8	Working whilst impaired by fatigue	Medication	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) AGO standard and enforcement v) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Unlikely - L4	C - Moderate		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE19.9	Working whilst impaired by fatigue	Mundane repetitive tasks	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Likely - L3	B - High		
			Op TE19.10	Working whilst impaired by fatigue	Hot / cold conditions	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE19.11	Working whilst impaired by fatigue	Pressure and stress	Working whilst impaired by fatigue	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage	i) TSR requirement ii) SSMP Review iii) SWMS Review iv) Compliance to AOD standard v) Fatigue Management for Rail Safety Workers Standard 60-ST-011	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE20.1	Worker under the influence of Alcohol and/or Drugs	Lack of awareness of AOD risk	Worker under the influence of Alcohol and/or Drugs	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely	i) Compliance to AOD standard ii) TSR requirement iii) SWMS review iv) SSSMP review v) AOD testing regime vi) Consultative inspections	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE20.2	Worker under the influence of Alcohol and/or Drugs	Lack of AOD Management	Worker under the influence of Alcohol and/or Drugs	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely	i) Compliance to AOD standard ii) TSR requirement iii) SWMS review iv) SSSMP review v) AOD testing regime vi) Consultative inspections	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE20.3	Worker under the influence of Alcohol and/or Drugs	Failure to comply with AOD program	Worker under the influence of Alcohol and/or Drugs	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely	i) Compliance to AOD standard ii) TSR requirement iii) SWMS review iv) SSSMP review v) AOD testing regime vi) Consultative inspections	Moderate - C4	Probable - L2	B - High		
			Op TE20.4	Worker under the influence of Alcohol and/or Drugs	Medication	Worker under the influence of Alcohol and/or Drugs	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely	i) Compliance to AOD standard ii) TSR requirement iii) SWMS review iv) SSSMP review v) AOD testing regime vi) Consultative inspections	Moderate - C4	Likely - L3	B - High		
			Op TE20.5	Worker under the influence of Alcohol and/or Drugs	Pressure and stress	Worker under the influence of Alcohol and/or Drugs	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Removal of worker from work g) Inability of worker to perform work safely	i) Compliance to AOD standard ii) TSR requirement iii) SWMS review iv) SSSMP review v) AOD testing regime vi) Consultative inspections vii) EAP program	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE21.1	Work under insufficient Lighting	Inadequate lighting assessment / design	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped?	i) SSMP review	Minor - C5	Rare - L5	D - Low		
			Op TE21.2	Work under insufficient Lighting	Power outage	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped?	Work to be stopped	Minor - C5	Rare - L5	D - Low		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CR/N)	W/PRC	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion
													Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE21.3	Work under insufficient Lighting	Lack of task specific light	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped	a) SWMS Review b) Consultative inspections	Minor - C5	Rate - L5	D - Low		
			Op TE21.4	Work under insufficient Lighting	Poor planning	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped	a) TSR Requirement	Minor - C5	Rate - L5	D - Low		
			Op TE21.5	Work under insufficient Lighting	Lack of emergency lighting	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped	a) TSR requirement b) Consultative inspections	Minor - C5	Rate - L5	D - Low		
			Op TE21.6	Work under insufficient Lighting	Work at night	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped	b) SSMP Review i) SWMS Review a) Consultative inspections	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE21.7	Work under insufficient Lighting	Inclement weather	Work under insufficient Lighting	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury e) Asset damage f) Work stopped	a) SSMP Review (risk assessment review)	Minor - C5	Rate - L5	D - Low		
			Op TE22.1	Release of Stored Energy	Failure to identify all energy sources	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Consultative Inspections ii) Emergency Management procedures	Major - C3	Likely - L3	B - High		
			Op TE22.2	Release of Stored Energy	Unsafe operation/ method	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	a) SWMS Review e) Consultative inspections iii) Emergency Management procedures	Major - C3	Unlikely - L4	B - High		
			Op TE22.3	Release of Stored Energy	Inadequate plant design	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Emergency Management procedures	Major - C3	Unlikely - L4	B - High		
			Op TE22.4	Release of Stored Energy	Inadequate guarding system	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Consultative Inspections ii) Emergency Management procedures	Major - C3	Unlikely - L4	B - High		
			Op TE22.5	Release of Stored Energy	Faulty equipment/ plant	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Consultative Inspections ii) Emergency Management procedures	Major - C3	Unlikely - L4	B - High		
			Op TE22.6	Release of Stored Energy	Plant/ equipment unfit for purpose	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Emergency Management procedures	Major - C3	Unlikely - L4	B - High		
			Op TE22.7	Release of Stored Energy	Failure of lockout system	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Emergency Management procedures	Major - C3	Rate - L5	C - Moderate		
			Op TE22.8	Release of Stored Energy	Poor maintenance practices	Release of Stored Energy	a) Fatal incident b) Legal action c) Permanent injury d) Non permanent injury	i) Emergency Management procedures	Major - C3	Likely - L3	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWB	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE23.1	Exposure to workplace Bullying and/or Harassment	Pressure and stress	Exposure to workplace Bullying and/or Harassment	a) loss of productivity b) Absenteeism c) Permanent psychological/physical injury d) Non permanent psychological/physical injury e) Legal action f) Failure to retain staff	i) Bullying and harassment policy and procedure ii) employee induction iii) Grievance Procedure iv) Employee Assistance Program	Moderate - C4	Rate - L5	C - Moderate		
			Op TE23.2	Exposure to workplace Bullying and/or Harassment	Poor management	Exposure to workplace Bullying and/or Harassment	a) loss of productivity b) Absenteeism c) Permanent psychological/physical injury d) Non permanent psychological/physical injury e) Legal action f) Failure to retain staff	i) Bullying and harassment policy and procedure ii) employee induction iii) Performance management (PDA) iv) Grievance Procedure v) Employee Assistance Program	Moderate - C4	Rate - L5	C - Moderate		
			Op TE23.3	Exposure to workplace Bullying and/or Harassment	Lack of policy / procedures	Exposure to workplace Bullying and/or Harassment	a) loss of productivity b) Absenteeism c) Permanent psychological/physical injury d) Non permanent psychological/physical injury e) Legal action f) Failure to retain staff	i) Bullying and harassment policy and procedure ii) employee induction iii) Grievance Procedure iv) Employee Assistance Program	Moderate - C4	Rate - L5	C - Moderate		
			Op TE23.4	Exposure to workplace Bullying and/or Harassment	Failure to apply policy / procedures Poor workplace culture Failure to communicate expectations	Exposure to workplace Bullying and/or Harassment	a) loss of productivity b) Absenteeism c) Permanent psychological/physical injury d) Non permanent psychological/physical injury e) Legal action f) Failure to retain staff	i) PDA ii) Induction iii) Grievance Procedure iv) Employee Assistance Program	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE23.7	Exposure to workplace Bullying and/or Harassment	Cultural diversity	Exposure to workplace Bullying and/or Harassment	a) loss of productivity b) Absenteeism c) Permanent psychological/physical injury d) Non permanent psychological/physical injury e) Legal action f) Failure to retain staff	i) Bullying and harassment program/training ii) EAP iii) Grievance Procedure	Moderate - C4	Rate - L5	C - Moderate		
			Op TE24.1	Workplace Violence and/or Assault	Pressure and stress	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) Bullying and harassment policy and procedure ii) employee induction iii) Grievance Procedure iv) Employee Assistance Program	Moderate - C4	Rate - L5	C - Moderate		
			Op TE24.2	Workplace Violence and/or Assault	Poor management	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) Bullying and harassment policy and procedure ii) Performance management (PDA) iii) Emergency Management procedures/plans iv) Employee Assistance Program	Moderate - C4	Rate - L5	C - Moderate		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE24.3	Workplace Violence and/or Assault	Lack of policy / procedures	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) Bullying and harassment policy and procedure ii) emergency management plans and procedures iii) Grievance Procedure iv) Employee Assistance Program	Moderate - C4	Rare - L5	C - Moderate		
			Op TE24.4	Workplace Violence and/or Assault	Failure to apply policy / procedures Failure to communicate expectations	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) PDA ii) Induction iii) emergency management plans and procedures iv) Grievance Procedure v) Employee Assistance Program	Moderate - C4	Rare - L5	C - Moderate		
			Op TE24.5	Workplace Violence and/or Assault	Poor security management	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) Security Management Plan ii) SSMP Review iii) Consultative inspections iv) emergency management plans and procedures v) Grievance Procedure vi) Employee Assistance Program	Moderate - C4	Incredible - L6	D - Low		
			Op TE24.7	Workplace Violence and/or Assault	Workplace design	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) Grievance Procedure ii) EAP iii) emergency Management plans and procedures	Minor - C5	Rare - L5	D - Low		
			Op TE24.8	Workplace Violence and/or Assault	TNSW worker exposed at public meeting/private property	Workplace Violence and/or Assault	a) loss of productivity b) Absenteeism c) Permanent psychological injury d) Non permanent psychological injury e) Legal action f) Fatality g) Permanent Physical injury h) Non permanent physical injury	i) 60-PR-006 Using public venues for gatherings ii) Grievance Procedure iii) EAP iv) emergency Management plans and procedures	Insignificant - C6	Rare - L5	E - Low		
			Op TE25.1	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Inadequate 3rd party advice to TNSW	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) Contractor selection and Management by TNSW ii) Emergency Management procedures iii) Health surveillance post exposure	Insignificant - C6	Rare - L5	E - Low		

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TPD	TS (CR/N)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE25.2	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Insufficient warning and communication of hazard	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SSMP Review ii) SWMS review iii) site induction iv) Emergency Management procedure v) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.3	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Inadequate safe removal practice	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SSMP Review ii) SWMS review iii) site induction iv) Consultative inspections v) Emergency Management procedure vi) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.4	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Unknown agent and/or hazardous nature	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) Contaminated land identification and surveys ii) Emergency management procedures iii) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.5	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Inadequate safe work procedures	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SSMP Review ii) SWMS review iii) site induction iv) Consultative inspections v) Emergency Management procedure vi) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.6	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Incorrect use of or inadequate protective equipment	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.7	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Uncontrolled demolition /excavation	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SSMP Review ii) SWMS review iii) site induction iv) Consultative inspections v) Emergency Management procedure vi) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE25.8	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Lack of contractual Legal compliance requirements	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) Contractor selection and Management by TNSW ii) Emergency Management procedures iii) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		

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			Op TE25.9	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	Poor personal hygiene practices	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Lost productivity b) Fatal illness/injury c) Permanent non fatal illness/injury d) Temporary non fatal illness/injury e) Legal action f) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.1	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Poor personal hygiene practices	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.2	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Insufficient warning and communication of hazard	Exposure to biological agent from contaminated land - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.3	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Unknown agent and/or hazardous nature	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.4	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Inadequate safe work procedures	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.5	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	Incorrect use of or inadequate protective equipment	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) SWMS Review ii) Consultative inspections iii) Emergency Management procedures iv) Health surveillance post exposure	Insignificant - C6	Rare - L5	D - Low		
			Op TE26.6	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	First Aid Officer exposure	Exposure to biological agent - person to person - bacteria, virus, fungus, parasite	a) Fatal illness b) Permanent non fatal illness c) Temporary non fatal illness d) Legal action e) Infected person unaware are carrier	i) Competent personnel ii) PPE provided to First Aid Officers	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.1	Lifting and/or manual handling of heavy, unstable, awkward loads	Inadequate safe work procedures	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.2	Lifting and/or manual handling of heavy, unstable, awkward loads	Poor work planning	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) SWMS Reviews ii) Consultative inspections iii) First Aid/Injury management	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.3	Lifting and/or manual handling of heavy, unstable, awkward loads	Poor task design	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) First Aid and injury management	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.4	Lifting and/or manual handling of heavy, unstable, awkward loads	Poor workplace design	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) First Aid and injury management	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.5	Lifting and/or manual handling of heavy, unstable, awkward loads	Lack of Mechanical Handling Equipment	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Moderate - C4	Frequent - L1	A - Medium		
			Op TE28.6	Lifting and/or manual handling of heavy, unstable, awkward loads	Lack of awareness of manual handling techniques/ hazards	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) Consultative inspections ii) First Aid/Injury management	Major - C3	Frequent - L1	A - Medium		
			Op TE28.7	Lifting and/or manual handling of heavy, unstable, awkward loads	Ageing workforce	Lifting and/or manual handling of heavy, unstable, awkward loads	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Likely - L3	B - High		

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			OP TE29.1	Static and/or Awkward Work Postures	Inadequate safe work procedures	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Likely - L3	B - High		
			OP TE29.2	Static and/or Awkward Work Postures	Poor work planning	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Likely - L3	B - High		
			OP TE29.3	Static and/or Awkward Work Postures	Poor task design	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Likely - L3	B - High		
			OP TE29.4	Static and/or Awkward Work Postures	Poor plant design	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Major - C3	Likely - L3	B - High		
			OP TE29.5	Static and/or Awkward Work Postures	Ageing workforce	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			OP TE29.6	Static and/or Awkward Work Postures	Lack of awareness of ergonomic hazards	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			OP TE29.7	Static and/or Awkward Work Postures	Work stress/pressure	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Incredible - L5	B - Low		
			OP TE29.8	Static and/or Awkward Work Postures	Poor workstation layout/setup	Static and/or Awkward Work Postures	a) Permanent injury b) Non permanent injury c) Legal action	i) TNSW WHS Induction ii) 60-SD-013 Guide to office safety iii) Injury Management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE30.1	Bites/ Stings (animals, insect, spider, etc)	Lack of safe work procedures	Bites/ Stings (animals, insect, spider, etc)	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP review ii) Site Induction iii) Emergency Management plan	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE30.2	Bites/ Stings (animals, insect, spider, etc)	Lack of awareness	Bites/ Stings (animals, insect, spider, etc)	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP review ii) Site Induction iii) Emergency Management plan	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE30.3	Bites/ Stings (animals, insect, spider, etc)	Environmental conditions (e.g swarms, unknown infestation etc.)	Bites/ Stings (animals, insect, spider, etc)	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP review ii) Site Induction iii) Emergency Management plan	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE31.1	Contact/ exposure to needles/ sharps	Lack of safe work procedures	Contact/ exposure to needles/ sharps	a) Fatal illness b) Non fatal illness c) Laceration d) Legal action e) Amputation	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE31.2	Contact/ exposure to needles/ sharps	Lack of awareness	Contact/ exposure to needles/ sharps	a) Fatal illness b) Non fatal illness c) Laceration d) Legal action e) Amputation	i) SSMP Reviews ii) SWMS Reviews iii) Site Induction iv) First Aid/Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE31.4	Contact/ exposure to needles/ sharps	Incorrect use of protective equipment	Contact/ exposure to needles/ sharps	a) Fatal illness b) Non fatal illness c) Laceration d) Legal action e) Amputation	i) SSMP Reviews ii) SWMS Reviews iii) Site Induction iv) Consultative inspections v) First Aid/Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE32.1	Repetitive movements	Inadequate safe work procedures	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE32.2	Repetitive movements	Poor work planning	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE32.3	Repetitive movements	Poor task design	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE32.4	Repetitive movements	Poor workplace/plant design	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE32.5	Repetitive movements	Ageing / modified plant	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Minor - C5	Likely - L3	C - Moderate		

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			Op TE32.6	Repetitive movements	Lack of awareness of ergonomic hazards	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE32.7	Repetitive movements	Ageing workforce	Repetitive movements	a) Permanent injury b) Non permanent injury c) Legal action	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE34.1	Exposure to excessive vibration	Inadequate safe work procedures	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE34.2	Exposure to excessive vibration	Poor work planning	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE34.3	Exposure to excessive vibration	Poor task design	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Moderate - C4	Likely - L3	B - High		
			Op TE34.4	Exposure to excessive vibration	Poor plant design	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE34.5	Exposure to excessive vibration	Ageing / modified plant	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE34.6	Exposure to excessive vibration	Lack of awareness of vibration hazards	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Minor - C5	Rate - L5	D - Low		
			Op TE34.7	Exposure to excessive vibration	Failure to provide/wear PPE	Exposure to excessive vibration	a) Permanent injury b) Non permanent injury c) Legal action d) Asset damage	i) Injury management	Critical - C2	Rate - L5	B - High		
			Op TE35.1	Fail into or inundation of water/ liquid	Inadequate safe work procedures	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Minor - C5	Rate - L5	D - Low		
			Op TE35.2	Fail into or inundation of water/ liquid	Plant rollover/ collapse	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Minor - C5	Incredible - L6	D - Low		
			Op TE35.3	Fail into or inundation of water/ liquid	Failure to isolate work area from water sources	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Major - C3	Unlikely - L4	B - High		
			Op TE35.4	Fail into or inundation of water/ liquid	Failure to identify water sources	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Catastrophic - C1	Rate - L5	B - High		

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			Op TE35.5	Fail into or inundation of water/ liquid	Excavation integrity	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Critical - C2	Rare - L5	B - High		
			Op TE35.5	Fail into or inundation of water/ liquid	Structural collapse of cofferdam, sheet piling etc.	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Critical - C2	Rare - L5	B - High		
			Op TE35.7	Fail into or inundation of water/ liquid	Failure to provide/wear PPE	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Minor - C5	Rare - L5	B - Low		
			Op TE35.8	Fail into or inundation of water/ liquid	Out of control plant	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Minor - C5	Unlikely - L4	C - Moderate		
			Op TE35.9	Fail into or inundation of water/ liquid	Strike service	Fail into or inundation of water/ liquid	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) TSR Requirement ii) SSMP Review iii) SWMS review iv) site induction v) Consultative inspections vi) Emergency Management procedure vii) Injury Management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE36.1	Exposure to extreme ambient temperatures	Poor planning	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE36.2	Exposure to extreme ambient temperatures	Lack of safe work procedures	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Minor - C5	Unlikely - L4	C - Moderate		
			Op TE36.3	Exposure to extreme ambient temperatures	Lack of awareness of hazards	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SWMS Reviews ii) Consultative inspections iii) First Aid/Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE36.4	Exposure to extreme ambient temperatures	Failure to respond to change in conditions	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Consultative inspections ii) First Aid/Injury management	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE36.5	Exposure to extreme ambient temperatures	Incorrect/ inadequate protective equipment	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP Reviews ii) SWMS Reviews iii) Consultative inspections iv) First Aid/Injury management	Minor - C5	Rare - L5	D - Low		
			Op TE36.6	Exposure to extreme ambient temperatures	Plant design/condition	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP Reviews ii) Consultative inspections iii) First Aid/Injury management	Minor - C5	Incredible - L6	D - Low		
			Op TE36.7	Exposure to extreme ambient temperatures	Client imposed limitations (eg response times to rectify issues may force working in very hot weather)	Exposure to extreme ambient temperatures	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) SSMP Reviews ii) Consultative inspections iii) First Aid/ injury management	Insignificant - C6	Incredible - L6	D - Low		
			Op TE38.1	TNSW office biohazard contamination	Exposure to biohazards	Exposure to biohazards	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) WHS Induction ii) WHS Committee inspection iii) First Aid Officers and equipment	Moderate - C4	Incredible - L6	D - Low		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE38.2	Hazardous Chemicals in TINSW office	Inappropriate storage and labeling of chemicals	Exposure to Hazardous Chemicals	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Limited access to server room. ii) SDS and risk assessments done. iii) Toners handled by approved personnel iv) WHS Committee inspection v) First Aid Officers and equipment	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE38.3	Elevated storage in TINSW office	Inappropriate access to items stored on elevated shelving	Falls from height <2m	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Stepladders with a solid base and a non slip surface provided to each floor. ii) Guide to Office Safety 60-SD-013 iii) WHS Committee inspection iv) First Aid Officers and equipment	Moderate - C4	Rare - L5	C - Moderate		
			Op TE38.4	Electrical hazard in TINSW office	Electrical faults in equipment	Contact with high voltage electricity	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Workplace Safety Standard 60-ST-015 ii) WHS Committee inspection iii) First Aid Officers and equipment	Insignificant - C6	Incredible - L6	D - Low		
			Op TE38.5	Use of fire stairs in TINSW office building	Slip/trip	Falls using fire stairs	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) WHS induction ii) WHS Committee inspection iii) First Aid Officers and equipment	Minor - C3	Rare - L5	D - Low		
			Op TE38.6	Visitors safety in TINSW office	Visitors induction and sign in/out process not followed	Visitor not evacuated	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Visitor sign in and out process. ii) TINSW office emergency plan iii) Contractor Induction					
			Op TE38.7	Slip hazards in TINSW office	Inappropriate floor covering, Poorly maintained floor surfaces	Slipping on wet floor	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Non slip floor coverings in kitchens and wet areas ii) Consultative Committee inspections	Minor - C3	Incredible - L6	D - Low		
			Op TE38.7A	Obstruction of walkways in TINSW office	Inappropriate storage of items / workarea layout	Slips, trips and falls on same level		i) Guide to Office Safety 60-SD-013	Minor - C5	Incredible - L6	D - Low		
			Op TE38.8	TINSW office worker injury/incident	Lack of awareness of First Aid/emergency management process	TINSW office worker injury/incident	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) WHS induction ii) 60-ST-015 Workplace Safety Standard iii) TINSW office emergency plan iv) First Aid Officers and equipment	Moderate - C4	Rare - L5	C - Moderate		
			Op TE38.9	Use of instant hot water systems in TINSW office	Fault in equipment/incorrect use of equipment	Burns/scalds from kitchen appliances	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) Warning signs in place ii) First Aid Officers and equipment	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE38.10	Visiting worksites	Travel incident	TINSW office worker injury/incident	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action	i) WHS induction ii) SWMS - Visiting Worksites 4TP-SD-005	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE39.2	Demolition work	Lack of dilapidation/hazardous materials survey	Person injured during demolition	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE39.3	Demolition work	Failure to identify, isolate / make safe all existing services	Damage or disruption to services	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan v) Comprehensive services identification process	Major - C3	Rare - L5	C - Moderate		
			Op TE39.5	Demolition work	Failure to install fall prevention equipment	Falls from heights	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Likely - L3	B - High		
			Op TE39.7	Demolition work	Lack of demolition work plan as per AS2601	Unplanned structural collapse	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Rare - L5	C - Moderate		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE39.8	Demolition work	Insufficient or inaccurate maintenance Lack of training of operator	Plant / equipment failure	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan v) 3rd party operator training management system	Moderate - C4	Incredible - L5	B - Low		
			Op TE39.9	Demolition work	Unsafe demolition method	Person injured during demolition	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan v) 3rd party operator Safety Management System	Moderate - C4	Likely - L3	B - High		
			Op TE39.10	Demolition work	Unlicensed demolition company	Person injured during demolition	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) Procurement processes ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE39.11	Demolition work	Lack of supervision of demolisher	Person injured during demolition	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE40.1	Tilt up / precast concrete construction	Failure to design / Work not completed in accordance with AS3650	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			Op TE40.3	Tilt up / precast concrete construction	Failure to inspect and certify to approved design	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE40.6	Tilt up / precast concrete construction	Structural collapse	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE40.7	Tilt up / precast concrete construction	Plant / equipment failure	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Incredible - L5	C - Moderate		
			Op TE40.8	Tilt up / precast concrete construction	Approved erection sequence not followed	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Likely - L3	B - High		
			Op TE40.9	Tilt up / precast concrete construction	Not competent company	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) Procurement processes ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE40.10	Tilt up / precast concrete construction	Lack of supervision	Person injured during tilt up / precast concrete construction	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Rare - L5	C - Moderate		
			Op TE41.1	Construction involving temporary structural support	Failure to design / Work not completed in accordance with AS3650, AS2601, AS1576, AS3610, AS4744	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Unlikely - L4	C - Moderate		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE41.3	Construction involving temporary structural support	Design by not competent persons	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE41.4	Construction involving temporary structural support	Falling objects	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE41.5	Construction involving temporary structural support	Falls from heights	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE41.6	Construction involving temporary structural support	Failure to inspect and certify to approved design	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE41.7	Construction involving temporary structural support	Plant and equipment failure	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Incredible - L6	C - Moderate		
			Op TE41.8	Construction involving temporary structural support	Approved work method not followed	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Likely - L3	B - High		
			Op TE41.9	Construction involving temporary structural support	Not competent company	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) Procurement processes ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE41.10	Construction involving temporary structural support	Lack of supervision	Person injured during construction involving temporary structural support	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.1	Working in confined space	Poor work planning	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.2	Working in confined space	Failure to identify confined spaces	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.3	Working in confined space	Failure to design out confined spaces	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			Op TE42.4	Working in confined space	Failure to prevent unauthorised entry	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.5	Working in confined space	Lack of permit to work system	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review, ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Catastrophic - C1	Unlikely - L4	A - Severe		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE42.6	Working in confined space	Failure to comply with permit to work system	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			OP TE 42.6a	Working in confined space	Failure to follow approved work method	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE42.7	Working in confined space	Plant and equipment failure	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.8	Working in confined space	Untrained/ incompetent personnel	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.9	Working in confined space	Lack of competent standby person	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Rare - L5	B - High		
			Op TE42.10	Working in confined space	Lack of supervision	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			Op TE42.11	Working in confined space	Lack of signage	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE42.12	Working in confined space	Work method not compliant with AS2865	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			Op TE42.13	Working in confined space	No rescue plan/equipment	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE42.14	Working in confined space	Failure to respond to changed conditions	Person(s) injured during construction involving confined space	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.1	Excavation work	Poor work planning	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.2	Excavation work	Failure to identify buried services	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE43.3	Excavation work	Failure to isolate services	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Likely - L3	B - High		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE43.4	Excavation work	Failure to provide safe access / egress.	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE43.5	Excavation work	Failure to control excavation work (i.e. by use of permits)	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.6	Excavation work	Failure to prevent falls of people into excavation	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.7	Excavation work	Plant and equipment falls into excavation	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.8	Excavation work	Collapse of excavation	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SWMS Review ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.9	Excavation work	Inappropriate stockpiling of materials	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SWMS Review ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE43.10	Excavation work	Lack of supervision	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Unlikely - L4	B - High		
			Op TE43.11	Excavation work	Lack of signage	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.12	Excavation work	Work method not compliant with CoP	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SWMS Review ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.13	Excavation work	No rescue plan/equipment	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SWMS Review ii) Consultative inspections iii) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.14	Excavation work	Failure to respond to changed conditions	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) Consultative inspections ii) Emergency response and Crisis Management plan	Major - C3	Likely - L3	B - High		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE43.15	Excavation work	Failure to inspect excavation on daily basis (where deeper than 1m)	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Critical - C2	Unlikely - L4	B - High		
			Op TE43.16	Excavation work	Lack of training/competence in relation to excavation safety	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Moderate - C4	Rare - L5	C - Moderate		
			Op TE43.17	Excavation work	Failure to design or install shoring system to AS4744	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C3	Likely - L3	B - High		
			Op TE43.18	Excavation work	Failure to identify contaminated soil	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C5	Rare - L5	C - Moderate		
			Op TE43.19	Excavation work	Failure to obtain geotechnical engineering advice	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) SSMP Review ii) SWMS Review iii) Consultative inspections iv) Emergency Response and Crisis Management plan	Major - C5	Rare - L5	C - Moderate		
			Op TE43.20	Excavation work	Inappropriate 3rd party advice	Person(s) injured during excavation	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Rare - L5	C - Moderate		
			Op TE44.1	Construction involving telecomm towers	Poor work planning	Person(s) injured during construction involving telecomm towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Minor - C5	Rare - L5	D - Low		
			Op TE44.2	Construction involving telecomm towers	Failure to isolate work beneath working at height location	Person(s) injured during construction involving telecomm towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C5	Rare - L5	C - Moderate		
			Op TE44.3	Construction involving telecomm towers	Failure to isolate energy sources	Person(s) injured during construction involving telecomm towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C5	Rare - L5	C - Moderate		
			Op TE44.4	Construction involving telecomm towers	Failure to provide safe access / egress	Person(s) injured during construction involving telecomm towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.5	Construction involving telecomm towers	Failure to control access (permit)	Person(s) injured during construction involving telecomm towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Moderate - C4	Rare - L5	C - Moderate		

Project Code		Project Name			Issue Date	Review Date	Rev. No.						
GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE44.6	Construction involving telecom towers	Plant and equipment failure	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Critical - C2	Incredible - L6	C - Moderate		
			Op TE44.7	Construction involving telecom towers	Manual handling injury	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.8	Construction involving telecom towers	Collapse of tower	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.9	Construction involving telecom towers	Failure to comply with AS1891 and/or AS4488	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Moderate - C4	Rare - L5	C - Moderate		
			Op TE44.10	Construction involving telecom towers	Lack of supervision	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.11	Construction involving telecom towers	Lack of signage	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.12	Construction involving telecom towers	Failure to obtain engineering/ rigging advice	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.13	Construction involving telecom towers	No rescue plan/equipment	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.14	Construction involving telecom towers	Failure to respond to changed conditions	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Major - C3	Rare - L5	C - Moderate		
			Op TE44.15	Construction involving telecom towers	Inappropriate 3rd party advice	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Critical - C2	Incredible - L6	C - Moderate		
			Op TE44.16	Construction involving telecom towers	Lack of training/ competence	Person(s) injured during construction involving telecom towers	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action f) Asset damage	i) TSR S1 Requirement ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Management procedure	Critical - C2	Incredible - L6	C - Moderate		

Project Code		Project Name			Issue Date	Review Date	Rev. No.						
GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CR/N)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE45.1	Construction involving diving	Poor work planning	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.2	Construction involving diving	Failure to develop diving work plan as per AS2299	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.3	Construction involving diving	Not competent divers	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.4	Construction involving diving	Failure to provide safe access / egress	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.5	Construction involving diving	Failure to control access (permit)	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Moderate - C4	Incredible - L6	D - Low		
			Op TE45.6	Construction involving diving	Plant and equipment failure	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.7	Construction involving diving	Manual handling injury	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.8	Construction involving diving	Failure to provide rescue means and plan, including decompression facility	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.9	Construction involving diving	Failure to comply with AS2299	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.10	Construction involving diving	Lack of supervision	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.11	Construction involving diving	Failure to respond to changed conditions	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Incredible - L6	C - Moderate		
			Op TE45.12	Construction involving diving	No rescue plan/equipment	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE45.13	Construction involving diving	Failure to manage diving work loads (bends and/or nitrogen in blood)	Person(s) injured during construction involving diving	a) Incident involving rescuer b) Fatality c) Non fatal permanent injury d) Non permanent injury e) Legal action	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		

Project Code		Project Name			Issue Date	Review Date	Rev. No.					
GENERIC WHS RISK REGISTER												
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project	
TPD	TS (CRN) / WPR	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
		Op TE46.1	Construction involving blasting with explosives	Poor work planning	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.2	Construction involving blasting with explosives	Inadequate storage of explosives	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.3	Construction involving blasting with explosives	Failure to transport explosives safely	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.4	Construction involving blasting with explosives	Failure to control sources of ignition	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.5	Construction involving blasting with explosives	Failure to establish exclusion zones	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.6	Construction involving blasting with explosives	Failure to use correct quantity of explosives	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.7	Construction involving blasting with explosives	Failure to handle explosives safely	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.8	Construction involving blasting with explosives	Structural collapse caused by blast	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
		Op TE46.9	Construction involving blasting with explosives	Flying shrapnel	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE46.10	Construction involving blasting with explosives	Lack of supervision	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE46.11	Construction involving blasting with explosives	Lack of signage	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE46.12	Construction involving blasting with explosives	Explosives used by incompetent persons	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE46.13	Construction involving blasting with explosives	Failure to obtain necessary licences/approvals	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE46.14	Construction involving blasting with explosives	Failure to respond to changed conditions	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Incredible - L6	C - Moderate		
			Op TE46.15	Construction involving blasting with explosives	Inappropriate 3rd party advice	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Critical - C2	Unlikely - L4	B - High		
			Op TE46.16	Construction involving blasting with explosives	Security breach leads to theft of explosives	Person(s) injured during construction involving blasting with explosives	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) Emergency Response and Crisis Management procedures/plans	Major - C3	Unlikely - L4	B - High		
			Op TE47.1	Tunnelling work	Poor work planning	Person(s) injured during tunneling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Likely - L3	B - High		
			Op TE47.2	Tunnelling work	Failure to identify buried services	Person(s) injured during tunneling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Moderate - C4	Rare - L5	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	WVBL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE47.3	Tunnelling work	Failure to isolate services	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		
			Op TE47.4	Tunnelling work	Failure to provide safe access / egress	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Critical - C2	Rare - L5	B - High		
			Op TE47.5	Tunnelling work	Failure to control entry	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Minor - C5	Frequent - L1	B - High		
			Op TE47.6	Tunnelling work	Failure to prevent falls into shafts	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Critical - C2	Unlikely - L4	B - High		
			Op TE47.7	Tunnelling work	Plant and equipment collision restricted space	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		
			Op TE47.7a	Tunnelling work	Worker struck by mobile plant	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Likely - L3	A - Severe		
			Op TE47.7b	Tunnelling work	Worker caught in plant or equipment (e.g. conveyor)	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		
			Op TE47.8	Tunnelling work	Collapse of tunnel	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Likely - L3	B - High		
			Op TE47.9	Tunnelling work	Inappropriate removal of materials	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Moderate - C4	Rare - L5	C - Moderate		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	WVPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE47.10	Tunnelling work	Lack of supervision	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Rare - L5	C - Moderate		
			Op TE47.11	Tunnelling work	Lack of signage	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE47.12	Tunnelling work	Tunnelling not compliant with CoP	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rare - L5	B - High		
			Op TE47.13	Tunnelling work	Nonfailure to maintain rescue plan/equipment	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Critical - C2	Rare - L5	B - High		
			Op TE47.14	Tunnelling work	Failure to respond to changed conditions	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Likely - L3	A - Severe		
			Op TE47.15	Tunnelling work	Lack of training/competence	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Moderate - C4	Rare - L5	C - Moderate		
			Op TE47.16	Tunnelling work	Failure in design of tunnel support system	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE47.17	Tunnelling work	Failure to identify contaminated soil	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Likely - L3	A - Severe		
			Op TE47.18	Tunnelling work	Failure to obtain geotechnical engineering advice	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		

Project Code		Project Name			Issue Date	Review Date	Rev. No.						
GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	WVPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE47.19	Tunnelling work	Inappropriate 3rd party advice	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE47.20	Tunnelling work	Failure to provide clean air and extract foul air	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE47.21	Tunnelling work	Fire in tunnel environment	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Moderate - C4	Unlikely - L4	C - Moderate		
			Op TE47.22	Tunnelling work	Ineffective emergency procedures	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rare - L5	B - High		
			Op TE47.23	Tunnelling work	PPE inadequate/foot worn	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE47.24	Tunnelling work	Inundation of water/sludge	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Insignificant - C6	Likely - L3	C - Moderate		
			Op TE47.25	Tunnelling work	Harsh working environment - heat, mud, noise	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Critical - C2	Rare - L5	B - High		
			Op TE47.26	Tunnelling work	Recruitment of inappropriate underground workers - claustrophobia	Person(s) injured during tunnelling	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Critical - C2	Rare - L5	B - High		
			Op TE48.1	Construction work on or near pressurised gas distribution mains and consumer piping	Poor work planning	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		

Project Code		Project Name			Issue Date	Review Date	Rev. No.						
GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE48.2	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to identify buried services	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Unlikely - L4	B - High		
			Op TE48.3	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to isolate/purge contents from pipeline	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Likely - L3	B - High		
			Op TE48.4	Construction work on or near pressurised gas distribution mains and consumer piping	Inadvertent strike (dropped load, mobile plant out of control, etc)	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Likely - L3	B - High		
			Op TE48.5	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to control work in vicinity (permit)	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Rate - L5	C - Moderate		
			Op TE48.6	Construction work on or near pressurised gas distribution mains and consumer piping	Lack of supervision	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Rate - L5	C - Moderate		
			Op TE48.7	Construction work on or near pressurised gas distribution mains and consumer piping	Lack of signage	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Major - C3	Likely - L3	B - High		
			Op TE48.8	Construction work on or near pressurised gas distribution mains and consumer piping	No rescue plan/equipment	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE48.9	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to respond to changed conditions Lack of training /competence in relation to high risk work	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rate - L5	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE48.10	Construction work on or near pressurised gas distribution mains and consumer piping	3rd party damage caused by asset owner or maintainer on TNSW project (not construction related)	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE48.11	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to respond to changed conditions	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE48.12	Construction work on or near pressurised gas distribution mains and consumer piping	Contact by stray current	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE48.13	Construction work on or near pressurised gas distribution mains and consumer piping	Security breach/terrorist attack	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Catastrophic - C1	Rate - L5	B - High		
			Op TE48.14	Construction work on or near pressurised gas distribution mains and consumer piping	Inappropriate 3rd party advice	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Critical - C2	Rate - L5	B - High		
			Op TE48.15	Construction work on or near pressurised gas distribution mains and consumer piping	Failure to protect pipeline	Person(s) injured during construction work on or near pressurised gas distribution mains and consumer piping	a) Fatality b) Permanent injury c) Non permanent injury d) legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Critical - C2	Rate - L5	B - High		
			Op TE49.1	Construction work on or near chemical, fuel or refrigerant lines	Poor work planning	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Major - C3	Unlikely - L4	B - High		
			Op TE49.2	Construction work on or near chemical, fuel or refrigerant lines	Failure to identify buried services	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Major - C3	Unlikely - L4	B - High		

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GENERIC WHS RISK REGISTER													
Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE49.3	Construction work on or near chemical, fuel or refrigerant lines	Failure to isolate/purge contents from pipeline	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rate - L5	B - High		
			Op TE49.4	Construction work on or near chemical, fuel or refrigerant lines	Inadvertent strike (dropped load, mobile plant out of control, etc)	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE49.5	Construction work on or near chemical, fuel or refrigerant lines	Failure to control work in the vicinity (permit)	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rate - L5	B - High		
			Op TE49.6	Construction work on or near chemical, fuel or refrigerant lines	Lack of supervision	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rate - L5	B - High		
			Op TE49.7	Construction work on or near chemical, fuel or refrigerant lines	Lack of signage	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Unlikely - L4	A - Severe		
			Op TE49.8	Construction work on or near chemical, fuel or refrigerant lines	No rescue plan/equipment	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE49.9	Construction work on or near chemical, fuel or refrigerant lines	Lack of training/competence in relation to high risk work	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Rate - L5	B - High		
			Op TE49.10	Construction work on or near chemical, fuel or refrigerant lines	3rd party damage caused by asset owner or maintainer on TNSW project (not construction related)	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedure/plans	Catastrophic - C1	Incredible - L6	B - High		

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TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE49.11	Construction work on or near chemical, fuel or refrigerant lines	Failure to protect pipeline	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections v) Emergency Response and Crisis Management procedures/plans	Catastrophic - C1	Incredible - L6	B - High		
			Op TE49.12	Construction work on or near chemical, fuel or refrigerant lines	Contact by stray current	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE49.13	Construction work on or near chemical, fuel or refrigerant lines	Security breach/terrorism attack	Person(s) injured during construction work on or near chemical, fuel or refrigerant lines	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public property damage g) Multiple fatality h) Loss of supply	i) TSR Requirements ii) SSMP/Utility Management Plan Review iii) SWMS review iv) Consultative inspections	Major - C3	Rate - L5	C - Moderate		
			Op TE50.1	Construction work on or near railway lines or roads	Poor work planning	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Unlikely - L4	B - High		
			Op TE50.2	Construction work on or near railway lines or roads	Lack of safe work procedures	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Rate - L5	C - Moderate		
			Op TE50.3	Construction work on or near railway lines or roads	Failure to plan worksite protection/traffic control	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Likely - L3	B - High		
			Op TE50.4	Construction work on or near railway lines or roads	Failure to provide safe access / egress	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Likely - L3	B - High		
			Op TE50.5	Construction work on or near railway lines or roads	Failure to control work in the vicinity (permit)	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Unlikely - L4	B - High		

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Applicable to agency		Hazard Information			Causes & Consequences of Hazard Event		Existing Risk Control(s) Details		Risk Rating		Applicability to scope and context of project		
TPD	TS (CRN)	HWPL	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE50.6	Construction work on or near railway lines or roads	Lack of supervision	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Likely - L3	B - High		
			Op TE50.7	Construction work on or near railway lines or roads	Lack of signage	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections vi) Emergency Response and Crisis Management procedures and plans	Major - C3	Probable - L2	A - Severe		
			Op TE50.8	Construction work on or near railway lines or roads	Failure to respond to changed conditions	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE50.9	Construction work on or near railway lines or roads	Lack of training/ competence	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections	Critical - C2	Unlikely - L4	B - High		
			Op TE50.10	Construction work on or near railway lines or roads	Inappropriate 3rd party advice	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections	Major - C3	Likely - L3	B - High		
			Op TE50.11	Construction work on or near railway lines or roads	Strike by train, vehicle, plant or equipment	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections	Major - C3	Unlikely - L4	B - High		
			Op TE50.12	Construction work on or near railway lines or roads	Worksite/traffic control plan not compliant to codes/legislation/ owner rules	Person(s) injured during construction work on or near railway lines or roads	a) Fatality b) Permanent injury c) Non permanent injury d) Legal action e) Asset damage f) Public/ service damage	i) Generic Rail Safety Risk Register 30-SD-036 ii) TSR Requirements iii) SSMP Review iv) SWMS Review v) Consultative inspections	Major - C3	Rare - L5	C - Moderate		
			Op TE51.1	Travelling to and from worksite	Road/rail traffic collision	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	i) SWMS - Visiting Worksites 4TP-SD-006	Major - C3	Rare - L5	C - Moderate		
			Op TE51.2	Travelling to and from worksite	Assault	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	i) SWMS - Visiting Worksites 4TP-SD-006	Major - C3	Rare - L5	C - Moderate		
			Op TE51.3	Travelling to and from worksite	Inability to render First Aid to injured TNSW worker	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	i) SWMS - Visiting Worksites 4TP-SD-006	Major - C3	Likely - L3	B - High		
			Op TE51.4	Travelling to and from worksite	TNSW not aware of medical conditions	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	i) SWMS - Visiting Worksites 4TP-SD-006	Major - C3	Rare - L5	C - Moderate		

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TPD	TS (CRN)	HWB	Hazard Ref.	Hazard	Potential Causes	Hazard Event	Potential Consequence(s)	Risk Controls Currently in Place (considered when determining the risk rating)	Consequence	Likelihood	Risk rating (cell formula used)	Applicability	Justification for exclusion Reference to the Project Risk Register Hazard ID applicable to this risk
			Op TE51.5	Travelling to and from worksite	Fatigue related incident	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	a) SWMS - Visiting Worksites 4TP-SD-006 b) Fatigue Management Standard c) Fatigue included in induction	Major - C3	Rare - L5	C - Moderate		
			Op TE51.6	Travelling to and from worksite	Lone work by TNSW staff	Exposure to trauma whilst travelling to and from worksite	a) Fatality b) Non Fatal permanent injury/illness c) Non Permanent injury/illness d) Legal action	a) Provision of mobile phones b) Flexible working arrangements	Major - C3	Unlikely - L4	B - High		

TfNSW Safety Risk Matrix

		Illness, first aid treatment or injury not requiring treatment.	1 or more Minor Injuries (medical treatment required)	Loss Time Injury (or restricted injury or occupational illness (recoverable))	Multiple Injuries or permanent major disabilities of employees, contractors, passengers, and/or the public	1 Fatality of employee, contractor, passenger, or a member of the public	Multiple Fatalities involving employees, contractors, passengers, and/or the public	-
		Insignificant - C6	Minor - C5	Moderate - C4	Major - C3	Critical - C2	Catastrophic - C1	<i>Drop-Down for zero risk (or not applicable or still to be scored)</i>
More than 100 times per year	Frequent - L1	B - High	B - High	A - Severe	A - Severe	A - Severe	A - Severe	-
10 to 100 times per year	Probable - L2	C - Moderate	B - High	B - High	A - Severe	A - Severe	A - Severe	-
1 to 10 times a year	Likely - L3	C - Moderate	C - Moderate	B - High	B - High	A - Severe	A - Severe	-
Once every 1 to 10 years	Unlikely - L4	D - Low	C - Moderate	C - Moderate	B - High	B - High	A - Severe	-
	Rare - L5	D - Low	D - Low	C - Moderate	C - Moderate	B - High	B - High	-
Less than once every 100 years	Incredible - L6	D - Low	D - Low	D - Low	C - Moderate	C - Moderate	B - High	-
<i>Drop-Down for zero risk (or not applicable or still to be scored)</i>		-	-	-	-	-	-	-

	Likelihood - QUALITATIVE EXPECTATION	Likelihood - QUANTITATIVE FREQUENCY
Frequent - L1	You expect it will almost definitely be a regular or repeated feature of the project life	More than 100 times per year
Probable - L2	You expect it very likely to occur during the project life	10 to 100 times per year
Likely - L3	You would expect it will occur more likely than not occur during the project life	1 to 10 times a year
Unlikely - L4	You would expect it will more likely not occur than occur during the project life	Once every 1 to 10 years
Rare - L5	You don't expect it to occur during the project life	Once every 10 to 100 years
Incredible - L6	You don't expect it to ever occur during project life	Less than once every 100 years

TfNSW SAFETY HAZARD EVALUATION AND ACTIONING

Risk Rating	Action to be Taken (refer to the Transport Enterprise Risk Management (TERM) Standard 30-ST-164 for more information)
A - Severe	Risks with this rating are generally intolerable and should be avoided. In relation to health and safety and environment, the task must not be performed and alternative solution found - without special dispensation from the Director General. All necessary steps must be taken to reduce the risk below this level without delay.
B - High	Risks with this rating are undesirable. They can only be tolerated if it is not reasonably practicable to reduce the risk further. In relation to health and safety and environment, the task must not be performed without the explicit concurrence of the Director General Direct Report, who is to verify that all reasonably practicable treatments have been implemented. These risks are considered on the verge of being unacceptable and must be given immediate priority.
C - Moderate	Risks with this rating are tolerable if it is not reasonably practicable to reduce the risk further. In relation to health and safety and environment, the task should be reviewed to determine if it can be reduced further and whether all reasonable and practicable controls have been considered / applied.
D - Low	Risks with this rating are considered to be broadly acceptable. In relation to health and safety and environmental risks, control measures should be effective and reliable and subject to appropriate monitoring. If there are options for further risk reduction and the cost is proportionate to the benefits to be gained, then implementation of these measures should be considered. The risk and its treatment measures should be subject to appropriate monitoring.

DROP DOWN MENU ENTRIES

Consequence	Likelihood	Risk Rating	Applicability
Catastrophic - C1	Frequent - L1	A - Severe	Applicable
Critical - C2	Probable - L2	B - High	Not Applicable
Major - C3	Likely - L3	C - Moderate	-
Moderate - C4	Unlikely - L4	D - Low	
Minor - C5	Rare - L5	-	
Insignificant - C6	Incredible - L6		
-	-		



Guide to Environmental Control Map

3TP-SD-015/8.0

Supporting Document – Applicable to Infrastructure & Services Quality Management System

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3.0	16 Dec 09	707847_1	Updated to reflect restructure of P&E group and document owner
4.0	1 Jul 10	800964_1	Reformatted for TCA transition and revised governance structure.
5.0	18 Nov 11	800964	Reformatted for Transport Projects transition and revised governance structure.
6.0	01 Apr 13	2389669	Section 7 updated – the ECM examples in this document are replaced by better ECMs.
7.0	14 Apr 15	800964	Updated to be published to TNSW website
8.0	28 Apr 16	800964_18	Annual Review, TSR under Section 3 updated; changed also made to reflect the change in organisation structure.

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1. Purpose and scope

An environmental control map (ECM) is a document prepared to assist in the planning and delivery of projects delivered on behalf of TfNSW. An ECM identifies the location of physical protection measures, work method controls and monitoring requirements to minimise the impact of project activities on the environment and community in and adjoining a specific work area.

Detailed construction methodologies are generally not advanced at the planning approval stage of a project and are only developed once a preferred delivery partner is selected and detailed design and construction planning commences. The ECM allows for a focused risk assessment of the environmental and community impacts of specific work areas and activities, and is a practical document to assist the delivery partner in implementing environmental plans and policies.

This document defines I&S' standard in relation to the development of an ECM.

2. Definitions

All terminology in this document is taken to mean the generally accepted or dictionary definition.

Delivery partner	The project alliance, managing contractor, design and construct contractor, construct-only contractor or other relevant party responsible for the delivery of a project on behalf of Infrastructure & Services
ECM	Environmental control map
EIA	Environmental impact assessment
EMR	Environmental management representative
TfNSW	Transport for New South Wales
TSR	TfNSW Standard Requirement

3. Accountabilities

The Director Planning and Environment Services is accountable for this standard. Accountability includes authorising the document, monitoring its effectiveness and performing a formal document review.

Project directors are accountable for ensuring the requirements of this document are implemented within their area of responsibility and the delivery partners comply with the requirements of this document to the extent they are required under TfNSW Standard Requirements (TSR).

Contractors are accountable for following this document, where this standard forms a part of their contract.

4. Environmental control map development

The purpose of the ECM is to document the environmental and community controls to be applied to project activities and work areas. The ECM details specific control measures identified in the EIA and on-site management actions identified as part of construction work method and risk assessments. The ECM must specify:

- where environmental controls are located and how they are utilised

- where and when environmental monitoring is to occur
- how environmental control measures are communicated to project personnel.

An ECM represents the practical application of environmental controls, statutory compliance and licence requirements (if applicable) at the work site. The ECM is the culmination of a project's environmental impact and risk assessment processes. The ECM should be a very concise 'statement of action' and not a 'plan for further action'. If required by I&S, the delivery partner appointed to a project must prepare the ECMs. The delivery partner must utilise an experienced environmental practitioner to assist with the preparation of ECMs. The ECMs should be drafted using a computer based drawing or graphical tool such as CAD or use electronic aerial photographs.

In accordance with relevant Conditions of Approvals, ECMs must be prepared and implemented prior to construction commencing for a project or component of a project and as a part of the detailed construction work method planning, and they must be endorsed by the project EMR prior to the works commencing. The ECMs of a project are to be reviewed or updated regularly as the nature of the work site or work activity substantially changes. The ECMs should be placed on site sheds or other central locations for reference by all project personnel.

ECMs should be used in project inductions, toolbox talks work site set-up, reviewing ongoing environmental performance, included as information in tender documents to subcontractors where applicable and in support of ancillary environmental approvals (i.e. council, Department of Planning and Environment, etc). The EMR uses the ECMs to regularly assess project environmental performance.

5. Content of an environmental control map

An ECM should contain the following:

- the worksite layout and boundary, including entry/exit points and internal roads
- north point, legend, scale, names of major roads and landmarks
- key project traffic routes within and adjacent to the worksite and key traffic management measures (traffic controllers, cueing zones, warning signs, etc)
- location of adjoining land-use and nearest noise sensitive receivers
- dust control measures
- location and type of sediment and erosion control measures, including size/capacity of detention basins and wheel wash facilities
- location of monitoring equipment (e.g. dust, noise, vibration monitors) and frequency of monitoring/inspections
- location of noise barriers for construction
- location of environmentally sensitive areas (e.g. threatened species, critical habitat, contaminated areas, heritage zones, etc)
- location of site offices
- vegetation and trees to be protected
- vegetation and trees to be removed, with any actions required prior to felling
- location of worker car parking and any parking restrictions

- location of known heritage (indigenous and non-indigenous) items
- location of spill containment and clean-up equipment
- location of stormwater drainage and watercourses leading to/from the worksite
- location of worksite waste management facilities
- restrictions on certain activities (e.g. Rock breaking and driven piling)
- key project stages and timeframes for the works
- contact details (including after hours) for key staff (including environment manager and environmental management representative)
- hours of work applicable to the worksite (including deliveries and any restrictions on high noise generating activities)
- Construction Response Line number (1800 775 465)
- Infrastructure & Services Infoline number (1800 684 490)
- reference to, and location of, operating procedures for pollution control equipment and other environmental control measures (e.g. water treatment plants, etc)
- document control and approval details
- key environmental risk issues and the specific mitigation measures
- existing major services (both under and above ground) that may be in conflict or high risk i.e. high pressure gas main
- contours/elevation points and/or direction of slope/s.

6. Related documents and references

Reference Documents and References

[Environmental Management System Manual – 1TP-ST-052](#)

[Environmental Management Representative Guideline – 5TP-ST-050](#)

[Environmental Incident/Non-Compliance Report – 9TP-FT-101](#)

7. Example of environmental control map

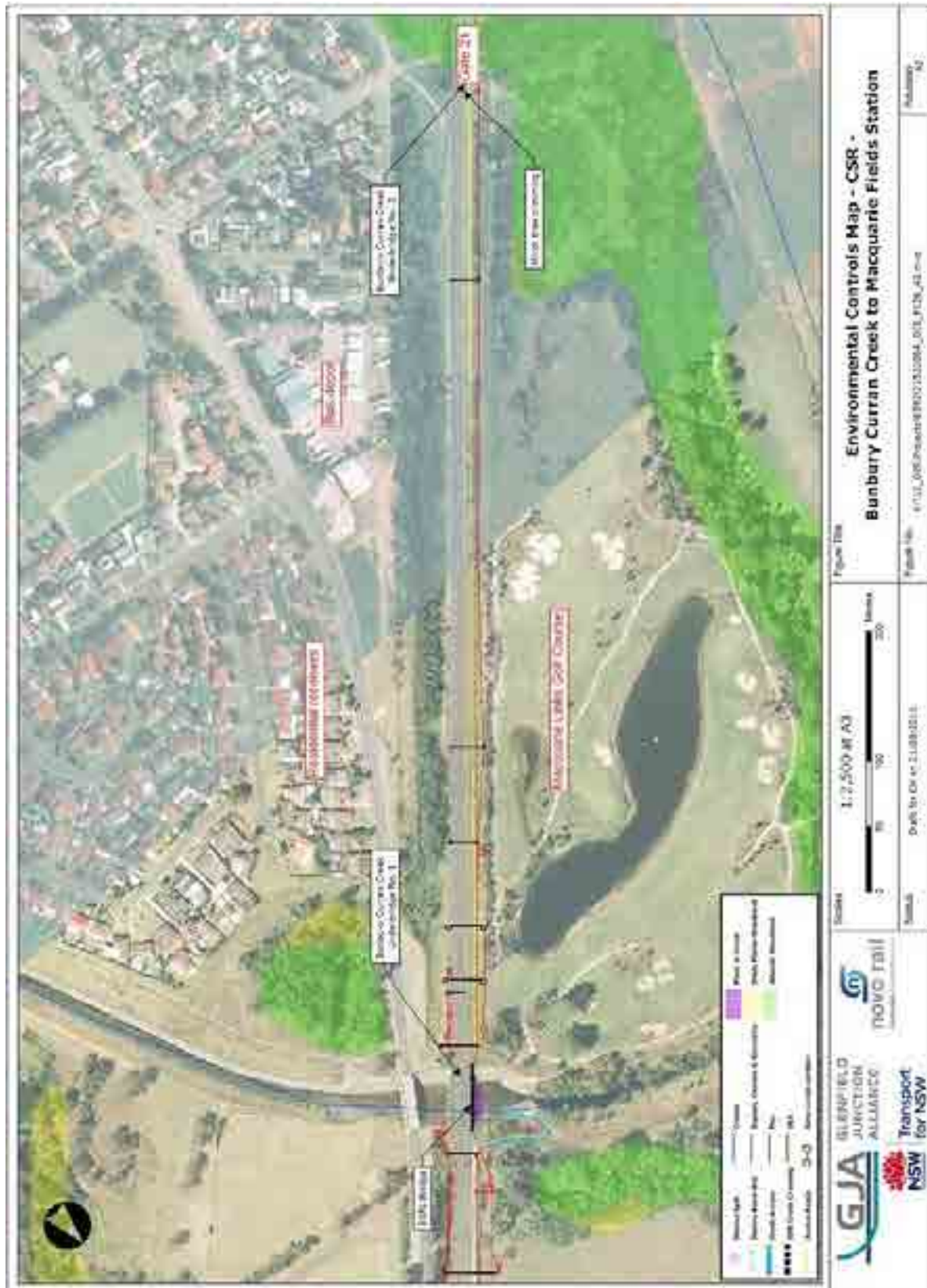


Figure 1 ECM example 1.



Figure 2 ECM example 2.

Incident and Crisis Communication Procedure

Applicable to:
Parramatta Light Rail

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1. Purpose and Scope

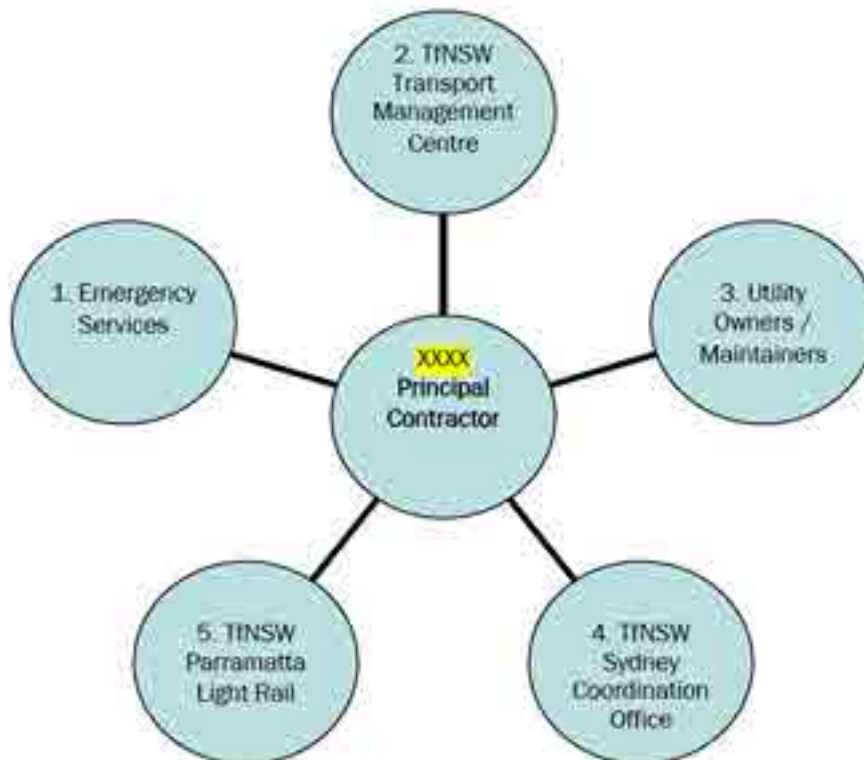
1.1. Purpose

This procedure describes the roles and responsibilities for notifying and responding to incidents involving the **Parramatta Light Rail project (PLR)** during the works phase.

The Procedure is not intended to provide comprehensive instructions for the precise actions to take in any given scenario, as each situation will be unique.

1.2. Scope

The PLR works are being undertaken by **XXXX**. For incident management PLR has multiple interfaces with key stakeholders, agencies and coordinating bodies as shown below.



PLR is responsible for managing the appointed Principal Contractor for the PLR, **XXXX**. **XXXX** must discharge the associated duties defined by the WHS Legislation. If an incident requiring management support occurs on a Contractor controlled site, the Principal Contractor is responsible for establishing an Emergency Management Team (EMT), when necessary. This team helps to control the incident, and informs the key stakeholders, agencies and coordinating bodies in priority order i.e. Emergency Services, Transport Management Centre, Utilities owners/maintainers, TfNSW Coordinator General and TfNSW PLR.

Emergency Services may include the NSW Police Force, Fire & Rescue NSW and NSW Ambulance, and as appropriate NSW State Emergency Service and Rural Fire Service.

Note: external parties such as the Office of the National Rail Safety Regulator (ONRSR), WorkCover or the NSW Police Force may take control of an incident site under specific circumstances.

TfNSW Transport Management Centre (TMC) monitors and manages the NSW road network 24 hours a day, seven days a week, 365 days a year. It also coordinates Sydney's public transport operations during peak commuter travel times, special events and unplanned incidents. The TMC uses a range of media channels to inform customers of changed or unusual traffic and transport conditions caused by incidents, environmental hazards or major events so they can choose the best way to get where they are going.

Utility owners/maintainers have their own incident response processes as part of their 'business as usual'. In the event of an incident involving a utility asset the Principal Contractor, **XXXX**, will contact the Utility owner/maintainer and provide relevant details. The Utility owner/maintainer will provide the appropriate response, with **XXXX** ensuring access to the incident site. This will include the Utility owner/maintainer mobilising their own communication teams to manage their customer requirements during the incident and recovery, in consultation and alignment with **XXXX**, PLR and Sydney Coordination Office.

TfNSW Parramatta Light Rail (PLR) is responsible for managing TfNSW's obligations in relation to this phase of the PLR. In the event of an incident PLR has no site management responsibility, but will arrange for a site representative to work with the Principal Contractor's representative on site to:

- Ensure immediate safety actions have been taken;
- Ensure the safety of impacted TfNSW workers;
- Inform PLR management;
- Provide regular updates through, or become, the PLR Liaison as part of PLR's Emergency Management Team, if activated;
- Facilitate, monitor and report the activities of contractors, media, and others such as Utility owners/maintainers and statutory investigators at the incident site.

TfNSW Sydney Coordination Office (SCO) will employ delegated powers under the Roads Act 1993 and the Road Transport Act 2013 to coordinate decisions, directions and approvals affecting all road and traffic arrangements in Parramatta. The SCO has responsibility for:

- Ensuring urgent and coordinated responses by the TMC and RMS to traffic incidents;
- Oversight of approvals for traffic management plans, and the allocation of areas and times for parking, loading zones and taxi ranks;
- Coordination of permits to hold major events; and
- Parramatta related customer information and communications.

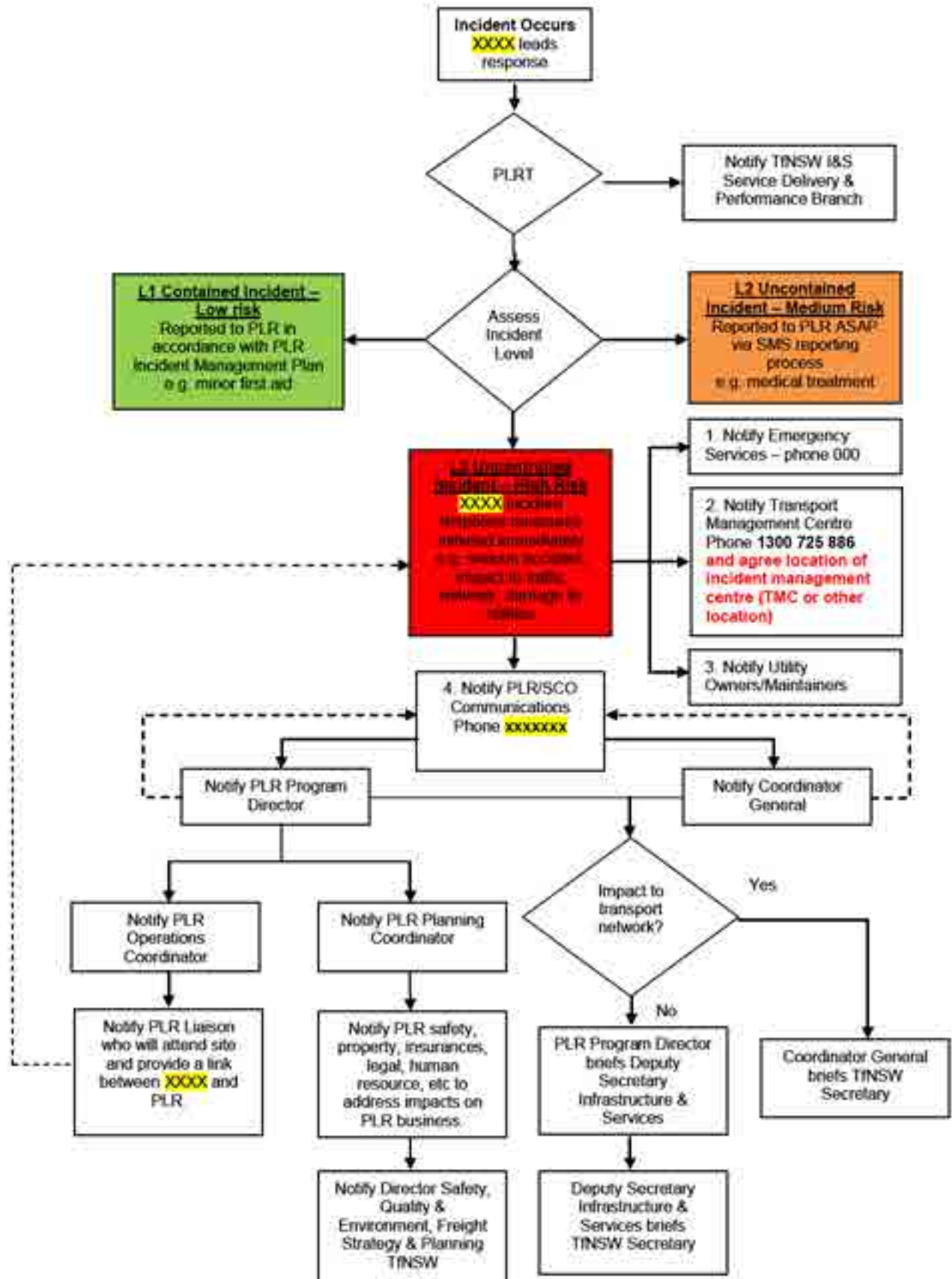
1.3. Accountabilities

The PLR Program Director is accountable for this procedure. Accountability includes authorising the procedure, monitoring its effectiveness and performing a formal document review. Direct Reports to the PLR Program Director are accountable for ensuring the requirements of this procedure are implemented within their area of authority.

2. Incident Notification Process

The PLR Incident Notification process forms the foundation for responding to incidents in a coordinated, timely and efficient manner. The nature of the notification will depend upon the nature of the incident and the level of risk associated with the incident.

A process flow is shown on the next page and this process focuses on the initial notification requirements and does not attempt to describe the multiple communication interfaces and other actions required after initial notification has been made.



2.1. L1 Contained Incident – Low Risk

XXXX manages and reports these low risk incidents in accordance with the **XXXX** works project contract.

2.2. L2 Uncontained Incident – Medium Risk

XXXX reports these incidents in the first instance by SMS text to the PLR, SCO, TMC and Energy & Utility Services Functional Area Coordination (EUSFAC) personnel identified in Section 6 of this procedure. When entered into **XXXX**'s incident management system, automatic email incident notifications will be sent to the same TfNSW personnel as a follow-up.

2.3. L3 Uncontrolled Incident – High Risk

XXXX

Having taken immediate action in relation to a Level 3 High Risk Incident **XXXX** must, in priority order, and as required by the nature of the incident, notify as soon as is reasonably practicable:

1. Emergency Services as determined by the nature of the incident;
2. TMC;
3. Utility owners/maintainers; then
4. PLR/SCO Communications.

Emergency Services, TMC and Utility owners/maintainers will each have their own response processes as part of their 'business as usual'. This will involve their own communication teams managing their customer requirements, in consultation with **XXXX**, PLR and SCO.

XXXX Environmental Manager to be notified immediately if it is an environmental incident, who will then immediately notify the project's independent Environmental Representative and PLR Environmental team.

TfNSW actions:

PLR/SCO Communications

PLR/SCO Communications is responsible for contacting the PLR Program Director and Coordinator General by phone and passing on the relevant details of the incident. The PLR Program Director and Coordinator General shall consult one another to determine if the High Risk incident has transport network implications.

Coordinator General

Where there is an uncontrolled risk and/or there is a transport network impact, the Coordinator General shall advise the TfNSW Secretary, and provide additional information as required. The Coordinator General will contact the PLR/SCO Communications Coordinator and pass on instructions.

PLR Program Director

Where the incident does not impact the transport network, the PLR Program Director shall advise the TfNSW Secretary, and provide additional information as required. The PLR Program Director will contact the PLR/SCO Communications Coordinator and pass on instructions.

The PLR Program Director shall contact the PLR Operations Coordinator and PLR Planning Coordinator and initiate an appropriate level PLR incident response.

PLR Operations Coordinator

If warranted the PLR Operations Coordinator shall appoint a PLR Liaison (PLR Project Manager) to attend site and provide a link between PLR and XXXX. In addition, the PLR Operations Coordinator monitors the effectiveness of the XXXX incident response actions and assesses the operational implications of the incident for PLR.

PLR Planning Coordinator

In the initial stages of a High Risk incident the PLR Planning Coordinator manages all human resource implications of the incident for PLR. In later stages the role will, on instruction from the PLR Program Director, activate business continuity and disaster recovery plans including:

- Financial, insurance, legal matters, including legal privilege for the Site Team;
- ICT and communications matters; and
- Records and administration matters.

The PLR Planning Coordinator shall ensure that the Director, Safety Quality and Environment, Freight Strategy & Planning Division TfNSW is notified of the nature of the incident.

PLR Senior Manager Environment

The XXXX Environment Manager is to notify the PLRT Senior Manager Environment of all environmental incidents upon becoming aware of them.

The PLR Senior Manager Environment will assist the XXXX Environment Manager in notifications and reporting to the NSW Environment Protection Authority (EPA) as requested by the XXXX Environment Manager.

The XXXX Environment Manager is to provide information and details of any incidents to enable the PLR Senior Manager Environment to notify the Department of Planning and Environment (DP&E) in accordance with conditions of approval B95 and C17. This includes any follow-up information requested by DP&E to close out the incident.

3. Incident Escalation Triggers

This Incident Action Table determines the situation and provides guidance for the required response for each incident type:

What does the Incident Affect?		
Impact Area	TINSW Incident (eg - Loss of building)	Transport (cluster-wide) Incident
Determine if the situation is...		
Contained	Uncontained	Uncontrolled
Indicators to determine the type of incident.		
<ul style="list-style-type: none"> Event has clearly defined circumstances Life, property, environment is not threatened It does not have adverse reputational impact Disruption affecting part or parts of one transport mode 	<ul style="list-style-type: none"> Event is emerging and not clearly defined Life, property, environment may be threatened The possibility of adverse reputational impact is high Major disruption affecting operations of one mode with network-wide effects on one or more modes 	<ul style="list-style-type: none"> Event requires immediate response Life, property, environment is threatened There is serious adverse reputational impact Extensive shutdowns or extended disruptions with economy wide effects
Determine the response based on the type of incident		
<ul style="list-style-type: none"> Manage through business as usual Notify/Activate the Divisional BCPs The EMT Leader may be informed The EMT Leader will determine if the EMT needs to be advised. 	<ul style="list-style-type: none"> Usually managed at Division Level Notify/Activate Divisional BCPs The EMT Leader may be informed. The EMT Leader will determine if the EMT will convene. 	<ul style="list-style-type: none"> Managed at TINSW Level (EMT) The EMT Leader must be informed. The EMT is to be convened immediately Activate BCP & Always keep a EMT Leader informed

Category	L1 Contained Incident – Low Risk (regular reporting)	L2 Uncontained Incident – Medium Risk (SMS alert)	L3 Uncontrolled Incident – High Risk (Call nominated 1800 number)
GENERAL DEFINITION	Minor low risk incidents that are reported in accordance with the XXXX Incident Management Plan – Delivery Phase.	Incidents that are more serious, may require further investigation, and have the potential to escalate and warrant notification to PLR as soon as practicable using SMS text. Coordinator General to assess if reporting to TfNSW Secretary is required.	Incidents that include any major event that requires an immediate response to preserve life, property and the environment. This includes incidents that have an adverse impact on the transport network or utilities infrastructure, may extend within and/or beyond the project site(s). These incidents warrant notification to PLR/SCO Communications as soon as practicable by phone.
Public Safety	<ul style="list-style-type: none"> Minor traffic or pedestrian incident. 	<ul style="list-style-type: none"> Injury to pedestrian requiring medical attention from XXXX activities Traffic incident resulting in Police attending involving XXXX activities Investigation by statutory authorities (WorkSafe NSW, EPA, ONRSR, NSW Police Force, RMS etc.). Trespassers enter works site without permission 	<ul style="list-style-type: none"> Multiple injuries, fatality or significant ongoing threat. Serious rail or road incident Fire, escape of gas or explosion impacting on external parties. Any serious incident likely to attract significant media attention.
Worker Safety	<ul style="list-style-type: none"> Minor site accident or minor personal injury. Report only incidents 	<ul style="list-style-type: none"> Serious Injury as defined by WHS Act (NSW) A dangerous incident requiring WorkSafe NSW notification with no significant impact to the public. Investigation by statutory authorities (WorkSafe NSW, EPA, ONRSR etc.). 	<ul style="list-style-type: none"> Multiple serious injuries or single fatality associated with XXXX activities. A dangerous incident requiring WorkSafe NSW notification with potentially significant impact to the public. Any serious incident likely to attract significant media attention. Prescribed serious illness as defined by WorkSafe NSW. Fire, escape of gas or explosion impacting on external parties.

Category	L1 Contained Incident – Low Risk (regular reporting)	L2 Uncontained Incident – Medium Risk (SMS alert)	L3 Uncontrolled Incident – High Risk (Call nominated 1800 number)
Transport Network		<ul style="list-style-type: none"> Incident resulting in disruption to a small number of transport users or customers. 	<ul style="list-style-type: none"> Incident resulting in significant disruption to the traffic, train, bus or ferry operations. Incident resulting in disruption to a large number of transport users or customers. Incident during road occupancy works where it is identified that the road occupancy may be handed back later than the agreed time. Emergency Services are called and/or take control of site. Real or immediate danger to transport network personnel which may be, or may be perceived, as a result of XXXX activities. Any serious incident likely to attract significant media attention.
Environment	<ul style="list-style-type: none"> Minor spill/emission which can be dealt with internally. No environmental impact or harm. Confined to a small area and cleaned up quickly. Notified through normal channels. 	<ul style="list-style-type: none"> Minor spill/emission that has potential for significant environmental harm. Impact contained within project footprint but requires more than 24 hours to clean up. Potentially a regulator notifiable incident, with potential investigation by statutory authorities. <i>Must notify the XXXX Environment Manager immediately, who will contact the project independent Environmental Representative (ER) and TfNSW Environment team</i> 	<ul style="list-style-type: none"> Serious spill/emission which would cause significant environmental harm. Impact extends beyond project boundary and could take weeks to months to clean up, with external resources required. Direct breach of contractual conditions by the Principal Contractor or a sub-contractor. Regulator notifiable incident, with action by statutory authorities including EPA. <i>Must notify the XXXX Environment Manager, project independent Environmental Representative (ER) and TfNSW Environment team immediately.</i>
Utilities	<ul style="list-style-type: none"> Damage to a redundant service. 	<ul style="list-style-type: none"> Minor damage to utility infrastructure or minor disruption to utility customers in a localised area. 	<ul style="list-style-type: none"> Damage to utility infrastructure that has the potential to significantly disrupt services to utility customers and/or significantly impact the public, including transport network operations.
Impact from External Parties	<ul style="list-style-type: none"> Minor security incidents managed locally. 	<ul style="list-style-type: none"> Regulator (WorkSafe NSW, EPA, ONRSR etc.) attends site or issues any formal notice. 	<ul style="list-style-type: none"> Natural disasters and civil disturbances (inc bomb threat and public disorder on site). Serious security incidents impacting XXXX activities requiring the involvement of the Police.

4. Roles of the PLR Incident Management Team

4.1. PLR Program Director

The PLR Program Director assumes the role of team leader and mobilises the PLR incident response. In the first instance, the PLR Program Director should ensure that every resource and assistance is being or will be available to stabilise the immediate situation.

For non-transport network related High Risk incidents the PLR Program Director provides regular updates and becomes the principal liaison with the Coordinator General, TfNSW Secretary and the Minister.

If the High Risk incident is declared a whole-of-portfolio incident or a State Disaster, the Secretary TfNSW may activate the *Executive Major Incident Management Procedure*.

4.2. PLR/SCO Communications Coordinator

The PLR/SCO Communications Coordinator assumes the role of communications liaison with the communications teams of **xxxx**, TMC and depending on the nature of the incident, emergency services and utility organisations, and will ensure alignment of the messaging in relation to the incident between all affected parties.

4.3. PLR Operations Coordinator

The role of the PLR Operations Coordinator is to assess and support immediate efforts to bring any physical crisis under control and source technical information or resources that could assist **xxxx** make the site safe. The PLR Operations Coordinator is the interface with the PLR Liaison and will assess operational implications for other PLR activities, and oversee project recovery.

4.4. PLR Planning Coordinator

The PLR Planning Coordinator assesses the crisis in terms of its impact on the PLR business. This may be the human impact - ensuring that Human Resource actions are initiated and coordinated to attend to enquiries about the welfare of PLR staff from their family members.

The PLR Planning Coordinator is also responsible for responding to other impacts, such as on property, insurances, or legal implications and for ensuring that the TfNSW Executive Director, Safety Quality and Environment is notified of the nature of the High Risk incident.

All Coordinators call on advisors and specialist resources, as required, to support the PLR incident response.

4.5. PLR Liaison

This is a project management-level responsibility and should be undertaken by a PLR Project Manager with basic knowledge of the incident site location and set-up.

The PLR Liaison shall monitor the status of the site to ensure it is eventually made safe. The PLR Liaison shall participate in **xxxx**'s emergency management team meetings to receive updates of **xxxx** incident response and provide status update of PLR requirements.

4.6. PLR Senior Manager Environment

PLR Senior Manager Environment will coordinate with the **XXXX** Environment Manager and independent Environment Representative to notify the relevant regulatory authorities, including the DP&E and the NSW EPA.

5. Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

Coordinator General	Will employ delegated powers under the Roads Act 1993 and the Road Transport Act 2013 to coordinate decisions, directions and approvals affecting all road, traffic and transport arrangements in Parramatta.
DP&E	Department of Planning and Environment
Emergency services	NSW Police, Fire & Rescue and Ambulance Service and as appropriate State Emergency Service and Rural Fire Service.
EPA	Environment Protection Authority - responsible for environmental regulation
EUSFAC	Energy & Utility Services Functional Area Coordination
Notifiable occurrence	An accident or incident associated that has, or could have, caused serious injury, or death, significant property damage or serious environmental damage and requires notification to an appropriate Regulator.
ONRSR	Office of the National Rail Safety Regulator
PLR	Parramatta Light Rail project
Principal Contractor	A principal contractor is the company which must ensure that a site specific occupational health and safety management plan is prepared, maintained and kept up to date and is the responding organisation to an incident on the worksite.
SCO	Sydney Coordination Office
TfNSW	Transport for New South Wales.
TMC	Transport Management Centre.
WHS legislation	Workplace Health and Safety legislation including the Work Health and Safety Act 2011 (NSW), Work Health and Safety Regulation 2011 (NSW) and any associated legislation.

6. Appendix 1: PLR Incident Contact Numbers

Incident Stakeholders			Telephone #
Emergency Services			000
PLR/SCO Communications			XXXXXXX
Transport Management Centre			1300 725 886
Ausgrid			13 13 88
Sydney Water			13 20 90
Jemena			13 19 09
Optus			1800 500 253
Telstra			13 22 03
City of Parramatta			1300 617 058
Transport for NSW power lines emergency			1800 060 015
TfNSW Incident Mgmt Role	Position	Name	Telephone #
TfNSW – Parramatta Light Rail (PLR)			
Program Director	Program Director	Tim Poole	
<i>Alt Program Director</i>			
Planning Coordinator			
Operations Coordinator			
<i>Alt Operations Coordinator</i>			
PLRT Liaison	Project Manager		
PLRT Liaison	Project Manager		
PLRT Liaison	Project Manager		
<i>Utilities advisor</i>	Utilities Manager		
<i>Environmental advisor</i>	Senior Manager Environment		
TfNSW – Sydney Coordination Office (SCO)			
Coordinator General	Coordinator General	Margaret Prendergast	0418 213 199
<i>Alt Coordinator General</i>			
<i>2nd Alt Coordinator General</i>			
<i>Alt Director Operations</i>			
<i>Alt Director Operations</i>			
Communications Coordinator			
<i>Alt Comms Coordinator</i>			

TNSW Incident Mgmt Role	Position	Name	Telephone #
XXXX			
	Chief Executive Officer		
	Technical Director		
	Project Director		
	Construction Manager		
	Utilities Manager		
	General Superintendent		
	Area Manager – Carlingford		
	Area Manager – Parramatta CBD		
	Area Manager – Parramatta North		
	Area Manager – Westmead		
	Traffic Manager		
	Traffic Operations Coordinator		
	Communications Director		
	Stakeholder Relationship Manager		
	Stakeholder Relationship Manager		
	Safety and Systems Assurance Director		
	Safety Manager		
	Senior Safety Advisor		
	Environmental Manager		
Energy & Utility Services Functional Area Coordination (EUSFAC)			
	Executive Director - EUSFAC	Doug Revette	0429938959
	Deputy ESUFAC	Marty Jones	0437553046

- Notes:
1. Bold indicates critical incident response role.
 2. Above names and contact numbers will be updated on a monthly basis with notification sent to all recipients of this procedure. This will not be considered as part of the review cycle.



Parramatta Light Rail (Stage 1)
Westmead to Carlingford via Parramatta CBD and Camellia

Communication and Engagement Strategy



December 2017



Rev	Revision date	Description	Prepared by	Reviewed by	Approved by
A	19 Dec '16	Initial plan prepared	R. Pearson	R. Haynes	R. Haynes
B	13 Feb '17	Plan updated for Feb CIC submission	R. Pearson	R. Haynes	R. Haynes
C	23 Feb '17	Updated community engagement stats	R. Pearson	R. Haynes	R. Haynes
D	20 March '17	Updated for FBC	R. Pearson	R. Haynes	R. Haynes
E	11 Dec '17	Updated for SPRs (including document title change)	S. Cousins	R. Haynes	R. Haynes
F	15 Dec '17	Updated for SPRs	K.Smith	S. Cousins	R. Haynes

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1 Introduction

1.1 Purpose of this plan

This Communication and Engagement Strategy (CES) has been developed to support communication and engagement during the development and into the construction and operation phase of Stage 1 of the Parramatta Light Rail (PLR) Project.

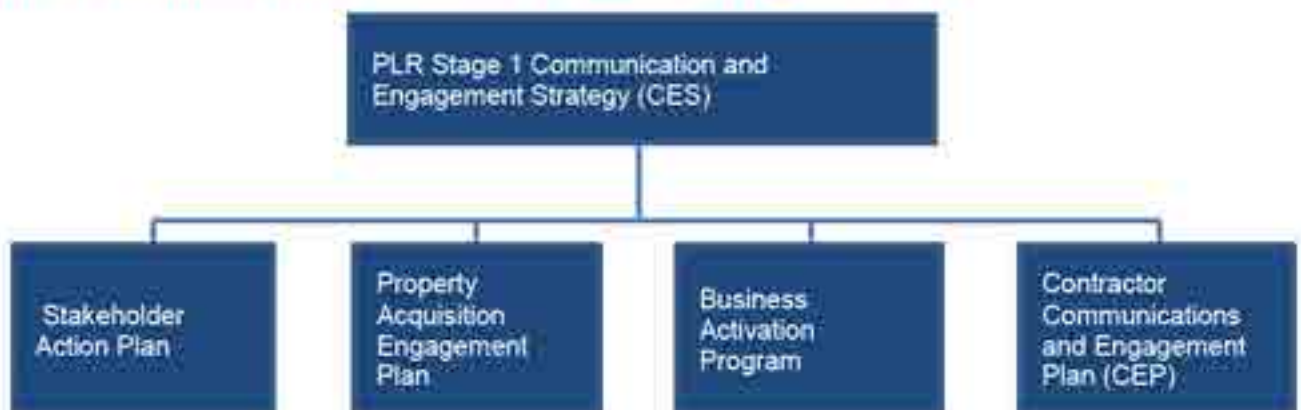
Stage 1 will connect Westmead to Carlingford via Parramatta CBD with a two-way track spanning 12 kilometres. Planning work for Stage 2 of the Project from Camellia/ Rydalmere to Carter Street via Sydney Olympic Park is being developed in collaboration with Sydney Metro West. This CES relates to Stage 1 of the Project only. A separate plan will be developed for Stage 2.

This CES is a dynamic working document that will be updated throughout the project to reflect the changing social environment and issues as they emerge. It sets out an overarching, high-level engagement framework that:

- Identifies accountabilities for delivering community and stakeholder engagement
- Outlines the engagement objectives and principles
- Outlines the engagement approach, methodology, tools and timeframes.
- Sets the framework for engaging with the communities and key stakeholders across the project area

Below this CES are a range of plans and programs that describe activities in more detail, as shown below.

Figure 1: Hierarchy of PLR Community and Stakeholder Engagement Plans



- **Stakeholder Action Plan:** This sets out the activities that will be undertaken by the Project to ensure that stakeholders can assist in the Project's implementation and that it contributes to meeting cross-Government objectives.
- **Property Acquisition Engagement Plan:** This outlines the approach to liaising with the owners and tenants of residential and commercial properties that will be impacted by acquisition for Stage 1 of the PLR project.
- **Business Activation Program:** This sets out the activities that will be undertaken to support businesses during construction.
- **Contractor Communications and Engagement Plan (CEP):** Contractors will be required to develop and implement plans that include policies, processes, and procedures for proactive communications management.

This CES does not include engagement with utilities, which is being led by the Infrastructure Workstream, or procurement activity, which is being led by the Commercial Workstream.

1.2 Accountabilities

Communication and engagement for the project is being delivered by the project Communications Workstream, led by the Director of Communication and Engagement for Parramatta Light Rail. At the end of each engagement phase, prior to commencement of the next phase, the Director of Communication and Engagement will seek approval for the updated plan from the appropriate level of governance. Final accountability for community and stakeholder engagement lies with the PLR Program Director.

The Communications Workstream will brief other Project workstreams on communication and engagement on a regular basis.

2 Project overview

2.1 About Parramatta Light Rail

Project overview

In December 2015, the NSW Government announced a preferred network for PLR to link areas that are being transformed by government and private investment.

Since the announcement of the preferred network, further investigations into possible route options were undertaken in consultation with key stakeholders.

On 17 February 2017, the NSW Government announced Stage 1 of PLR. Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres and 16 stops.

The PLR network would be delivered in stages to ensure the infrastructure needed to support the growth of Greater Parramatta is in place and light rail is operating as soon as possible.

On 18 October 2017, the NSW Government announced Stage 2 of the network would extend to Sydney Olympic Park.

The preferred route would connect to Stage 1 north of Parramatta River and run east along South Street and Boronia Street to Melrose Park, south to Wentworth Point via Wharf Road and a new Parramatta River crossing, and on to Sydney Olympic Park to Carter Street.

Stage 2 will have a nine kilometre two-way track and about 10-12 stops.

It will connect to the future Sydney Metro West underground stations, which includes a stop at Sydney Olympic Park, heavy rail in Parramatta and Olympic Park, and ferry services at Rydalmere and Olympic Park.

Key features of PLR Stage 1 include:

- A new light rail network 12 kilometres in length
- 16 stops integrated into the urban environment
- Operation seven days a week from 5am to 1am, with services around every 7.5 minutes from 7am to 7pm weekdays



- Modern, comfortable air-conditioned driver-operated vehicles, 45 metres long carrying up to 300 passengers.
- Integration with the Opal Card electronic ticketing system
- Interchanges with existing rail, bus and/or ferry facilities at Westmead, Parramatta CBD and Carlingford
- Creation of two light rail and pedestrian shared zones within the Parramatta CBD along Church Street (between Market Street and Macquarie Street) and Macquarie Street (between Horwood Place and Smith Street).
- A new shared pedestrian and cycle path from Tramway Ave, Parramatta to Carlingford along the light rail route, and additional urban design features along sections of the alignment and at stop locations
- An integrated stabling and maintenance facility located at Camellia, consisting of a workshop, an automatic train wash plant and storage
- New bridges along the alignment, including over James Ruse Drive and Clay Cliff Creek, Parramatta River near Cumberland Hospital, Kissing Point Road and Vineyard Creek at Rydalmere
- Closure of the existing T7 Carlingford Line and replacing it with a two-way light rail track Camellia and Carlingford

Key features of PLR Stage 2 include:

- A nine kilometre two-way track with around 10-12 stops.
- Travel times of around 25 minutes from Olympic Park to Camellia, and a further eight minutes to Parramatta CBD.
- Connection to the future Sydney Metro West underground stations, heavy rail in Parramatta and Olympic Park, and ferry services at Rydalmere and Olympic Park.
- Stage 2 will be further developed and informed by consultation with the community and stakeholders and further planning will inform a final decision on the Stage 2 route through Rydalmere or Camellia.
- A Final Business Case for Stage 2 is expected to be completed in 2018, with an investment decision and details on the timing of construction to follow.

Project benefits

Parramatta Light Rail will revitalise the region and connect the community with great places so they can explore what the region has to offer.

The project will support the Greater Sydney Commission's vision for the Greater Parramatta Olympic Peninsula (GPOP) priority growth area.

By 2036, more than half of all Sydneysiders will live in Western Sydney, and the population of the Parramatta Local Government Area will undergo extraordinary growth from 240,000 residents in 2016 to more than 415,000 by 2036.

There is also significant employment growth in Greater Parramatta, increasing from 96,000 jobs to around 160,000 by 2036.

Overall, the project would result in the following benefits to the community and economy:

- City-shaping: reduce urban sprawl, improved housing affordability and reduced socio-economic disadvantage
- Place-making: improved amenity for customers and residents, improved cycling and pedestrian environments and health benefits from increased active transport
- Productivity: reduced transport and logistics costs for businesses, assisting in a transition to a knowledge economy and increased agglomeration benefits from knowledge transfer
- Transport: travel-time savings, reduced crowding, reliability improvements and reduced future road congestion

Project timeline

Year	Assessment
2012	Strategic Planning The <i>NSW Long Term Transport Master Plan</i> and <i>Sydney's Light Rail Future</i> identified the need to collaborate with City of Parramatta to identify a transport network that serves the future growth of Parramatta.
2013	The <i>Western Sydney Light Rail Feasibility Study</i> is completed by City of Parramatta, which considered 15 strategic corridors. Two preferred routes for the first stage of the network identified: Parramatta to Castle Hill and Parramatta to Macquarie Park.
2014	Corridor Options The NSW Government completes the <i>Parramatta Transport Corridor Strategy</i> , which considered 13 potential routes across nine corridors. In late 2014, four shortlisted corridors with a common Parramatta CBD route are identified and carried forward for further analysis. Key destinations of the fewer shortlisted options included Castle Hill, Macquarie Park, Blacktown and Smithfield.
2015	In December 2015, a preferred network for the corridor is announced by the NSW Government following a multi-criteria analysis of the four shortlisted options in the Strategic Business Case. The preferred network included key destinations such as Westmead, Carlingford and Strathfield.
2016	Alignment Options Transport for NSW commenced further investigations to inform the preferred route alignment for PLR. Of the 14 possible options in consultation with key stakeholders, nine options are shortlisted and carried further for further analysis.
2017	The NSW Government announces in February its preferred alignment for PLR Stage 1 from Westmead to Carlingford via Parramatta CBD. The preferred route for Stage 2 extending to Sydney Olympic Park is announced in October. An extension to Epping is being investigated to explore options for this transport corridor.

During 2014 and 2015, Transport for NSW (TfNSW) undertook an assessment of strategic transport corridors connected to Parramatta to determine their feasibility for rapid transit including light rail. This work resulted in a Strategic Business Case, submitted to the Cabinet Infrastructure Committee in December 2015, which demonstrated the benefits of the above light rail network. This network was announced publicly on 8 December 2015 and the preferred route for Stage 1 was announced on 17 February 2017.

The Final Business Case for the project was approved in July 2017 and public exhibition on the project's Environmental Impact Statement took place between August 23 and October 23 2017. A State Significant Infrastructure Application (SSIA) has also been submitted to the Department of Planning and Environment (DPE).

The procurement phase for four packages of work (early works, enabling works, and two main works packages) commenced in August 2017 and an industry briefing attended by over 500 industry representatives was held on 30 August 2017 at which the delivery model for the project was announced.

Expressions of interest have now been received for all four major contracts, with contracts expected to be let during 2018. Key milestones for the project are shown below.

Figure 2: Key project milestones



2.2 The PLR program

A PLR Program Office was established by NSW Government in May 2016. This is led by a Program Director who has oversight of the project, cross-governmental integrated transport and land use planning, and the development of a program business model.

The PLR Program Director reports to a PLR Steering Committee with an independent chair who, in turn, reports jointly to the Ministers for Transport and Infrastructure, and Planning and Environment. The PLR Program Director also sits on the Parramatta Strategic Projects CIC Sub Committee.

The PLR project team is structured into six workstreams: Communications, Commercial, Infrastructure, Services, Environment and Sustainability and Project Controls. The project reports to a Project Control Group and Light Rail Client Control Group within the TfNSW/RMS Cluster. A Multi Agency Steering Committee also provides advice to the project.

3 Stakeholders and community

3.1 Definition

For the purposes of the PLR project, a stakeholder is any body or group that either currently, or in the future:

- Has an influence on the project (including its processes and outcomes)
- Has an interest in the project
- Is directly impacted by the project.

Stakeholders include government agencies, special interest groups, political representatives, community groups, and any other organisations that have some level of interface with the project.

3.2 Stakeholder categories

Stakeholders have been divided into the following categories and sub categories:

- Key stakeholders (local council, organisations that manage key venues and destinations, other government agencies, NGOs, business representative groups and influencers)
- Businesses
- Community organisations (eg. clubs, places of worship, schools and universities)

3.3 Community

The Project will engage with local residents, resident representative groups, and transport network users across the corridor to ensure that they are aware of Project developments, how the Project will affect them and that they can have their say as appropriate on any plans.

4 Engagement approach

As a transport mode that sits within an urban context, light rail inevitably impacts, benefits and is shaped by, the communities and precincts it passes through. Development of many of the areas that will be served by PLR is being managed by third parties. Engagement with these third parties - and with communities affected by, and benefitting from (including potentially benefitting from), light rail - will therefore be a critical aspect to the development of the project.

4.1 Engagement principles

The principles that guide community and stakeholder engagement on the project include:

We know our communities and understand our stakeholders - we have undertaken a thorough analysis and mapping of local communities to identify organisations, businesses and individuals who are potentially interested in, or impacted by, the project, and who have a potential influence over it. We have asked them how they want to be engaged and listen to their ideas, views and concerns. We have become part of the community by establishing a local project office and seeking out partnerships with Local Authorities that may also be delivering projects in the area. We will continue to do this through the construction period.

We provide direct access to the project team at the right level - we have appointed a team of Place Managers who will work with our communities to provide a local, single point of contact and be a source of information. They are responsible for engaging with individuals and community organisations to ensure that identified issues are raised, discussed and circulated within the project team for information and action. They also work with the community to identify, mitigate and manage potential roadblocks and risks. The Place Managers work with businesses to identify their needs during construction and operation.

We meet our stakeholders as often as needed - we hold regular meetings with our key stakeholders as required. We ensure these meetings are well structured to ensure transparent and open discussion. On occasions, we may need to bring different stakeholder organisations together to work through and resolve issues that require numerous inputs. We have a dedicated relationship manager responsible for developing and maintaining collaborative relationships between the PLR team and key stakeholders.

We strive to be open and transparent in our decision making - we seek the input of our stakeholders (as appropriate) before critical decisions are made. We aim to provide full explanations of our decisions and be open and honest when we cannot adopt a stakeholder's suggestion or deliver their specific desired outcomes.



We have strong processes for recording and circulating stakeholder feedback - this ensures that all feedback is captured and fully considered during project development. It also assists with reporting back to stakeholders to show where their views did or did not influence the project and the reasons why.

4.2 Benefits of engagement

Community and stakeholder engagement on PLR is needed for the following reasons.

Benchmarking demonstrates the benefits of early community engagement

The PLR project team has undertaken a detailed benchmarking exercise of other major infrastructure projects including Sydney Metro, Sydney CBD and South East Light Rail and Gold Coast Rapid Transit. This has demonstrated the benefits of undertaking early and ongoing community engagement.

Engagement helps design an attractive transport service

Light Rail also has the potential to enhance public areas and contribute to the creation of attractive places for people to visit, live and work in. People and businesses along the light rail corridor will know the area and as such, they have ideas and thoughts on how light rail could contribute to the enhancement and amenity of their neighbourhoods.

Engagement will inform place-making

Light Rail also has the potential to enhance public realm and contribute to the creation of attractive places for people to visit, live and work in. People and businesses along the light rail corridor will know the area. As such, they have ideas and thoughts on how light rail could contribute to the enhancement of precincts and neighbourhoods.

Engagement helps understanding of, and support for, Parramatta Light Rail

As a high-profile project, of great significance to Parramatta and Western Sydney, the project will be scrutinised. A perceived lack of community involvement in, or understanding of, the project could undermine public support and create opposition.

Engagement identifies potential impacts that could arise during project delivery

Constructing light rail through an established urban environment – including a busy CBD – will mean disruption and, if this is not managed, it could impede the project's development and delivery and undermine support. Engaging businesses, property owners, residents and other relevant stakeholders about the PLR alignment, likely construction impacts, traffic/pedestrian/cyclist impacts and construction staging, helps to identify specific or unknown issues and works towards mitigation or resolution.

4.3 Alignment with IAP2 public participation spectrum

The PLR project team has used the International Association for Public Participation (IAP2) spectrum of public participation to decide how to work with project stakeholders. The IAP2 elements are shown in Figure 3 below.

Figure 3: IAP2 Public Participation Spectrum



	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To provide the public feedback on analyses, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and questions, and provide feedback on how public input influenced the decision. We will save your feedback on staff and processes.	We will work with you to ensure that your concerns and suggestions are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will work together with you to formulate solutions and incorporate your advice and recommendations into the decision to the maximum extent possible.	We will implement what you decide.

4.4 What we are engaging on?

Based on the above analysis, post EIS some key stakeholders and the community will have an opportunity to influence the areas outlined in Table 4 below.

Table 1: What we will engage on

Issue	What stakeholders and the community can influence
Design	<p>Collaborative engagement process on urban design and place making will provide stakeholders and the community with an influence over:</p> <ul style="list-style-type: none"> - Landscaping - Street furniture - Links to walking and cycling routes - Public art <p>Getting to the PLR network, including input on pick up and drop off, park 'n ride, bus feeder services, walking and cycling routes.</p>
Business activation	Engage with businesses and stakeholders including City of Parramatta Council and Parramatta Chamber on activities and events that will bring people into the Parramatta CBD and surrounding areas.

Issue	What stakeholders and the community can influence
Construction co-ordination	Stakeholder and community feedback on construction impacts will inform the development of the delivery timeline and methodology. Community members will need to be made aware of construction activities so that they can make appropriate plans.
Travel demand management	Stakeholder and community input will be required to implement travel demand management programs to minimise car use during construction.
Legacy programs	Involvement of stakeholders in projects related to light rail that will bring lasting benefits to local communities.

The table below outlines how we will engage the different stakeholder groups,

Table 2: How we will engage with stakeholders

Key: Col= collaborate Inf = inform Con = consult Inv = involve

Stakeholder group	Design	Business activation	Construction coordination	Travel demand management	Legacy programs
City of	Col	Col	Col	Col	Col
Venues/	Col	Inf	Col	Col	Col
Other gov	Inf	Inf	Inf	Inf	Inv
NGOs	Inf	Inf	Inf	Inf	Inf
Business	Con	Col	Col	Con	Con
Businesse	Inf	Col	Inf	Col	Inf
Communit	Con	Inf	Inf	Inv	Inv

4.5 Communication tools

Given the scale of the project and the unique characteristics of business precincts and communities along the route, a variety of engagement tools and techniques are essential to achieve the objectives of the engagement program. These tools will include a project website, 1800 community information line, information brochures, fact sheets, maps and community information sessions. A full list and description of potential community and stakeholder engagement tools and techniques is provided at Appendix C.

5 Engagement program

5.1 Overview

Community and stakeholder engagement during the development phase of Stage 1 of the PLR project have been phased, up until the start of construction. Table 5 outlines the five key engagement phases.

Table 3: Overview of phased engagement approach

Phase	Timing	Engagement objectives
Phase 1 Listening	October 2015 to February 2017 (completed)	<ul style="list-style-type: none"> To provide more information to stakeholders and the community on the preferred network announced in December 2015. To start a conversation with stakeholders and the community (centred on the strategic narrative) that outlines the potential for light rail to support and shape growth in a way that benefits new and existing communities. To seek feedback on the outcomes that communities and stakeholders would like light rail to deliver and feed these in to ongoing project definition. To identify concerns about light rail construction and potential mitigation.
Phase 2 Preferred route announcement	February - May 2017 (completed)	<ul style="list-style-type: none"> To announce the preferred light rail route. To provide a robust justification for why options were discounted. To begin consultation with potentially impacted property owners To involve key stakeholders (delivery partners) in Project design.
Phase 3 Pre-EIS consultation Legacy and impact mitigation Third party agreements (pre-EIS)	January – July 2017 (completed)	<ul style="list-style-type: none"> To identify with key stakeholders issues and concerns about light rail construction and potential mitigation. To identify initiatives that will leave a long-term legacy eg: urban design, schools program and public art To continue consultation with potentially impacted property owners Develop term sheets and full third party agreements with key stakeholders.

Phase	Timing	Engagement objectives
Phase 4 EIS public display	August - October 2017 (completed)	<ul style="list-style-type: none"> • One on one consultation with stakeholders to inform their EIS submissions • Statutory community consultation on EIS and submissions sought (including with businesses) • To provide display material and access to the EIS to the public in order to provide the community, stakeholders and agencies with an outline of expected environmental and social impacts and proposed management and mitigation measures • Commence PLR Advisory Group and start attending City of Parramatta Council Advisory Group.
Phase 5 Preconstruction and early/enabling works	Late 2017-2019	<ul style="list-style-type: none"> • Finalise third party agreements with key stakeholders • Educated community about the impacts and benefits of the Project • Consultation about impacts of off-corridor works with impacted residents and businesses • Commence business support including planning for disruption and what construction means for small businesses • Rollout Business Activation program • Ongoing consultation during early and enabling works • Ongoing detailed design considerations with key stakeholders • Identification and implementation of 'legacy projects' with key stakeholders (including workforce development, public arts, education).
Phase 6 Construction	2018 - 2023	<ul style="list-style-type: none"> • Communications and Engagement Plans to be developed and implemented by the contractors in collaboration with the project and the Sydney Coordination Office. • Travel demand management • Continue business support and business activation program • Regular community updates about construction and impacts • Ongoing education about potential Program benefits. • Implementation of 'legacy projects'.
Phase 7 Operations	From 2022 (ahead of operations in 2023) – 2024 (first year of operations)	<ul style="list-style-type: none"> • Education of potential users about light rail and associated impacts (eg traffic and parking, how to use light rail).

5.2 Phase 1 – Listening (complete) – October 2015 to February 2017

Engagement focused on key stakeholders, explaining the vision and objectives of the project and establishing how these were aligned with stakeholder objectives. As part of the PLR Route Options Evaluation Framework, completed between May and November 2016, meetings were held with government departments and agencies and organisations that manage key venues and destinations, and local councils.

During the strategic merit test phase, TfNSW presented the baseline alignment and asked stakeholders to propose alternatives and provide feedback on long-list options. Further meetings were held as part of the multi-criteria analysis process, at which more detailed feedback was sought on the short list of options.

Community engagement during phase 1 focused on informing people about the Project, understanding how they might use the light rail and identifying issues that might influence the design. The Project team developed collateral that explained the Project vision and objectives, showed the preferred network and described the expected service level. A PLR website was also established to provide this information, as well as opportunities for online feedback.

In summary during Phase 1, the PLR team:

- Attended 55 information sessions
- Talked to 4300 stakeholders and members of the public at community events
- Received more than 10,000 visits to the PLR website
- Received 350 comments to the online forum
- Handed out around 9,000 brochures
- Delivered 75,000 newsletters in letterboxes.

Findings during this stage of engagement included:

- Overwhelming support for work to get started as soon as possible on the Parramatta Light Rail project;
- Community is keen to understand exactly where PLR will run and when it will be operational;
- There is strong support along the Carlingford Line for PLR, as it is acknowledged that it will provide a better service than heavy rail;
- There is support for PLR to serve other destinations, notably Epping and Castle Hill;
- There is interest in how PLR will be integrated with other modes (both physically and ticketing); and
- There is some concern about potential impacts on property, particularly around North Strathfield (stage 2)

In addition, qualitative and quantitative research was undertaken on behalf TfNSW between September and November 2016, to gauge levels of community awareness and support for Parramatta Light Rail, and gain suggestions for managing the impacts of construction. Focus group sessions were held with randomly-selected residents, small business and workers in the Greater Parramatta to Olympic Peninsula growth area. Details of the main findings are available in a separate report.

5.3 Phase 2 – Preferred route announcement – February to May 2017

The purpose of this phase was to support the announcement of the preferred route by the NSW Government. Engagement activities started in mid-February 2017, before the announcement, and ran until late May 2017.



A number of tools and activities were used to engage key stakeholders and the community, including a media release, updated project brochure, visualisation materials, stakeholder meetings and briefings and community information sessions and pop ups.

During this period, the PLR team:

- Attended around 20 information sessions and pop up events
- Engaged with more than 5,000 stakeholders and members of the public at community events
- Conducted business surveys of around 130 businesses
- Attended over 50 meetings, presentations and briefings
- Received more than 12,337 visits to the PLR website
- Received more than 100 comments to the online forum
- Handed out 5,000 brochures
- Delivered 83,000 newsletters in letterboxes.

Findings from this phase of engagement reflected those of Phase 1. There was strong support for the preferred route. Community was keen for further information on interchange between modes and potential traffic and parking impacts.

5.4 Phase 3 – Pre-EIS consultation, legacy and impact mitigation, third party agreements (January to July 2017)

Phase 3 involved seeking information from stakeholders and the community about the potential impacts of PLR (both during construction and operation) and how they could be managed. This information informed the drafting of the EIS. Community engagement place managers were appointed to lead engagement on a precinct-specific basis. This allowed targeted messaging to be developed for each precinct, working with key partners.

Discussions continued with key stakeholders on design issues. Third-party agreements continued to be developed with some key stakeholders which set out mutual objectives, agreed expectations and clear responsibilities.

Discussions commenced with stakeholders and the Sydney Coordination Office on a program for business activation. The team also started to liaise with the owners and tenants of properties that need to be wholly or partially acquired for the project. This engagement will support an extended period of negotiation with the aim of reaching a negotiated settlement without the need for compulsory acquisition.

During this phase, opportunities were identified to initiate some specialist programs designed to provide additional benefit and long term legacy for the community. These include: public art, education partnerships and workforce diversity plans.

5.5 Phase 4 – EIS public exhibition (August to October 2017)

The EIS was placed on public display for two months from 23 August 2017, with submissions closing on 23 October 2017. A separate engagement plan was developed for this.

The EIS and its accompanying documents were available to view at a number of locations including; Department of Planning and Environment, City of Parramatta Council, City of Parramatta Council Library, Dundas Valley Branch Library, Transport for NSW Parramatta Light Rail Project Office, Transport for NSW Transport Projects Office Chatswood, Telopea Masterplan Office and the Nature Conservation Council.

While the formal EIS documents were placed on the Department of Planning and Environment website, supporting documents were available on the PLR project website including a digitally embedded EIS Navigator tool.

During this EIS exhibition period, the PLR team:

- Held seven community information sessions across the corridor, including one business information session specifically targeting local businesses. These were attended by over 270 members of the community including 35 businesses.
- Engaged with 89 stakeholders to specifically address the EIS.
- Held four pop up events over seven days at Kidtopia Festival, Deepavali Festival, Westmead Adults Hospital and Westmead Children's Hospital engaging with over 740 community members.
- Distributed the EIS brochure to 165,000 letterboxes.
- Received over 17,211 visitors to the website.
- Received over 2,885 views of the EIS navigator on the website.
- Placed advertisements in 26 English and foreign language newspapers.
- Reached an audience of 152,500 people through social media activity.
- Received 97 enquiries to the PLR 1800 number and email address.

The Department of Planning and Environment received 156 submissions on the EIS, which Transport for NSW is currently reviewing. These submissions are now available online on the Department of Planning website. Transport for NSW will prepare a submissions report to respond to issues raised which will also be made available to the public.

In August 2017a Project Advisory Group was formed. This group of key stakeholders which will meet four times per year provides advice to the project, tapping into local expertise and knowledge.

5.6 Phase 5 – pre-construction engagement (late 2017 to 2019)

Following the conclusion of the EIS display, engagement will focus on explaining the benefits of the Project, preparing the public for the realities of construction impacts and working with directly impacted stakeholders to mitigate and reduce those impacts where possible. This will include:

- Notifications to directly affected residents and businesses about enabling and early works (contractors to produce and manage their own Communications and Engagement Plans)
- Regular newsletters and leaflets updating community on activities
- Implementation of the Business Activation Program and Business Support
- Travel demand management program to prepare for construction
- Media announcements of key milestones to raise awareness and explain benefits
- Ongoing detailed design considerations with key stakeholders.

Third party agreements with key stakeholders will be finalised by the end of 2017. In addition, planning approval is expected in mid- 2018, and this will need to be communicated and explained to stakeholders and community.

Implementation of legacy projects with key stakeholders and community will commence. These projects, such as workforce development, public arts and education, will raise awareness of the project, prepare communities for construction and operation of light rail and leave lasting benefits for communities.

The project will work with stakeholders to ensure that messages are communicated in a consistent manner to communities.

5.7 Phase 6 – engagement during construction (2018 to 2023)

Once the main works are underway, the focus of engagement will be on keeping local communities informed of progress and managing any potential adverse impacts. The project team would work with the construction contractors, who will develop and implement their own Communications and Engagement Plans. Engagement during this phase would include:

- Ongoing implementation of a Business Activation Program and Business Support.
- Travel demand management program.

- Community information sessions
- Notification (including targeted letterbox drops) of works that may affect existing transport (such as road closures, changes to pedestrian routes and bus stops).
- Complaints management.
- Regular updates to the project website.
- Regular newsletters, information brochures and fact sheets.
- Clear signage at construction sites.
- Ongoing consultation with key stakeholders to ensure coordination of works and messaging.
- Media releases and regular project development advertisements in local and metropolitan papers.
- Property Managers Acquisition to act as point of contact for property owners impacted by acquisition.

The Project will continue to implement legacy projects with stakeholders, including implementing the public arts program and an education program.

5.8 Phase 7 – engagement during operations (2022 to 2024)

An engagement plan to inform local communities about light rail and educate potential and actual users will commence ahead of the start of operations in 2023 and be continued during the first year of operation. Engagement will include working with hospitals, schools, universities and special interest groups (including disability representative groups) (disability groups) to inform and educate potential users. This will be led by the contractor appointed to operate the network.

6 Protocols and procedures

6.1 Record keeping

Details of all meetings, complaints, phone calls, emails, interactions, notifications and/or newsletters, along with all engagement events, are recorded in Consultation Manager. The PLR team is using the TfNSW Consultation Manager protocols to guide the systematic recording of information across the team. This includes the use of actions to record commitments made and to send reminders for anything that requires follow-up. Notes from community meetings are recorded and distributed to attendees within one week of the event.

6.2 Outcomes reporting

The outcomes of community and stakeholder engagement are written up in outcomes reports at the end of each engagement phase. These reports provide key inputs to team and Government decision making. They outline:

- engagement activities undertaken during each phase
- what was heard from community via all engagement tools
- how that feedback has been considered by the PLR team, and
- how feedback has influenced the project

6.3 Evaluation

The PLR team seeks feedback from community members at information sessions and also provides opportunities for online comment on consultation activities. Similarly, feedback is sought from stakeholders during meetings and briefings. This information will be used to continuously update and improve the engagement program, approach and activities. These updates will be included in updates to this plan.

Research will be undertaken periodically which will provide information on community attitudes to PLR and how they are receiving information about the project. This will inform updates to this plan.

6.4 Enquiries and complaints management

General project enquiries and complaints

Responding to enquiries and complaints promptly and effectively is central to effective project communications and building relationships with stakeholders and the community.

Enquiries and complaints may be received directly by members of the PLR team or their contractors, or via TfNSW's 24 hour community information line (1800 684 490) or the project's community email address (parramattalightrail@transport.nsw.gov.au). All Project communication materials contain these central contact details

The Director Communication and Engagement is ultimately responsible for managing all enquiries and complaints relating to the project. However, once construction is underway, contractors will be responsible for responding to complaints in line with their contractual requirements. A complaints management procedure has been developed that sets out the project's approach to handling complaints and is included at **Annexure xxxxx** to this document.

Property acquisition enquiries and complaints

A dedicated Property Acquisitions Information Line (**0439 435 993**) has been set for the PLR project and has been provided to members of the community whose properties are being acquired. This line is being managed by the PMAs and is separate to the TfNSW general complaints and enquiries community information line.

More information about the Property Acquisitions Information Line and the property owner acquisition enquiry and support service procedure can be found in the Property Acquisition Engagement Plan.

7 Communications and media

7.1 Approach

A planned approach will be undertaken throughout the life of the project to ensure successful media engagement. Media coverage will be monitored and results will be actively evaluated. A series of stories will be promoted to the mainstream media via media releases and media events to achieve key communications objectives. When required, stories will be supported by a proactive communications strategy promoting project milestones.

The objectives of the communications and media strategy are to:

- Increase community and stakeholder understanding of the project and its objectives and benefits
- Strengthen brand and image of the project among the community and stakeholders



- Provide opportunities for proactive media and communications actions
- Keep people informed about the project phases and ensure that project information is distributed to the community and stakeholders in an effective and timely manner
- Identify concerns and address them where practical and appropriate
- Ensure that community, media and stakeholder enquiries regarding the project are managed and resolved effectively

The principles that will be used to guide media and communications on the project include:

- Proactive
- Inclusive
- Accessible
- Transparent and accountable
- Responsive
- Sensitive

7.2 Key Messages

The key messages will provide the foundation for all communications activities and seek to convey the needs, benefits and outcomes associated with the project. Messages will be tailored and will be continuously reviewed and updated throughout the life of the project to ensure relevance and accuracy.

The need for the project

- Parramatta Light Rail is one of the state's latest major infrastructure projects being delivered to serve a growing Sydney and Greater Parramatta
- Parramatta Light Rail Stage 1 will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres
- The route will link Parramatta's CBD and Parramatta Railway Station to the Westmead Health precinct, Parramatta North Urban Transformation Program, the new Western Sydney Stadium, the new Powerhouse Museum and Riverside Theatres Cultural Hub, the private and social housing redevelopment at Telopea, Rosehill Gardens Racecourse and three Western Sydney University campuses.
- The project will introduce high frequency, reliable light rail services to major locations in Greater Parramatta and drive economic development
- Light rail will revitalise the region, contributing to urban renewal along the route and improving places like Church Street and Centenary Square for pedestrians in Parramatta's CBD

The benefits

Parramatta Light Rail will create new communities, connect great places and help both local residents, workers and visitors move around and explore what the region has to offer.

Benefits include:

- Turn up and go services every 7.5 minutes and more frequent services during special events
- It will include 16 stops and connect to ferry, rail and bus interchanges along the route
- Capacity for up to 300 people on board each light rail vehicle, compared to 60 a buses and 100 on a bendy bus
- Comfortable and accessible air-conditioned light rail vehicles
- Reliable journeys from Carlingford to Parramatta
- Providing a new public transport option for commuters travelling around the Greater Parramatta region to their workplace; students studying at Western Sydney University and Sydney University; staff, patients and visitors to Westmead's Health precinct; and people attending major events at the new Western Sydney Stadium, the new Powerhouse Museum and Riverside Theatres Cultural Hub, and Rosehill Gardens Racecourse
- Parramatta Light Rail will assist urban renewal, particularly around Camellia and Telopea

Consultation

- Parramatta Light Rail is committed to working closely with the community, businesses and other stakeholders throughout the project's development and delivery
- The Environmental Impact Statement (EIS) was on exhibition from 23 August to 23 October. The EIS outlines the Parramatta Light Rail Stage 1 route, key benefits, urban design, and the potential impacts of construction and operation. The community and stakeholders will be encouraged to have their say on the EIS, as this feedback will help to determine the final approved project, ahead of construction starting in 2018. It will involve detailed studies into the project's likely impacts on surrounding areas including significant community consultation
- The EIS was an important opportunity for the community to have its say and included seven information sessions, including a dedicated session for businesses.
- Transport for NSW will prepare a submissions report to respond to issues raised by the community, which will be made available to the public.
- Approval from the NSW Minister for Planning is required before Transport for NSW can proceed with construction.
- As part of our ongoing commitment to consultation, Transport for NSW has appointed four place managers to consult with each of the communities along to the light rail route – Westmead and North Parramatta, Parramatta CBD, and Camellia to Carlingford.
- This builds on the extensive consultation undertaken with key stakeholders to select the preferred route for Parramatta Light Rail Stage 1, which included a series of workshops

Construction

- Building this project in the heart of Parramatta CBD involves significant challenges, and we will deliver this in the most efficient way possible to minimise disruptions and keep the city moving
- Construction will take place in stages to minimise disruption to residents, businesses and commuters
- Lessons learned from previous projects are already informing a construction management plan to minimise disruption to businesses.
- To assist businesses throughout the construction phase, Parramatta Light Rail and Transport for NSW's Sydney Coordination Office will work with business groups and City of Parramatta on activities and events that will bring people into the CBD.
- Regular information will be provided to businesses and properties during construction and operation of light rail so that any issues are identified quickly and solutions implemented.
- Once completed, light rail has the opportunity to significantly benefit businesses along the route.

Project Q&As

The Parramatta Light Rail website currently contains a selection of Q&As. These have been included below and updated where required. Additional Q&As have also been added to the list:

Q. What is the preferred Parramatta Light Rail route?

A. Parramatta Light Rail will connect Westmead to Carlingford via Parramatta CBD and Camellia with a two-way track spanning 12 kilometres of dual track in a dedicated corridor. Stage 1 of the network will connect Parramatta's CBD to the key areas being transformed by the NSW Government and private investment, including the Westmead Health Precinct, UrbanGrowth NSW's Parramatta North Urban Transformation Program, the Camellia Precinct, the Telopea Urban Renewal, and Western Sydney University campuses at Westmead, Rydalmere and Parramatta CBD.

Q. What else is along the preferred route?

A. Light Rail is at the core of the planning within a number of important precincts and the project team is continuing to work with the community and precinct owners to create great places. Light Rail will create an attractive pedestrian-friendly boulevard for the hospital precinct in Hawkesbury Road, Westmead with connections to Parramatta Park, CBD and Parramatta North. It will also be the main



public transport mode to access the urban renewal of the Parramatta North heritage precinct and create new urban spaces in Church Street and Macquarie Street, Parramatta. A light rail stop at the edge of Parramatta Square will be part of the city's vibrant new civic square with pedestrian links to Parramatta Station and the river. Light rail will also replace the Carlingford Line between Carlingford and Camellia with a two-way track featuring regular services. Major attractions also include the new Western Sydney Stadium, the new Powerhouse Museum and Riverside Theatres Cultural Hub, new schools, including the redeveloped Arthur Phillip High School, and Rosehill Gardens Racecourse.

Q. When will Parramatta Light Rail construction begin and when will it open?

A. It is expected construction will begin in 2018 and begin operating in 2023.

Q. What are the key features of the project?

A. Key features of Parramatta Light Rail Stage 1 include 16 accessible stops; regular services from 5am to 1am each day, including services every 7.5 minutes from 7am to 7pm; Opal ticketing; and modern and comfortable air-conditioned vehicles.

Q. How can I have my say on the preferred route?

A. As at December 2017, the Parramatta Light Rail project team has attended 106 information sessions, receiving valuable feedback on what people want from the project. The Environmental Impact Statement provided the community with another opportunity to have its say when it was exhibited from 23 August to 23 October. Seven information sessions were held during the exhibition period, including one dedicated to businesses. The Department of Planning and Environment received 156 submissions from individuals and organisations on the project.

Q. How much will Parramatta Light Rail cost?

A. The NSW Government has allocated \$1 billion to the project from the Restart NSW and Rebuilding NSW funds. The project cost will be more than this allocation will be confirmed once construction contracts have been signed in 2018.

Q. What is the progress of Stage 2 of the project?

A. The project is being delivered in stages to ensure the infrastructure needed to support the current growth of Greater Parramatta is in place and light rail is operating as soon as possible to support the thousands of new houses and jobs being created. On 18 October 2017, the NSW Government announced Stage 2 of the network would extend to Sydney Olympic Park. The preferred route would connect to Stage 1 north of Parramatta River and run east along South Street and Boronia Street to Melrose Park, south to Wentworth Point via Wharf Road and a new Parramatta River crossing, and on to Sydney Olympic Park to Carter Street. Stage 2 will have a nine kilometre two-way track and about 10-12 stops. It will connect to the future Sydney Metro West underground stations, which includes a stop at Sydney Olympic Park, heavy rail in Parramatta and Olympic Park, and ferry services at Rydalmere and Olympic Park.

Q. Will the project have an impact on trees?

A. The project is committed to retaining trees where possible. During detailed design ongoing efforts will be made to further minimise the potential impacts on trees. The Environmental Impact Statement has identified a number of trees will potentially require removal during the construction and the operation of the project. Trees removed will be offset in accordance with the Transport for NSW's Vegetation Offset Guide (2016). Trees will be replaced at a ratio of between 2:1 and 8:1 depending on the size of the tree removed.

Q. Will the project have an impact on parking?

A: Parramatta Light Rail will make it easier for workers and residents to move around new and existing communities, and it will bring more visitors into the region. The project would require a number of major traffic changes within the Parramatta CBD. The project team is working closely with City of Parramatta Council on strategies for residential parking and paid parking, to mitigate longer-term parking impacts. Around 863 parking spaces will be directly impacted by the project. Of these spaces, around 168 will be relocated into adjacent streets. The remaining spaces will be accommodated within the surrounding streets where possible. All affected disability parking spaces will be permanently relocated (wherever feasible) to adjacent side streets.

Q. How will construction of the Parramatta Light Rail affect my business?

A. Transport for NSW is preparing a plan to ensure traffic and transport flows smoothly during and after construction of Stage 1 of the Parramatta Light Rail project. To assist businesses throughout the construction phase, Parramatta Light Rail and Transport for NSW's Sydney Coordination Office will work with business groups and City of Parramatta on activities and events that will bring people into the CBD. Transport for NSW has also appointed four place managers who have been talking to businesses along the route to provide information and answer questions about the impacts of construction and access. A business survey has also been completed to understand how businesses operate to help inform the plan.

Q. Will there be impacts to traffic flow along the route, including Parramatta CBD, when construction of the light rail begins?

A. The project team is engaging directly with businesses along the route to provide information and answer questions about the impacts of traffic flow and access when light rail is operational. Further consultation will take place with the business community on an access plan to ensure traffic flows smoothly during and after construction. This will include access for deliveries developed in consultation with impact business owners and managers.

Q. Are there plans to extend light rail to Epping?

A. Previous investigations identified technical challenges connecting Carlingford to Epping due to the hilly nature of the route. An extension to Epping is being investigated to explore options for this transport corridor.

Q. Why not buses?

A. Light rail has the capacity to move up to 300 passengers in each vehicle, compared to about 60 on buses or 100 on bendy buses. It also effectively integrates into the existing urban environment and has been shown to benefit local economies by encouraging investment. Light rail has the ability to connect people to local jobs and places, as well as providing better links to major transport services and interchanges.

Q. Why build light rail if Sydney Metro West is going ahead?

A. Sydney Metro West will move people between major city centres. Parramatta Light Rail moves people between local precincts. We are working with industry and the community to ensure Parramatta Light Rail integrates with a new metro line.

Q. Will any private properties need to be acquired for light rail?

A. Parramatta Light Rail will mainly run along existing roads, but some properties will need to be acquired for the project. Transport for NSW makes every effort to avoid the need to acquire private property and the Parramatta Light Rail team is working hard to minimise the number of properties that will be impacted. All owners of properties that need to be acquired for the project have been notified and discussions with property owners are ongoing. In line with reforms to the land acquisition process announced by the NSW Government in October 2016, property owners have been assigned Personal Managers, Acquisitions to guide them through the process.

Q. How will property owners be compensated for property that needs to be acquired?

A. In October 2016, the NSW Government announced reforms to the land acquisitions process to ensure a fairer and more transparent process for property owners and residents. The Land Acquisition (Just Terms Compensation Act) 1991 sets out the steps that must be followed, including how compensation is calculated. Under the reforms, a compulsory six month negotiation period applies to all acquisitions to give landowners time to seek legal advice and have face-to-face meetings with TfNSW. Each affected resident is assigned a Personal Manager, Acquisitions to guide them through the process.

TfNSW's offer to buy a property is based on an independent valuation of the property. If an agreement on the amount payable for the property is unable to be reached, then the property will be compulsorily acquired and compensation will be determined by the Valuer General. For more information on property acquisition, go to: www.propertyacquisition.nsw.gov.au



Q. What's happening at Robin Thomas Reserve?

A. Parramatta Light Rail is working with the City of Parramatta on its draft Master Plan for Robin Thomas Reserve and James Ruse Reserve. The current Master Plan needs to be revised to accommodate the proposed Parramatta Light Rail route. The review has also created an opportunity to refresh how the reserves function. The new draft Master Plan makes recommendations for the entire park including building use, condition and placement as well as the surrounding parkland, sports fields and recreation and community facilities. The public exhibition period is Monday 20 November 2017 until Monday 15 January 2018.

Q. Why are you going to Camellia, even though it is contaminated?

A. Access to the Stabling and Maintenance facility needs to be close to the preferred route alignment. Due to the amount of land required, Camellia was considered the best option. The process undertaken to determine the location of the Stabling and Maintenance facility is outlined in the Environmental Impact Statement, which is available on the Parramatta Light Rail website.

The Camellia peninsula has a long history of industrial use and contaminated sites in the area have already been identified and are registered on the NSW EPA Contaminated Sites Register and Record of Notices. Transport for NSW has developed a remediation strategy for the Stabling and Maintenance facility at Camellia, and is in the process of engaging a suitably qualified company to undertake the work required to remediate the site. A contract is expected to be awarded in mid-2018 and work would start soon after. The project is expected to take about 12 months to complete.

Q. Have you engaged with the Indigenous community?

A. The project has engaged with more than 50 Aboriginal and Indigenous groups in the local area and we will continue to do so as the project progresses.

Q. What is being done to ensure the cultural heritage of the area is maintained?

A. Detailed studies have been carried out across the alignment to understand the potential impacts of the project on heritage items in the area. Where feasible, the project design has been amended to avoid impacts on heritage items and properties.

Q. How do I get to Sydney CBD using the Carlingford Line when Parramatta Light Rail is open?

A. Parramatta Light Rail will significantly improve public transport services along the Carlingford Line. The single heavy rail line between Carlingford and Camellia will be replaced with a two-way light rail track in the existing rail corridor, providing more frequent services and better connections to town centres, including Parramatta and the Sydney CBD. There will be light rail stops at Carlingford, Telopea, Dundas, Rydalmere and Camellia.

Replacing the heavy rail line with light rail will enable Carlingford residents and workers to get to the Parramatta CBD in just under 20 minutes. The Carlingford Line currently has around two services an hour, and it will be replaced with light rail services every 7.5 minutes between 7am and 7pm, or eight services an hour.

Travel times to the Sydney CBD from locations along the Carlingford Line via Parramatta will be about the same if not faster than current travel times. The new train timetable introduced on 26 November has seen a more than 40 per cent increase in the number of weekly services stopping at Parramatta. Importantly, travel times from the CBD will be quicker, as there will be no more waiting at Clyde for a train to Carlingford. Commuters can wait up to 30 mins for connecting trains at Clyde in the afternoon peak.

Q. How long will the Carlingford Line be shut down once construction of light rail begins?

A. The T6 Carlingford Line train services will be discontinued between Clyde and Carlingford at the start of construction. A bus service will run between Carlingford and Parramatta, providing commuters with connections to the T1 Western, T5 Cumberland and T2 Inner West Lines at Parramatta Railway Station. The bus service will operate every 10 minutes during the week from 7am to 9am and 4pm to 6pm, and every 30 minutes before 7am and from 9am to 4pm and after 6pm until 11pm and hourly until 1am. Bus stops will be located near Rydalmere, Dundas, Telopea and Carlingford railway stations as well as on Hassall Street, servicing commuters for Rosehill and Camellia.

7.3 Media and Communication procedures

Media enquiries

This process below is designed to help both Media and Communications teams, as well as journalists, receive the information they need:

1. Media enquiry received by the contractor, Parramatta Light Rail Media, Transport for NSW Media Team or the NSW Government. All enquiries will be referred to TfNSW Manager Communications and Public Affairs. Only the Media manager, Director Communication and Engagement or Program Director can provide information to the media on behalf of the project
2. The PLR Media Manager will manage drafting a response to the enquiry, seeking input as necessary from across the project, including contractors, or TfNSW.
3. The PLR Media Manager will seek approval for the draft response from the PLR Director Communication and Engagement and the PLR Program Director, who can decide whether the response also requires approval within TfNSW.
4. The PLR Media Manager will send the approved response to the Transport for NSW Media Team, who will clear the response (if necessary) with TfNSW. The Transport for NSW Media Team will then decide whether the Minister's Office, Transport for NSW Media Team or the Project provides the final response to media.

Incident and Crisis Communication procedures

This procedure describes the roles and responsibilities for notifying and responding to incidents involving the Parramatta Light Rail project (PLR). It is provided at [Annexure XxXXX](#).

7.4 Key media opportunities and issues

Opportunities

The Parramatta Light Rail is a major infrastructure project for Sydney. It will change the face of Parramatta CBD and has the potential to not only cater for locals but visitors too.

There will be opportunities throughout the development of the project to promote light rail, public transport, Parramatta, Sydney and NSW.

Key opportunities are:

- Providing early public transport and amenity benefits as these are introduced
- Leveraging off the positive response from key stakeholders and the general public through information and media campaigns in conjunction with key partners
- Keeping the community and stakeholders informed of the successful project milestones to develop confidence in the project
- Providing clear information with personalised and flexible consultation on issues
- Leveraging off the reputation of light rail as a modern, progressive and sustainable mode that contributes to urban amenity
- Testing and reporting on improvements for public transport customers at the completion of the project to build confidence in public transport
- Community outreach to create a sense of ownership through public art and education programs
- Promote the history of Parramatta through any archaeological finds

Examples of stories include:

- Award of major contracts
- Environmental Impact Statement exhibition and submissions report
- Project planning approval
- Light rail rolling stock arrival
- Community initiatives and activities

- Business support programs
- Public art activities or works
- Local employment and apprentices
- Archaeological finds

Key Issues

Stakeholders and the community will have a range of different issues and concerns in relation to the development and construction phase of the project. The following is a summary of the key issues, the management strategies and tools used. Engagement with the Transport for NSW Campaigns Team, *Tomorrow's Sydney*, will be undertaken.

Issue	Management Strategy
<p>Noise Noise caused by construction activity, workers going to and leaving a site, and work at night</p>	<ul style="list-style-type: none"> • Explain to residents and businesses how noise will be managed and how complaints will be resolved • Provide advance notice of noisy activity through emails, letterbox notifications, website information and resident meetings • One-on-one meetings with those most impacted and responding to individual needs where necessary • Effective and timely response to complaints and enquiries
<p>Traffic and Transport Impacts</p>	<ul style="list-style-type: none"> • Provide up-to-date information to the community, including public transport customers and road users about changes to transport and traffic • Effective and timely responses to complaints and enquiries • Provide advance notice of construction activity through emails, letterbox notifications, website information and meetings
<p>Property access Disruption to access private property</p>	<ul style="list-style-type: none"> • Provide advance notice of construction activity through emails, letterbox notifications, website information and meetings • One-on-one meetings with those most impacted and responding to individual needs where necessary • Effective and timely responses to complaints and enquiries
<p>Environment and Heritage Dust and pollution from construction work that involves earthworks; potential vegetation removal; temporary loss of public parkland and changes to recreational facilities</p>	<ul style="list-style-type: none"> • Regular public reporting and tracking of environmental performance • Effective and timely responses to complaints and enquiries • Signage changes to access must have clear directions and be prominent

Issue	Management Strategy
<p>Lighting and visual impacts For residents and businesses adjacent to the work being carried out</p>	<ul style="list-style-type: none"> • Provide advance notice of night activity through emails, letterbox notifications, website information and meetings • One-on-one meetings with those most impacted and responding to individual needs where necessary • Effective and timely responses to complaints and enquiries
<p>Community, sporting events and facilities Impacts to community events as a result of construction; impacts to public areas, open space and community and sporting facilities during construction</p>	<ul style="list-style-type: none"> • Provide advance notice of activities through emails, letterbox notifications, website information and meetings • One-on-one meetings with those most impacted and responding to individual needs where necessary • Effective and timely responses to complaints and enquiries • Responsiveness to needs where events and facilities may be impacted, including considered scheduling of works
<p>Temporary changes to pedestrian access Residents and visitors navigating their way through construction areas</p>	<ul style="list-style-type: none"> • Signage on changes to access must have clear directions and be prominent • Provide advance notice of activities through emails, letterbox notifications, website information and meetings • One-on-one meetings with those most impacted and responding to individual needs where necessary • Effective and timely responses to complaints and enquiries

7.5 Online and social media

Increasingly, the community has an expectation that accurate, relevant information will be available online and via social media channels. There is also a growing expectation that engagement with communities will occur through these channels. A dedicated and branded project website provides the community with a central point for information and feedback. Website content includes factsheets, brochures, newsletters, media releases, Frequently Asked Questions, details about upcoming events, animations and illustrations, key messages, timeframes and benefits of the project. Other initiatives to be included on the website will be considered.

When incorporated into a broader media and communications strategy and connected to other engagement processes, social media can help to include groups and individuals who might not normally participate in more traditional consultation methods and decision-making processes, policies and strategies. To ensure there is consistency across various channels, processes and guidelines will be developed as part of a separate Social Media Strategy for the project. It is recommended that the Social Media Strategy is consistent with what has already been developed by Transport for NSW's Customer Experience Division. Social media tools will be used as appropriate, in line with Transport for NSW's Social Media Strategy. A specific set of messages targeted towards social media audiences will be developed, based on the project's overarching key messages.

Appendix A: Construction Complaints Procedure

1. Purpose and responsibilities

1.1 Document purpose

The Parramatta Light Rail project will manage complaints in line with Transport for NSW's Customer Complaints and Feedback Policy. The Project will make complaint systems accessible and support people that may require assistance when making a complaint. If a matter concerns an immediate risk to safety or security, the response will be immediate and will be escalated appropriately.

This appendix outlines the processes for managing complaints made during construction of Parramatta Light Rail. It includes:

- Receiving complaints
- Classifying complaints
- Responding to complaints
- Recording complaints
- Reporting.

1.2 Roles and responsibilities

Complaints handling is the responsibility of all team members who come into contact with the community and stakeholders. The Director of Communication and Engagement is the member of the Project's Senior Leadership Group with responsibility for complaints management. However, there are a number of teams that with roles and responsibilities for managing complaints.

Transport for NSW's Public Affairs and Engagement Team manages the Transport for NSW call centre and forwards any complaints to the PLR Communications Team or the relevant contractor.

The Project's Communications Workstream, under the direction of the Director of Communication and Engagement, will maintain the complaints management system and assist the contractor in resolving complaints. Other Project workstreams will be consulted as necessary. If a complaint cannot be resolved, the Director will notify the Program Director.

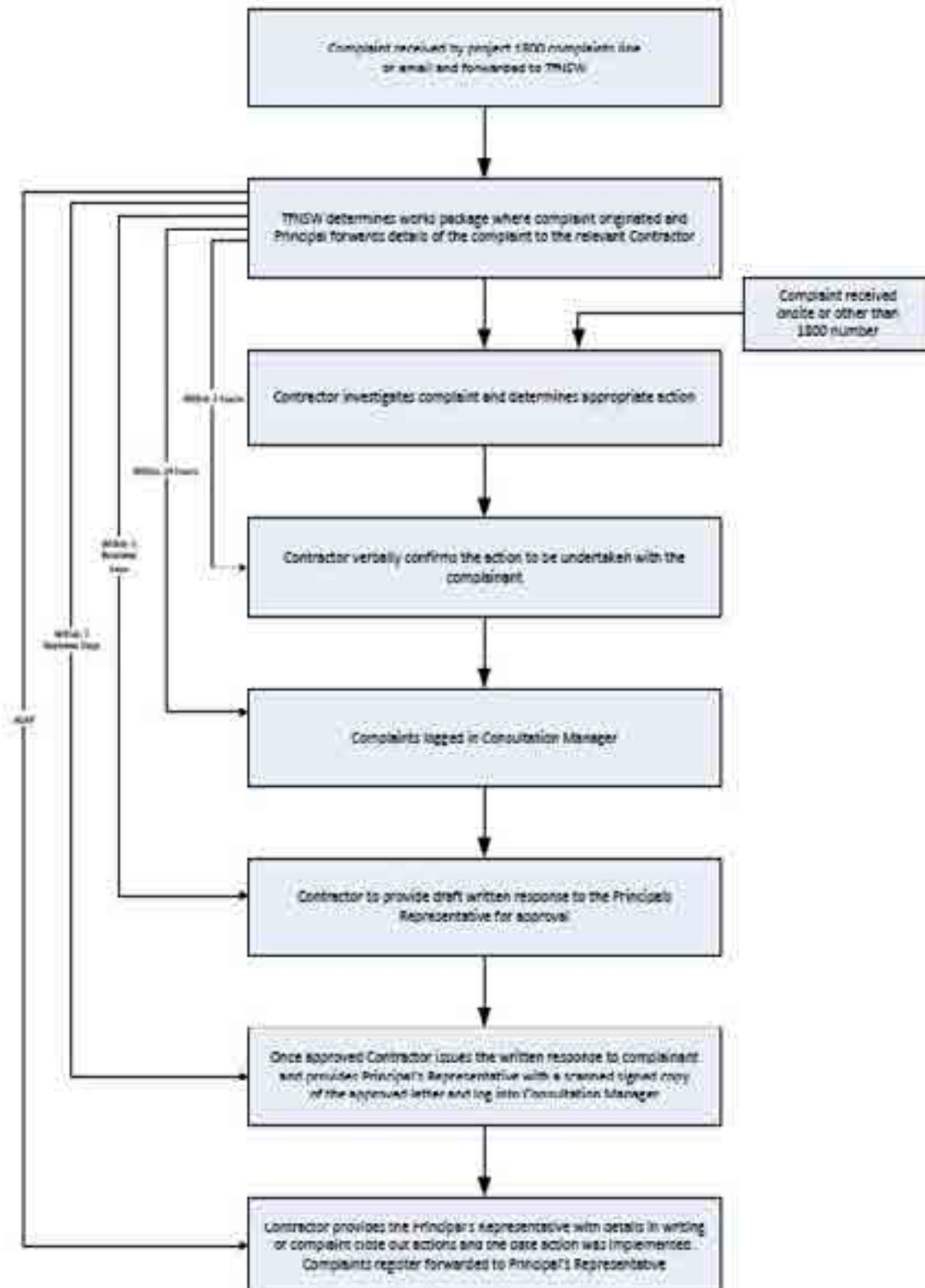
The contractors will have the following responsibilities:

- Answer all phone calls transferred by the call centre from the community information line (calls to be answered by a team member 24/7, not an answering machine while construction activities are occurring).
- Develop and implement procedures for managing and resolving complaints.
- Refer complaints not associated with contractor activities to the PLR Communications Team immediately.
- Investigate and determine the source of a complaint immediately, including an initial call to the complainant (when received by phone or where a telephone number was provided or available on Consultation Manager).
- Provide an initial verbal response to all complaints within two hours of receipt by the contractor (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise.
- Provide a written response to emails within 24 hours (or verbally within two hours of receipt by the contractor if a phone number is provided or available on Consultation Manager).

- Provide a written response to letters/faxes within 24 hours (or verbally within two hours of receipt by the contractor if a phone number is provided or available on Consultation Manager).
- Keep the complainant informed of the process until the complaint is resolved.
- Provide feedback to requests for information from the Parramatta Light Rail Communications Team within two hours.
- Take all actions and implement all measures to prevent the reoccurrence of the complaint.
- Close out complaints within agreed timeframe (with complainant).
- Report to the Parramatta Light Rail Communications team on a daily basis.
- Record all complaints on Consultation Manager in accordance with Consultation Manager data entry procedure by 3pm after the complaint. Details should include how it was managed and closed out.

The complaints management process is summarised in the flowchart below.

Figure 4: Complaint management process



1.3 Australian Standard for Complaints Handling

Parramatta Light Rail's approach to managing complaints is based on the Australian Standard for Complaints Handling '*Customer satisfaction-Guidelines for complaints handling in organisations – ISO 10002:2004, MOD*' (Formerly AS4269: Complaints Handling). The standard requires the following guiding principles:

Visibility

'Information about how and where to complain should be well publicised to stakeholders'.

All Parramatta Light Rail public materials will direct stakeholders wishing to make a complaint to use our:

- Community information line
- Community email address
- Community information centre and mobile displays
- Project postal address.

Accessibility

'A complaints-handling process should be easily accessible to all complainants'.

Information and assistance for making complaints will be clearly available on the Project website and other Project communications collateral. Complaints can be made by phone, email, post, or in person to a member of any member of the project or contractor teams and Transport for NSW will not charge the complainant to make a complaint.

Responsiveness

'Receipt of each complaint should be acknowledged to the complaint immediately. The complainants should be treated courteously and kept informed of the progress of their complaint through the complaint-handling process'.

Our responsibilities for complaint handling include:

- Investigate and determine the source of a complaint immediately, including an immediate call to the complainant (when received by phone).
- Provide an initial response to all complaints within two hours of receipt by the contractor (where a phone number is provided or available on Consultation Manager) from the time of the complaint unless the enquirer agrees otherwise.
- Keep the complainant informed of the process until the complaint is resolved.

Objectivity

'Each complainant should be addressed in an equitable, objective and unbiased manner through the complaint-handling process'.

Our contractors develop and manage their own construction complaints management systems. Complaints that the contractor considers cannot be resolved within the agreed timeframe must be referred to the Director of Communication and Engagement who may assist with resolving the complaint.

Confidentiality

'Personally identifiable information concerning the complainant should be available where needed, but only for the purposes of addressing the complaint within the organisation and should be actively protected from disclosure, unless the customer or complainant expressly consents to its disclosure'.

A stakeholder's contact information along with their complaint record will be recorded for the purposes of resolving their complaint. Should they wish to remain anonymous, the complaint will be registered under an 'Anonymous' stakeholder record for recording keeping and reporting purposes.

Customer-focussed approach

'The organisation should adopt a customer-focussed approach, should be open to feedback including complaints, and should show commitment to resolving complaints by its actions'.

The Project will monitor complaints and complaint topics and will implement changes to work practices if necessary as a result of complaints.

Accountability

'The organisation should ensure that accountability for and reporting on the actions and decisions of the organisation with respect to complaints handling is clearly established'.

This process sets out accountability for complaints handling within the Project. The Director of Communication and Engagement is the member of the Project's Senior Leadership Group with responsibility for complaints management.

Continual improvement

'The continual improvement of the complaints-handling process and the quality of products should be a permanent objective of the organisation'.

This construction complaints management system will be reviewed and reissued annually, or as required.

2. Receiving complaints

Parramatta Light Rail has established the tools shown in the table below for receiving complaints from the community. At a minimum, the telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the start of construction. This information will also be provided on the Parramatta Light Rail website. Contractors will be encouraged to develop other innovative ways to distribute these tools to the community.

Table 4: Community contact tools

Tool	Purpose
Community information line	This allows stakeholders and the community to have access to the project teams 24 hours a day during construction. All communication materials and the website will include the community information line number. During construction, calls will be redirected to relevant contractors as required.
Community email address	This allows stakeholders and the community to have access to the project team. All communication materials and the website will include the community email address. During construction, emails will be redirected to relevant contractors as required.
Community post box	This central postal address allows stakeholders and the community to have access to the project team. Correspondence will be redirected to contractors as required.
Parramatta Light Rail website	Information about the project will be uploaded to the Parramatta Light Rail website. The website will be referenced in all communication materials as a source of information and will be updated on a regular basis. Information will include: <ul style="list-style-type: none"> - Project information including: <ul style="list-style-type: none"> - Description of the project, current status and timing - Newsletters - Notifications - Up-to-date project information

Tool	Purpose
	<ul style="list-style-type: none"> - Graphics and images on the project background and progress - Copies of relevant reports - Photos, images and maps - Links to documents as required under the relevant projects Conditions of Approval - A link to Parramatta Light Rail contractor webpages • Contact information

3. Responding to complaints

3.1 Receiving a complaint

As outlined in Table 3, telephone contact should be made with a complainant where a phone number is provided or available on Consultation Manager. All team members should exercise the following telephone techniques, to establish the nature of the complaint and the needs of the complainant:

- Active listening
- Reducing barriers
- Open and closed questioning
- Summarising the call
- Confirming level of satisfaction with the actions and timeframes.

3.2 Referring complaints

Regardless of how a complaint is received, it must be referred to the most appropriate person as soon as they are received. If that person is unable to resolve the complaint, they should escalate it to a higher level and that person should make a decision on how to resolve it. The following table outlines the referral process.

Table 5: Guideline for referring complaints

Complaint type	Description	Referred to	Escalation
Construction site specific	Complaint is about construction work, behaviour or activities at/or around a Parramatta Light Rail construction site	Relevant construction contractor representative	Director of Communication and Engagement
Overall project or government policy	Complaint about the need for the project, the project's procedures or processes the approval process, or TfNSW policy position	Manager Project Community Engagement	Director of Communication and Engagement
Associated works or projects undertaken by other agencies	Complaint about works associated with Parramatta Light Rail but outside the light rail construction zone (eg. paths to stops, urban design improvements)	Stakeholder Manager ((for forwarding to relevant agency)	Director of Communication and Engagement
Media	Complaint has come via a member of a media organisation	Media Manager	Director of Communication and Engagement
Government or	Complaint has come via a	Media Manager	Director of

Complaint type	Description	Referred to	Escalation
ministerial enquiry	member of a local, state or federal government body, government department or ministerial department		Communication and Engagement
Relates to other TfNSW projects	Complaint is unrelated to Parramatta Light Rail but relates to other areas of TfNSW	Manager Project Community Engagement (for forwarding to relevant section of Transport for NSW)	Director of Communication and Engagement

3.3 Escalating complaints

If a complainant responds to the project and does not agree that the complaint has been resolved, the complaint should be escalated to the Director of Communication and Engagement who should decide on the need for future action, including further escalation within Transport for NSW (eg. to the Program Director). The Director of Communication and Engagement may choose, in any further response to the complainant, to make them aware of the option to refer the complaint to the NSW Ombudsman, including contact details.

4. Reporting on complaints

4.1 Daily reporting

Contractors are required to report on the day of any complaint (or the following working day if the complaint has been received after 5pm) to the Director of Communication and Engagement. The report must include:

- Information on complaint(s) received
- Summary of complaint(s)
- Response times
- Details of any actions undertaken or proposed or investigations occurring.

4.2 Monthly reporting

All complaints should be reported on a monthly basis to the Director of Communication and Engagement. The Monthly Complaints Report must as a minimum address and detail:

- Number of complaints received
- Status of the complaints
- Issues raised
- Action taken to resolve or proposed actions
- Location of complainant
- Response times
- Investigations outstanding
- How lessons learnt are being applied across the project to avoid the complaint recurring.

Appendix B – Stakeholders and issues analysis

The table below shows how each group, and the stakeholders within it, relate to the project, their expected issues of interest and/or concern and the strategy for keeping them engaged in the project.

Table 6: Stakeholder analysis

Group	Members	Issue/interest in project	Engagement tools and activities
<ul style="list-style-type: none"> • Local Government 	City of Parramatta Council	<ul style="list-style-type: none"> • Third Party Agreement and DA • Design and placemaking • Alignment and stops • Traffic management and parking • Travel demand management • Special Infrastructure Contribution • Planning approval • Business activation • Planning approvals • Property acquisition • Active transport • Construction coordination • Customer experience • Community engagement • Economic development and business opportunities • Legacy projects 	<ul style="list-style-type: none"> • One-on-one meetings and briefings • Place Manager meetings • Presentations • PLR attendance at events • Workshops, as necessary • Participation in Advisory Group

Group	Members	Issue/Interest in project	Engagement tools and activities
<ul style="list-style-type: none"> NSW Government departments and agencies 	Organisations that manage key venues and destinations		
	<ul style="list-style-type: none"> Western Sydney Local Health District Health Infrastructure NSW UrbanGrowth NSW Department of Education Land and Housing Corporation Property NSW Department of Planning and Environment Venues NSW and Infrastructure NSW MAAS Parramatta Park Trust 	<ul style="list-style-type: none"> Third Party Agreements/ DAs Design and placemaking Traffic management and parking Travel demand management Planning approval Special events Special Infrastructure Contribution Provision of land Construction coordination Community engagement Legacy projects 	<ul style="list-style-type: none"> One-on-one meetings and briefings Presentations PLR attendance at events Workshops, as necessary Participation in Advisory Group (some)
	<ul style="list-style-type: none"> Other Government agencies 		
	<ul style="list-style-type: none"> Greater Sydney Commission Create NSW Department of Industry Small Business Commissioner Emergency Services Office of Environment and Heritage Auspost 	<ul style="list-style-type: none"> Traffic management and parking Construction coordination Business activation and support Legacy projects Community engagement 	<ul style="list-style-type: none"> One-on-one meetings and briefings Presentations PLR attendance at events Workshops, as necessary Participation in Advisory Group (some)

Group	Members	Issue/Interest in project	Engagement tools and activities
<ul style="list-style-type: none"> • Non-Government organisations 	Universities		
	<ul style="list-style-type: none"> • Western Sydney University 	<ul style="list-style-type: none"> • Third party agreements 	<ul style="list-style-type: none"> • One-on-one meetings and briefings
	<ul style="list-style-type: none"> • University of Sydney 	<ul style="list-style-type: none"> • Design and placemaking 	<ul style="list-style-type: none"> • Presentations
	<ul style="list-style-type: none"> • University of NSW 	<ul style="list-style-type: none"> • Academic collaboration 	<ul style="list-style-type: none"> • PLR attendance at events
	<ul style="list-style-type: none"> • University of New England 	<ul style="list-style-type: none"> • Construction coordination 	<ul style="list-style-type: none"> • Workshops, as necessary
		<ul style="list-style-type: none"> • Traffic management and parking 	<ul style="list-style-type: none"> • Participation in Advisory Group (some)
		<ul style="list-style-type: none"> • Legacy projects 	
		<ul style="list-style-type: none"> • Community engagement 	

Group	Members	Issue/interest in project	Engagement tools and activities
<ul style="list-style-type: none"> • Community 	Residents		
	Directly impacted	<ul style="list-style-type: none"> • Property acquisition (see Property Acquisition Engagement Plan) • Planning approval • Stop locations • Construction impacts • Operational impacts • Service cost and frequency • Future growth/development 	<ul style="list-style-type: none"> • Personal face-to-face contact • One-on-one meetings with Place Managers and Personal Managers, Acquisitions • Project newsletters/updates • Advertisements • Community information events • Website • Social media
	Indirectly impacted – adjacent to or near light rail route and work areas	<ul style="list-style-type: none"> • Construction impacts • Planning approval • Operational impacts • Service cost and frequency • Future growth/development 	<ul style="list-style-type: none"> • One-on-one meetings with Place Managers, as required • Site investigation notifications • Project newsletters/updates • Advertisements • Community information events • Website • Social media
	Wider community within project area	<ul style="list-style-type: none"> • Potential improvements to public transport • Planning approval • Integrated ticketing • Delivery of government promises • Future growth/development 	<ul style="list-style-type: none"> • Project newsletters/updates • Advertisements • Community information events • Website • Social media
Community Services and Groups	<ul style="list-style-type: none"> • Stop locations • Construction impacts • Service cost and frequency 	<ul style="list-style-type: none"> • One-on-one meetings and briefings • Project newsletters/updates • Advertisements • Community information events 	

Group	Members	Issue/interest in project	Engagement tools and activities
			<ul style="list-style-type: none"> • Website • Social media
	Education	<ul style="list-style-type: none"> • Stop locations • Construction impacts • Operational impacts • Service cost and frequency 	<ul style="list-style-type: none"> • One-on-one meetings and briefings • Project newsletters/updates • Advertisements • Community information events • Education programs • Website • Social media
	Local businesses	<ul style="list-style-type: none"> • Stop locations • Planning approval • Construction impacts • Operational impacts • Potential job creation • Economic stimulus • Future growth/development 	<ul style="list-style-type: none"> • Business Activation • One-on-one meetings with Place Managers • Project newsletters/updates • Advertisements • Community information events • Business forums/workshops • Website • Social media
	Transport customers	<ul style="list-style-type: none"> • Stop locations • Connectivity • Construction impacts including buses replacing trains and road detours • Operational impacts • Travel demand management 	<ul style="list-style-type: none"> • Project newsletters/updates • Advertisements • Community information events • Static signage • Website • Social media

Group	Members	Issue/Interest in project	Engagement tools and activities
	Community Housing Providers	<ul style="list-style-type: none"> • Property acquisition (see Property Acquisition Engagement Plan) • Construction impacts • Operational impacts • Service cost and frequency • Future growth/development 	<ul style="list-style-type: none"> • One-on-one meetings and briefings • Project newsletters/updates • Advertisements • Community information events • Website
	Media	<ul style="list-style-type: none"> • Delivery of government promises in terms of timeframe, budget etc. • Effectiveness of light rail system. • Community response. 	<ul style="list-style-type: none"> • Media releases • Media briefings

Appendix C – Engagement tools and activities

Table 7: Community and stakeholder engagement tools and activities

Type	Explanation and purpose
Community contact tools	
Community information line 1800 684 490	Provides free and accessible number to contact project team to make an enquiry or complaint. All communication materials and the website will include this number.
Project email parramattalightrail@transport.nsw.gov.au	Provides accessible point of contact for stakeholders and community to make enquiries or complaints directly to project team. All communication materials and website will include this email address.
Calling cards	To advise residents, business and the broader community of activities happening in and around their area, such as geotechnical investigations or utility service locating work. Different types of calling cards include: <ul style="list-style-type: none"> - 1800 number - We are working in your street - Sorry we missed you - No parking
Consultation Manager database	Used to record and track all communication, including emails, phone calls and meetings, with the community and stakeholders during the life of the project.
Information tools	
Newsletters	Provides a general update on the entire project to key stakeholders and the broader community, including residents and businesses along the light rail alignment. These will be available on the website and hard copies sent to residents within the corridor.
Email updates	Email updates will be sent by the project team to subscribers as required about the progress of the project. These updates are intended to supplement, not replace, newsletters or activity specific notifications. Stakeholders, including businesses and residents, are offered the opportunity to register to receive these updates on the PLR website and via public materials produced for the project.
Fact sheets	Fact sheets are used as required to explain key aspects of the project to the community and our stakeholders. This may include, but not be limited to, the benefits of light rail, the stop locations, precinct details, construction impacts etc.
Photography and video	Photos and videos are used to assist with explaining aspects of the project, in notifications, newsletters, on the Parramatta Light Rail website, presentations and reports as required.

Type	Explanation and purpose
Site signage and hoarding banners	Site signage and hoarding banners identify Parramatta Light Rail, explain the project need and provide contact information. Signage may be used to notify stakeholders of site investigation works, construction sites, traffic changes etc.

Type	Explanation and purpose
Online tools	
Parramatta Light Rail website	Information about the project is uploaded to Parramatta Light Rail website, which will be referenced in all communication materials as a source of information. The website is updated regularly. Information on the website includes: <ul style="list-style-type: none"> - Description, current status and timing - Newsletters and notifications - Graphics and images on the project background and progress - Copies of relevant reports - Construction progress - Photos, images and maps - Links to documents as required under the relevant projects - Contact information
Social media	Social media, such as Facebook, Twitter and Instagram, provides a platform through which to distribute information to, and gather feedback from, the community about the project, including: <ul style="list-style-type: none"> - key milestones announcements - construction updates - out of hours work and changed traffic conditions - community information sessions and other events Social media is also useful in targeting commuters who may not live in the notification areas, but pass through them.
Face to face and interactive tools	
Mobile pop up public information displays	Mobile information displays at community events and shopping centres are used to provide information about Parramatta Light Rail, seek stakeholder and community views and encourage submissions during exhibitions. Provides stakeholders and the community with an opportunity to speak directly to the project team and give feedback. Opportunity to build positive, proactive presence in community.
Door knocks	Individual doorknock meetings will be used as required to discuss the potential impacts of Parramatta Light Rail with highly impacted stakeholders, especially residents and businesses directly impacted by construction work. Door knocks are useful to contact individual property owners if they are potentially affected and unable to be

Type	Explanation and purpose
	contacted by phone / mail.
Meetings	Stakeholder meetings will be used as required to discuss Parramatta Light Rail, including potential impacts and, where relevant, mitigation strategies to offset impacts.
Site visits	Meetings on site to inform and consult with government agencies, councils, special interest groups and other stakeholders.
Presentations and forums	Presentations and forums will be used where appropriate to inform stakeholders about the progress of Parramatta Light Rail and any key milestones or activities taking
Maps / diagrams	Provides a visual explanation of the project, to be used in stakeholder meetings, project newsletters and fact sheets and at community information sessions.
Translations	Some information material will be translated into community languages spoken in the City of Parramatta Council – Mandarin, Cantonese, Arabic, Korean and Hindi
Community and business based forums	Forums will be arranged by contractors (in accordance with project Conditions of Approval) to focus on key environmental management issues relating to contractor activities with highly impacted community and business stakeholders.
Place Managers	Dedicated Place Managers are in place for precinct areas along the light rail route. Each Place Manager will work with the communities within their precinct area to provide a local, single point of contact and be a source of information. They will be responsible for engaging with individuals and community organisations to ensure that identified issues are raised, discussed and circulated within the project team for information and action. They will also work with the community to identify, mitigate and manage potential roadblocks and risks.
Personal Managers, Acquisitions	<p>Personal Managers, Acquisitions (PMAs) coordinate interactions between property owners and tenants affected by acquisition and TfNSW. The PMAs are responsible for understanding and implementing the NSW land acquisition reforms announced by the Government in October 2016.</p> <p>This includes providing support to affected residential landowners and tenants as required, including helping to find new homes or business premises, new schools for children and other support services to deliver a fairer, more balanced and more transparent acquisition process to ease the experience of moving. This support may be extended to small businesses as well, if deemed appropriate by the PMA.</p>

Type	Explanation and purpose
Project notifications	
5 day notification letter	<p>The 5 day notification letter will be used to advise the community and stakeholders, no earlier than 7 days prior, of any activity with the potential to impact – such as geotechnical, service locating site investigation works. Notifications will be issued via letterbox drop in a Parramatta Light Rail notification template and include the following:</p> <ul style="list-style-type: none"> - Scope of work - Location of work - Hours of work - Duration of activity - Type of equipment to be used - Likely impacts including noise, vibration, traffic, access and dust - Mitigation measures - Project contact information. <p>Copies of notifications will also be uploaded onto the Parramatta Light Rail website and distributed to key stakeholders, including councils and libraries.</p>
Advertising	Display advertisements will be used to notify the community of key project milestones, such as major changes to traffic.
Briefings and media	
MP, local elected members and Ministerial briefings	MP, local elected members and Ministerial briefings will be used to update these stakeholders on major Parramatta Light Rail milestones.
Media briefings and releases	Media releases, briefings and events will be used to update the community on major Parramatta Light Rail milestones.
Contractor requirements	
Site inductions	Project site inductions must include communication and engagement requirements to ensure all members of the project and contractor teams are aware and respectful of residents and businesses neighbouring work areas. This includes site investigation works, including geotechnical and utility service locating activities along the route alignment.

Transport for NSW
Parramatta Light Rail (PLR)
Stage 1
Sustainability Strategy

PLR-ARA-SN-0000-RPT-00004

Issue | 21 December 2017

This report takes into account the particular instructions and requirements of our client

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party

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Document Verification



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Table 2: PLR Goals, Objectives and Initiatives

Table 3: Sustainability targets for the three different Works Packages.

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Figure 1: TfNSW Sustainability Framework

Appendices

Appendix A

Sustainability Targets for Works Contracts

Appendix B

Workforce Targets for Works Packages

1 Introduction

The purpose of this document (the “Strategy”) is to provide the direction and identify the material sustainability issues for the Parramatta Light Rail (PLR) project, as identified during definition design. The Strategy also seeks to influence the planning, design, construction and operation of the project. The document is intended for internal purposes, and is to be utilised as the basis for development of sustainability credentials of the project.

The Strategy describes the overall approach to sustainability for PLR as at the definition design phase.

1.1 Sustainability policy context

The NSW Government is committed to delivering environment, social and economic (sustainability) outcomes for the NSW community, with a particular focus on ensuring resilience to a changing climate. The NSW Government’s *Climate Change Policy Framework* sets out a strategy, objectives and targets in the areas of energy efficiency, carbon management and climate resilience, including an aspirational net zero emissions by 2050 target for NSW. Particularly, government is to lead by example to save emissions in government operations, for example in government purchasing, asset management and service delivery.

1.2 Sustainability at Transport for NSW

Transport for NSW (TfNSW) recognises that public transport assets play an integral role in delivering social equity, economic development and improved environmental outcomes. During the planning, procurement, delivery and operation of any transport asset it is important that decision making takes into account communities and the environment in the value for money so that benefits are maximised.

In developing the *Long Term Transport Master Plan*, TfNSW has considered how transport services and infrastructure can help reach economic, social and environmental goals over the next 20 years. The *Long Term Transport Master Plan* includes various environment and sustainability commitments and actions. The Plan is supported by the *TfNSW Environment and Sustainability Framework* (Figure 1).

The TfNSW Sustainability Guiding Principles, presented in Figure 2 below, have been used to influence the Sustainability Strategy for PLR.

Table 1: TfNSW Sustainability Guiding Principles

Consider whole of life	Integrated planning	Encourage innovation	Customer focus	Partner with supply chain	Measure and report on performance
Consider future costs across the asset lifecycle such as operating costs, environmental and social costs as well as the initial capital expenditure in the assessment of the best option.	Work with its partners to develop integrated transport services and infrastructure that meet the existing and future requirements of its customers.	Continually drive improvement in the environmental performance of transport infrastructure and services during the planning, design, building and operating to maintain best practice and deliver value for money.	Consider the needs and expectations of its customers in the planning, design, building and operation of transport services and infrastructure. The customer is at the centre of our decision making.	Develop strong and trusted relationships with its partners to ensure transport services and infrastructure meets the expectations of its stakeholders.	To drive continual improvement in transport services and infrastructure, Transport will measure and report its progress against the sustainability indicators and targets to its external stakeholders on a regular basis.

TfNSW's *Sustainability Design Guidelines (SDGs) Version 4.0*, deliver sustainable development practices by embedding sustainability initiatives into the planning, design, construction, operations and maintenance of transport infrastructure projects. The development of these guidelines has been influenced by the Transport for NSW Environment and Sustainability Policy (August 2015) and Transport for NSW Long Term Transport Master Plan.

1.3 Project sustainability context

The Strategy is made up of four key parts:

1. *PLR Environment, Sustainability Policy* (the “Policy”) identifies the overarching commitments that have been made by the PLR Project Management Team and endorsed by the PLR Client Control Group to the principles of sustainability. It is the primary document for setting the project direction on sustainability matters. The Policy has been developed based on other recent sustainability policies such as CBD and South East Light Rail, Sydney Metro North West and with reference to the TfNSW Environment and Sustainability Policy.
2. *PLR Sustainability Goals* identifies the set of sustainability goals that are expected to be realised by the project. These are high level over-arching goals that focus on different areas and aspects of the PLR and require a supporting hierarchy of objectives and initiatives to be implemented in order to attain these goals. The goals are reflected in the Business Requirements Specification documentation.
3. *PLR Objectives* represent the sustainability issues that have the greatest level of materiality for the PLR, and have been developed based on the outcomes of an early high level sustainability workshop attended by TfNSW and other early stage stakeholders. The objectives have been informed by strategies developed on other similar projects, through an early benchmarking exercise and based on the project profile. Objectives have been developed to meet with the PLR stated goals.
4. *PLR Initiatives and Targets* The initiatives set out the activity or activities to be pursued to meet stated objectives and realise the overarching PLR goals. Targets constitute the expected level of attainment which requires verifiable evidence in order to prove that they have been met.

2 Parramatta Light Rail Environment and Sustainability Policy

Parramatta Light Rail

 **Transport for NSW**

 **NSW**
MAKING IT HAPPEN

Parramatta Light Rail Environment and Sustainability Policy

This policy relates to the delivery of the Parramatta Light Rail (PLR) project and is aligned with the Transport for New South Wales (TfNSW) Environment and Sustainability Policy approved by the Secretary in August 2015.

The PLR project will not only deliver a sustainable transport outcome but will also contribute to the urban renewal, sustainable growth and transformation of the Greater Parramatta to Olympic Peninsula Priority Growth area including Westmead Health Precinct, Greater Parramatta, Sydney Olympic Park and Cabella.

This policy outlines the commitment to:

- Develop effective and appropriate responses to sustainability including climate resilience, urban place making and integration of public and active transport modes.
- Minimising environmental impacts of the project and embedding sustainability principles into the planning, construction and operational phases of the project.
- Proactively comply with all applicable environmental laws, regulations and statutory obligations in both domestic and international jurisdictions where they apply.

To deliver on policy commitments the PLR team will work in the following areas:

Leadership

- Encourage innovation through design and procurement in the areas of sustainability and climate resilience.
- Explore new benchmarks for sustainability in the transport infrastructure sector by expecting quality, value for money and benefit maximisation (environment, economic and social) from our designers, contractors and suppliers.
- Implement coordinated and transparent decision making, through collaboration across government departments, stakeholders and suppliers.

Customers, Community and Stakeholders

- Deliver our customers an efficient, accessible and convenient transport service.
- Establish positive relationships with the local community to maximize opportunities to create places our customers are drawn to by enhancing liveability, community and economic outcomes.
- Work with the community and our stakeholders to develop workforce skills and diversity.
- Develop and maintain collaborative relationships with our key stakeholders and other important partnerships in order to obtain mutually beneficial sustainability outcomes.

Embedding Sustainability

- Establish, monitor, measure and report on sustainability objectives and targets.
- Develop and integrate an environmental and sustainability management system throughout the project lifecycle.
- Apply assurance processes to monitor performance and identify appropriate rewards and corrective actions.
- Be responsible in the sourcing of goods and services by implementing best practice sustainable procurement protocols.
- Hold project employees and contractors accountable for proactively meeting their environmental sustainability and climate resilience responsibilities and provide appropriate training, information and resources for all project personnel.


Tim Poole
Project Director

23 March 2017
Date

3 PLR Sustainability Goals

The following goals have been developed for the PLR Project.

1. Reinforce the Inherent Sustainability Benefits of the PLR:

The inherent sustainability benefits of the project and the operating asset will be realised through diversion of trips to light rail from less sustainable or efficient modes, considering the needs of current and future communities and integrating transport choices by facilitating increased cycling, walking and other public transport uses within the project corridor.

2. Benchmark Against Recognised Rating Tools:

The PLR project will target an ISCA (Infrastructure Sustainability Council of Australia) IS (Infrastructure Sustainability) 'Excellent' rating (with a minimum score of 65) for the design and as built phase and a rating for the operational phase of the Project.

3. Maximise Energy Efficiency, Renewables and Greenhouse Gas Reduction:

PLR has committed to implementation of the energy hierarchy (avoidance, energy efficiency, renewables, low emission and offset), including identification of opportunity for generation of renewable energy and to improve the project energy efficiency and reduce the carbon footprint.

4. Advocate for Sustainable Communities:

PLR is working with relevant stakeholders along the alignment to realise common goals for sustainable communities, residents, customers, local and regional business. This includes realising opportunities for workforce skills and diversity and planning a resilient asset that strives to meet the challenges of a changing climate.

5. Utilise an Environmental Management System:

PLR have identified that the Environmental Management System, ISO14001 will continue to be used as a framework to enable the project to meet with TfNSW, stakeholder and community expectations.

6. Report on our Progress:

PLR will create a dashboard of information on relevant and material sustainability issues and report regularly on the progress made in our sustainability journey.

4 Sustainability Goals, Objectives and Targets

The goals, objectives and targets for PLR Stage 1 have been developed to national and international benchmarks of sustainability for light rail projects. Combining these benchmarks with relevant NSW government policies, plans, strategies and consultation with relevant Project stakeholders, the Project sustainability goals, objectives and initiatives have been identified and are outlined in Table 2: PLR Goals, Objectives and Initiatives.

Appendix A (Sustainability Targets for Works Contracts) and Appendix B (Workforce Targets for Works Contracts) are an important component of the Project targets. Each contract has specific targets that align with this Strategy and with the overall project goal of achieving an ISCA IS rating of 65.

Table 2: PLR Goals, Objectives and Initiatives

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
Goal 1: Reinforce Inherent Sustainability Benefits	Customer and Community Experience <i>Promote improved public transport patronage by leveraging connectivity and interchange capabilities.</i>	Position the light rail alignment and locate stops to integrate with the wider public transport and walking and cycling networks.	The location of stops was determined with consideration to a number of principles including potential inter-modal interchange (to/from rail/bus/ferry) and opportunities for integration of existing or planned cycle and pedestrian.
		Ensure a safe and efficient interchange for customers accessing the project from bus, rail and other public transport and active transport modes.	Crime prevention through environmental design (CPTED) principles have been, and will continue to be applied throughout the design of the project, in particular in the design of, and key access route to the stops.
		Provide cycle parking spaces at active transport nodes.	Bicycle parking facilities would be provided at a number of stops along the project alignment outside of the Parramatta central business district (CBD). The final locations and design would be confirmed during detailed design.
	Customer and Community Experience <i>Provides comfortable accessible, safe and attractive stops and precincts.</i>	Design in accordance with best practice urban design principles and use of the Transport for NSW Urban Design Guidelines.	The Urban Design Requirements will document the desired urban design and public domain outcomes of the Project. Together, these will guide the detailed design of the Project.
		Incorporate CPTED principles throughout the Project lifecycle.	CPTED principles have been, and will continue to be, applied throughout the design of the Project.
		Design to minimise urban heat island effect for customers at stop locations and during the course of their interaction with the light rail system.	Each stop would provide weather protection. The design of each stop would be subject to further detailed analysis during the detailed design phase of the Project.
		Design light rail stops to identify with the local social and built environment and expected patronage profile.	The design of each stop would be subject to further detailed analysis during the detailed design phase of the Project.
	Goal 2:	Obtain Rating Tool Certification	Engage with ISCA rating agency to obtain an excellent rating level for the PLR at design and as built and obtain a rating for the operational phase.

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
Drive Sustainability through Recognised Rating Tools	Materials and Waste <i>Reduce materials consumption, minimize waste generation and disposal throughout the project lifecycle, and maximize recycling of construction and demolition waste.</i>	Maximise reuse of existing materials, buildings, facades, and structures. Enable systems for the recycling of waste materials from office facilities and customers. Plan for the final disposal of operational assets, such as light rail vehicle (LRV) carriages. Use modular, prefabricated and precast structural and finishing materials to minimise waste during construction and maintenance where possible. Design optimisation to minimise volumes of excavation, concrete and steel.	Initiatives that would be confirmed during detailed design. This could include (but not limited to): <ul style="list-style-type: none"> • use of recycled materials, such as the maximum permitted recycled content for asphalt and concrete (including use of fly ash and blast furnace slag); • use of modular, prefabricated and precast structural and finishing materials; • use of recycled materials and local low embodied energy materials for light rail stops; • design track components, structures and stops for disassembly to enable readily separation of parts for recovery and recycling.
	Water <i>Minimise use of potable water</i>	Estimate and monitor potable water usage, and implement design and construction initiatives to minimise potable water use. Model water use and include water-efficient features, equipment and appliances in the design of buildings and infrastructure to reduce average water use requirements during operations. Use non-potable water in concrete, dust suppression and irrigation where feasible. Incorporate water metering devices which allow real-time consumption monitoring during construction and operation where feasible.	Initiatives that would be confirmed during detailed design This could include (but not limited to): <ul style="list-style-type: none"> • water efficient fixtures and fittings at the stabling and maintenance facility, including the LRV wash facility; • rainwater harvesting infrastructure at the stabling and maintenance facility to provide non-potable water for operational uses; and • the use of wastewater or recycled water to reduce potable water demand during construction and operation.
	Water <i>Maximise opportunities for reuse of rainwater, stormwater, wastewater and groundwater.</i>	Carry out a feasibility analysis and connect to district recycled water networks where available. Harvest and reuse rainwater at permanent and temporary facilities where feasible.	The feasibility of accessing the recycled water network during construction and operation would be explored during detailed design. The stabling and maintenance facility would also include a series of sustainability measures to minimise water consumption including of a series of stormwater tanks, a recycled water network and the use of recycled water for the train wash facility. This would be confirmed during detailed design.
		Establish performance targets for the use of potable and recycled water.	Targets have been identified in line with ISCA requirements.

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
		Incorporate water sensitive urban design solutions for stormwater management and reuse.	Opportunities for water sensitive urban design measures along the alignment and at the stabling and maintenance facility would be explored during detailed design.
	Biodiversity <i>Protect and create biodiversity and habitat connectivity through appropriate planning and management.</i>	Establish and achieve targets for biodiversity conservation and enhancement.	Trees removed as a result of the project would be replaced in accordance with: <ul style="list-style-type: none"> the tree offset strategy that would be prepared with consideration of the Transport for NSW's <i>Vegetation Offset Guide</i>; and an urban design and landscape plan developed for the Project. This would be continually investigated through detailed design.
		Develop biodiversity management plans which identify opportunities for linking with existing plans across the corridor and surrounds.	This would continue to be investigated during detailed design.
	Heritage <i>Protect and promote local heritage through appropriate design, planning, and management controls.</i>	Identify opportunities to enhance heritage values and show evidence of implementation.	As outlined in the Environmental Impact Statement, heritage interpretation for identified heritage items impacted by the Project have been committed to. This would continue to be investigated during detailed design with registered Aboriginal stakeholders.
	Land <i>Appropriate use development and enhancement of land.</i>	Support preparation of a green infrastructure strategy for the corridor, integrated with the Sydney green grid network.	Trees removed as a result of the project would be replaced in accordance with: <ul style="list-style-type: none"> the tree offset strategy that would be prepared with consideration of the Transport for NSW's <i>Vegetation Offset Guide</i>; and an urban design and landscape plan for the Project that would be developed. This would continue to be investigated during detailed design.

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
		Support the restoration of underperforming sites, particularly contaminated land for beneficial and safe reuse.	The stabling and maintenance facility would be located on a currently disused industrial site (which would be remediated under a separate approval). Residual land (land in excess of project requirements) would be made available for other uses (subject to separate applicable approvals).
Goal 3: Energy Efficiency, Renewables and Greenhouse Gases	Energy, Renewables and Greenhouse Gas Emissions <i>Reduce energy use and greenhouse gas emissions through design and during construction</i>	Identify a construction related greenhouse gas emission reduction target based on an established Project construction baseline in accordance with the SDGs and GREP. Identify and implement key initiatives that will enable these targets Establish energy efficiency targets for the Project during construction and operation. Identify and implement key initiatives that will enable these targets Identify an offset target for consumption of electricity during construction.	Targets would be reviewed and identified in line with ISCA and GREP requirements. Initiatives implemented to achieve the targets would be confirmed during detailed design. This could include (but not limited to): <ul style="list-style-type: none"> the use of biodiesel and other low carbon fuels in vehicles and equipment; the use of fuel-efficient construction equipment; the use of energy efficient construction practices; use of energy efficient or solar powered lighting for temporary construction facilities; and selection of materials during construction planning to ensure products with low embodied carbon or recycled materials are considered and used.
	Energy, Renewables and Greenhouse Gas Emissions <i>Reduce energy use and greenhouse gas emissions during operations</i>	Identify an operational related greenhouse gas emission reduction target based on an established Project operational baseline and identify and implement key initiatives that will enable these targets. Establish energy efficiency targets for the Project during the operational phase and identify and implement key initiatives that will enable these targets. Establish a renewable energy generation target for the Project and identify and implement key initiatives that will enable these targets, including solar pv on the roof of the stabling and maintenance facility.	Targets would be reviewed and identified in line with ISCA and GREP requirements. A technical solar pv study has been undertaken at definition design stage. In response to the study, a minimum rated power output of 300 kW has been set for the solar pv system on the stabling and maintenance facility roof. Initiatives implemented to achieve the targets would be confirmed during detailed design. This could include (but not limited to): <ul style="list-style-type: none"> the use of biodiesel and other low carbon fuels in vehicles and equipment; the use of fuel-efficient plant and equipment the use of energy efficient construction practices;

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
			<ul style="list-style-type: none"> • use of energy efficient or solar powered lighting for temporary construction facilities; • selection of materials during construction planning to ensure products with low embodied carbon or recycled materials are considered and used.
Goal 4: Advocate for Sustainable Communities	Climate resilience <i>Plan and design infrastructure and operations to be resilient to the impacts of climate change.</i>	Carry out a climate risk assessment in accordance with Transport for NSW requirements and current best practice Identify and implement adaptation measures to mitigate extreme and high level climate change risks, and address medium level climate change risks on the Project. Review and update the climate change risk assessment and adaptation response through the project lifecycle to influence all design phases. Work with stakeholders to ensure flood risk strategies and urban heat island effect management strategies are optimised throughout the lifecycle of the Project.	An initial assessment has been completed and identifies adaptation measures for significant risks that will be further investigated during detailed design, which includes an assessment or a review for all major design packages and design stages.
	Climate Resilience <i>Promote a corridor-wide approach to climate adaptation and resilience.</i>	Work with partners to enable an aligned approach to corridor adaptation and resilience including flood risk and increased urban heat island effect.	An early assessment has been completed and identifies adaptation measures for significant risks that will be further investigated during detailed design, which includes a new climate risk assessment produced specific to each major design packages and for all design stages including a required interface between the Infrastructure and SOM contractors.
	Community Benefit <i>Contribute to the delivery of legacy projects to benefit local</i>	Investigate and implement feasible opportunities to use residual land to benefit local communities.	Residual land (land in excess of project requirements) would be made available for other uses (subject to separate applicable approvals).
	Community Benefit <i>Support education and training</i>	Select stop locations that improve community access to a variety of education and learning systems and facilities.	The location of stops was determined with consideration of a number of principles including residential areas, strategic land uses and major trip generators (e.g. universities and schools, major centres, town and village centres, retail precincts and hospitals) and urban renewal precincts).
	Community Benefit <i>Support access to employment and business development</i>	Select stop locations with potential for a diversity of employment growth. Locate stops to enable community and business connectivity.	Refer above

Sustainability Goal	Sustainability Objective	Proposed Initiatives	Comment
	Community Engagement <i>Advocate best practice approaches to community participation in corridor-wide decision making</i>	Support early and effective opportunities for community and stakeholder involvement in the development of the Project.	Stakeholder and community consultation has formed an integral part in the development of the Project, which will continue throughout the project lifecycle.
	Workforce Development and Diversity <i>Utilise the project lifecycle to use and grow local and regional skills, capability and diversity.</i>	Develop a workforce development and diversity plan that assists with local and regional requirements and identifies appropriate Project targets and provides an implementation process for the whole of life of the Project.	A Project workforce development strategy has been developed for the project at concept design. This strategy has influenced the setting of targets for the project. Each major works package will be required to produce a workforce development plan that aims to implement the required project targets.
Goal 5: Sustainable Management Systems	Implement ISO14001	Adopt an Environmental Management System that meets with the requirements of ISO14001.	This has been adopted.
		Obtain external verification through an audit process that the Environmental Management System adequately addresses the sustainability risk and impact profile for the Project.	An external verification process as per the requirements of the Transport for NSW's Environmental Management System would apply to the Major works for the project. ISCA IS rating tool would be independently assessed by appointed verifiers for the major works packages for the project.
	Sustainable Procurement	Develop a sustainable procurement strategy and management plan for construction, operation and maintenance of the Project to ensure that the sustainability credentials of the organisations that Transport for NSW works with on the Project are known and acceptable, and the use of sustainable materials is considered throughout the lifecycle of the Project.	This would be documented in the Sustainability Management Plan as developed by the major works contractors.
	Training and development in sustainability	Develop a training plan which identifies the provision of information, training sessions and inductions to employees, contractors and visitors on the sustainability credentials, requirements and non-negotiable aspects throughout the duration of the Project lifecycle.	This would be documented in the Sustainability Management Plan by the major works contractors.
Goal 6: Report on our Progress	Set targets and report performance against those targets	Complete internal and external reports and dashboards at regular intervals throughout Project delivery and operation.	Regular and detailed reporting will be a requirement for each major works package and documented in the Sustainability Management Plan. The details of further internal and external reporting will be further developed as the project progresses.

Appendix A

Sustainability Targets for Works Contracts

A1 Sustainability Targets for Works Contracts

Sustainability is embedded into the three PLR Stage 1 Works packages: Enabling Works, Infrastructure and SOM (Supply, Operate & Maintain). The Project has an overall target IS rating of excellent (65), and each contract has their own individual sustainability targets including an IS rating score. These targets are collated in Table 3.

The IS rating scores provided below are between the conservative and the stretch scores that TfNSW have determined are achievable for each work contract. These individual IS rating targets, when achieved, will enable the whole PLR Project to reach a minimum combined IS rating of 65.

In addition to the IS rating and sustainability targets, a minimum score for a number of credits within ISCA (version 1.2) have been mandated in the contract documents.

Table 3: Sustainability targets for the three different Works Packages.

		Enabling		INF		SOM	
Area	Description	Proposed target	Rationale, reference and Definitions	Proposed Target	Rationale, reference and Definitions	Proposed Target	Rationale, reference and Definitions
ISCA	Achieve an ISCA Rating	Excellent (As built) 55	PLR Project Commitment	Excellent (Design and As built) 70	PLR Project Commitment	Excellent (Design and As built) 70, Certified for operation.	PLR Project Commitment
Waste - Spoil	Usable spoil (by weight) to be beneficially reused	100%	ISCA 1.2 Was3 level 3	100%	ISCA 1.2 Was3 level 3	100%	ISCA 1.2 Was3 level 3
Waste – Construction and demolition waste	Construction and demolition waste (by weight) to be diverted from landfill	90%	ISCA 1.2 Was2 level 3	95%	ISCA 1.2 Was2 level 3	90%	ISCA 1.2 Was2 level 3
Waste - Office	Diversion from landfill	40%	ISCA 1.2 Was2 level 2	60%	ISCA 1.2 Was2 level 3	60%	ISCA 1.2 Was2 level 3
Construction related greenhouse gas emissions	Reduction from identified base case assumptions using TfNSW Carbon Estimation Reporting Tool (CERT).	10%	ISCA 1.2 Ene1 level 1.66	20%	ISCA 1.2 Ene1 Level 2.5	15%	ISCA 1.2 Ene1 level 2
Construction – Total Water Use	Reduction in total water use from identified base case assumptions	10%	ISCA 1.2 Wat1 level 2	15%	ISCA 1.2 Wat1 level 2.5	15%	ISCA 1.2 Wat1 level 2.5
Construction – Potable Water	Replacement of potable water by non-potable water	0	NA	50%	ISCA1.2 Wat2 level 2	50%	ISCA1.2 Wat2 level 2
Material Use	Reduction in materials used from identified base case assumptions.	0	NA	20%	ISCA1.2 Mat1 level 2.3	15%	ISCA 1.2 Mat1 level 2

Appendix B

Workforce Targets for Works Packages

BI Workforce Targets

Table 4 below presents a summary of the Social Procurement & Workforce Development targets for each work contract. The targets have been determined considering the size and nature of the respective work contract.

The targets for Enabling Works are aligned to the Infrastructure Skills Legacy Program (ISLP) targets in addition to the mandatory NSW Government Aboriginal Participation in Construction (APIC) targets. More information is provided at the following link:

<https://www.procurepoint.nsw.gov.au/policy-and-reform/construction-procurement-policy/aboriginal-participation-construction-policy>

Table 4: Workforce targets for Enabling, Infrastructure and SOM contracts.

Group	Workforce	Enabling Works	INF	SOM (Construction)	SOM (Operation)
Mandatory	Aboriginal	1.5% CAPEX (min 50% on direct)	1.5% CAPEX (min 50% on direct)	1.5% CAPEX (min 50% on direct)	1.5% CAPEX
	Apprentices	20% trade workforce	20% trade workforce	20% trade workforce	Bundled with learning workers
Project specific	Unemployed youth (<25)	NA	8% overall workforce	8% overall workforce	8% overall workforce
	Learning workers	NA	20% overall workforce	20% overall workforce	20% overall workforce
	Women	NA	2% trade workforce	2% trade workforce	20% trade workforce
	Under represented	NA	5% workforce 1% CAPEX or indirect	5% workforce 1% CAPEX or indirect	8% workforce
	Future talent	NA	6 work experience and graduate placements p.a. (pro rata)	6 work experience and graduate placements p.a. (pro rata)	6 work experience and graduate placements p.a. (pro rata)
	Ambassador sessions	NA	8 ambassador sessions p.a. (pro rata)	8 ambassador sessions p.a. (pro rata)	8 ambassador sessions p.a. (pro rata)

Pre-construction Minor Works Approval

Application and all supporting information must be submitted to the environmental management representative at least 10 business days before the planned dates of minor works.

Project name:	
Alliance/contractor:	Reference no:
Description of proposed minor works Describe proposed works including ancillary activities, working hours, machinery, staffing levels, impacts on utilities/authorities, wastes generated or hazardous substances/dangerous goods used	
Commencement Date: _____	End Date: _____ Duration: _____
Name of subcontractor conducting the works (if applicable):	
Site description Provide a description of the site on which the proposed works are to be carried out, including Lot and Deposited Plan details where available. Also identify the local government area(s) within which the site/project is situated and any sensitive environmental areas and community receptors:	
Compliance with relevant planning approval List the documentation & relevant conditions/definitions with respect to minor pre-construction works, and identify how the proposed works are consistent with the relevant conditions/definitions:	
Potential environmental impacts Identify any potential environmental impacts of the proposed works:	

Documentation (relevant documents to be attached)

Minor works are to be carried out, and environmental impacts managed, in accordance with the following documents (e.g. environmental management plan, environmental controls map, method statement):

Community notification

Has appropriate advance notification been provided to the community in accordance with the planning approval/EPL/contract/Infrastructure and Services' requirements (where applicable)?

Yes No

If yes, provide details of when and how community was notified (attach relevant documents)

If no, provide justification as to why community notification has not be undertaken:

Environmental contact for these works

Nominate the contact person(s) with regard to the environmental/*community management of these works*:

Name: _____ Position: _____ Phone: _____

Applicant

Name: _____ Signature: _____ Date: _____

Environmental management representative

I am satisfied that the proposed works will have minimal environmental impact and can be undertaken as pre-construction minor works in accordance with the planning approval

Name:

Signature:

Date:

Comments/recommendations

Forward to the relevant Infrastructure and Services environment & planning manager or senior manager environment

Infrastructure and Services approval

May be approved by the Principal Manager Environment or Senior Manager Environment

Name:

Signature:

Date:

Conditions of approval

Copy to Director Community Engagement, Project Director, Compliance Reporting Manager, Senior Manager Environment, Environmental Management Representative, Senior Manager Communications at least 5 days prior to commencement of works.

Property Compliance Register

2TP-ST-175/2.0

Standard – Applicable to:

Transport Projects

Quality Management System

Status:	Approved
Division:	Transport Projects
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Document History

Version	Date	Doc no.	Summary of Changes
1.0	7 Nov 2011	DS# 1672148	The purpose of this standard is to prescribe the arrangements for defining the lead manager for key pieces of legislation.
2.0	23 Jun 2014		Document updated to align with currency of the business.

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1. Purpose and Scope

The purpose of this standard is to prescribe the arrangements for defining the lead manager for key pieces of legislation.

2. Definitions

All terminology in this standard is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

DDG	Deputy Director General
DG	Director General
WAD	Work Agreement Deed
MOU	Memorandum of Understanding
BRS	Business Requirement Specifications
CPTDP	Crime Prevention Through Design Principles
ADS	Asset Divestment Strategy
RIC	Rail Infrastructure Corporation
GAMC	Government Asset Management Committee
SIP	Significant Issue Paper
PPS	Project Property Services
RFS	Rural Fire Service

3. Accountabilities

The Technical Director Project Property Services is accountable for this standard. Accountability includes authorising the standard, monitoring its effectiveness and performing a formal document review.

Direct reports to the Deputy Director General are accountable for ensuring the requirements of this standard are implemented within their area of responsibility.

The direct reports to the Deputy Director General who are accountable for specific projects/programs are accountable for ensuring associated contractors comply with the requirements of this standard.

4. Standard Requirements

4.1. Compliance Register

The compliance register is described below.

Safety								
Ref	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
S1	<i>Work Health and Safety Act 2011 (NSW) and Work Health and Safety Regulations 2011 (NSW)</i>	Technical Director Safety & Quality	WHS policies, standards and procedures and a compliant WHS management system, Training, monitoring, reporting, investigations, auditing.	High	Yes	N/A	OHS Alert subscription service utilised and monitored for changes to legislation and/or other compliance tools. Workcover and SafeWork Australia websites monitored for advice of changes to legislation and Codes of Practice	Reporting undertaken monthly at Executive Committee and SHEAR Committee.
S2	<i>Workers Compensations Act 1987 (NSW)</i>	Executive Director HR & BS	Policies and procedures for preventing and managing workplace injuries, including return to work programs.	Low	Yes		No action required if compliant	Policies reviewed annually.
S3	<i>Workplace Injury Management and Workers Compensation Act 1998 (NSW)</i>	TfNSW HR (TBC)	Rehabilitation policy/guidelines. Record keeping protocols.	Low	Yes		No actions required if compliant	Policies reviewed annually.

Employment								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy

Environment and Planning								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy

Construction								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
C1	Roads Act 1993 (NSW)	Technical Director Commercial Technical Director Project Property Services	Approvals from Roads and Maritime Services or Councils where appropriate. Compliance with Public Authority status for works.	Medium	Yes	N/A	Work undertaken on Roads and Maritime Services controlled roads is subject to a formal agreement between Transport Projects and Roads and Maritime Services (WAD or MOU). Work on Council controlled roads needs council approval unless utilising public authority powers (Councils still	Agreements are only entered into after review and sign off of an Issue Paper that seeks approval to enter into a WAD (or MOU).

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D1	<i>Access to Neighbouring Land Act 2000 (NSW)</i>	Technical Director Project Property Services	Permits access to land adjacent to other land upon which work is to be carried out including construction, repair, maintenance, improvement and making plans. Access to be obtained by application to Local Court.	Low	Yes	N/A	Submit application to Local Court. 21 days notice of the application must be given to a person who will be affected by the order. Land must be left in same condition as it was prior to access being taken. Comply with court orders. Applicant must indemnify owner of land against damage to land or personal property arising from access.	Access has been by agreement or compulsory process. This right available via SIP after other avenues exhausted.
D2	<i>Casino, Liquor and Gaming Control Authority Act 2007 (NSW)</i>	Technical Director Project Property Services	Provides for probity of officials, allowing investigation and enforcement powers for casino, liquor and gaming purposes.	Low	Yes	N/A	Comply with Authority's orders to determine whether there has been compliance or contravention of the gaming and liquor legislation (e.g. provide Authority with records / information / access to premises etc).	In accordance with the PPS and Authority requirements.
D3	<i>Liquor Act 2007 (NSW)</i>	Technical Director	Regulates and controls the sale,	Low	Yes	N/A	Licence must be obtained for the	In accordance

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
		Project Property Services	<p>supply and consumption of liquor.</p> <p>May restrict or prohibit promotions; may require licensees, managers to undergo training courses.</p>				<p>occupier, manager or person in control of any premises on or from which liquor is sold (e.g. hotel licence, club licence, on-premises licence, bottle shop licence).</p> <p>Licence applications may be made by an individual or a corporation. An application for a licence may not be made by an individual who is under 18 years or who is disqualified from holding a licence or who holds a suspended licence.</p> <p>A licensee may apply to the Authority for approval to transfer the licence to another person. This application is dealt with and determined by the Authority as if it were an application for the granting of a licence. Comply with Authority's regulations.</p>	with the PPS and Authority requirements.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D4	<i>Gaming Machines Act 2001 (NSW)</i>	Technical Director Project Property Services	Regulates controls and facilitates management of gaming machines in hotels and registered clubs.		Transport Projects	Transport Projects	<p>Licence required for the operation of gaming machines. An application must be made to the Board for gaming machine's dealers, sellers, technician and/or testing facility licence. A gaming related licence remains in force until surrendered to the Authority.</p> <p>A poker machine entitlement allocated in respect of a hotel licence or the premises of a registered club is transferable. The transfer must be approved by the Authority and complied with the Authority's regulations.</p>	In accordance with the PPS and authority requirements.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D5	<i>Community Land Management Act 1989 (NSW)</i>	Technical Director Project Property Services	<p>Provides for management of community, precinct and neighbourhood schemes established by the subdivision of land.</p> <p>Large parcels of land can be purchased - the developer acquires the land and provides roads and amenities.</p> <p>The land is divided into small lots or into neighbourhoods and the community assumes responsibility for looking after the land once the development is completed.</p>	Low	Yes	N/A	<p>Creates by-laws relating to the control or preservation of the development by limiting occupancy under the scheme.</p> <p>By-laws can limit the kind of materials used or require that property be used only for particular purposes.</p>	Impact assessed as part of due diligence process within proposed acquisitions monitored through the PPS.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D6	<i>Conveyancing Act 1919 (NSW)</i>	Technical Director Project Property Services	Regulates general property provisions: power for corporations to hold property as joint tenants; construction of conveyance deeds; provision for grant of easements and reservation of easements. Provisions for the sale of property including contracts for sale, obligation to show title, damages where title is defective, conditions of sale, sales by auction, outlines the passing of risk between vendor and purchaser and provisions for mortgages.	Medium	Yes	N/A	Compliance required when creating easements, restriction on user, public covenants, stratum sub-divisions, building management statements. Compliance required when buying and selling land, entering into options to buy and sell land.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D7	<i>Conveyancing and Law of Property Act 1898 (NSW)</i>	Technical Director Project Property Services	Regulates titles to Crown grants, claims to grants of land, leases and sales of settled estates and estates of minors.	Medium	Yes	N/A	Limited application. Compliance required when dealing with Crown grants, claims to grants of land, leases and sales of settled estates and estates of minors.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.
D8	<i>Dividing Fences Act 1991 (NSW)</i>	Technical Director Project Property Services	Provides for the apportionment of the cost of dividing fences for any adjoining lands. Applies whether or not a dividing fence already separates the adjoining lands. Adjoining owners are liable to contribute in equal proportions to carrying out fencing work of a standard not greater than the standard for a	Low	Yes	N/A	An adjoining owner may require the other adjoining owner to contribute to carrying out fencing work by serving a notice in writing to the other owner. The notice is to specify the following: (a) the boundary line on which the fencing work is proposed to be carried out or, if it is impracticable to carry out fencing work on the common boundary of the adjoining lands, the line on which it is proposed to carry out the work, (b) the type of fencing	In accordance with the PPS, monitored through property management including managing agents.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			sufficient dividing fence.				work proposed to be carried out, and (c) the estimated cost of the fencing work. No notice is required to be issued in respect of urgent fencing work; an adjoining owner can carry out the fencing work and the other adjoining owner is liable to half of the cost.	
D9	<i>Duties Act 1997 (NSW)</i>	Technical Director Project Property Services	Duty becomes payable when a transfer of dutiable property occurs and is payable by the transferee. Part 3 of the Act outlines the rates of duty (General and Premium Rates). Part 6 of the Act details concessional rates of duty.	Low	Yes	N/A	Transport Projects is exempt from payment of stamp duty with respect to transfer of land. Minister's letter (exemption) has been required to be produced at OSR. As the crown Transport Projects will remain exempt form State taxes.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.
D10	<i>Encroachment of Buildings Act 1922</i>	Technical Director	Provision for the adjustment of	Medium	Yes	N/A	An adjacent owner or an encroaching owner may	In accordance

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
	(NSW)	Project Property Services	boundaries where buildings encroach on adjoining land and to facilitate the determination of boundaries. The minimum compensation to be paid to the adjacent owner in respect of any conveyance, transfer, lease, or grant to the encroaching owner shall, if the encroaching owner satisfies the court that the encroachment was not intentional and did not arise from negligence, be the land value of the subject land, and in any other case three times such land value.				apply to the Court for relief in respect of any encroachment. On the application, the court may make such orders as it may deem just with respect to: (a) the payment of compensation to the adjacent owner, (b) the conveyance transfer or lease of the subject land to the encroaching owner, (c) any easement right or privilege and (d) the removal of the encroachment.	with the PPS, monitored at every transaction through lawyers, BCA certifications and surveyors certificates as well as Land Titles Office.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D11	<i>Graffiti Control Act 2008 (NSW)</i>	Technical Director Project Property Services	Regulations to control and minimise graffiti States what constitutes an offence. Enables a local council, <u>without</u> the agreement of the owner or occupier of any land, to carry out graffiti removal work on the land if the graffiti concerned is visible from a public place. The local council bears the cost of the work and pays compensation for any damage caused in carrying out the work.	Low	Yes	N/A	The Local Council can carry out graffiti removal <u>with</u> the consent of the owner. Costs to be agreed. Transport Projects to liaise with the Local Council.	In accordance with PPS and CPTDP.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D12	<i>Inclosed Lands Protection Act 1901 (NSW)</i>	Technical Director Project Property Services	Procedures to be followed to protect inclosed lands from intrusion and trespass. Inclosed lands are either public or private, inclosed or surrounded all or in part by a fence, wall or other construction.	Low	Yes	N/A	It is an offence to enter into inclosed land without consent of the owner or without lawful excuse. "Lawful excuse" is not established by proving a mistaken belief, it is whether the belief is reasonable or not. Penalties will apply if this is contravened. Transport Projects to obtain owner's consent when entering inclosed lands.	Inclosed lands identified as part of due diligence monitored within the PPS.
D13	<i>Land Acquisition (Just Terms Compensation) Act 1991 (NSW)</i>	Technical Director Project Property Services	Procedures to be followed in the Acquisition of land and compensation payable for land acquired by Compulsory Process Project Property Services - 4TP-ST-036 Section 18E (4) states that	High	Yes	N/A	Acquisitions by agreement are not required to follow all processes. However, if initiated as a compulsory acquisition then in accordance with compulsory entitlements. Compulsory acquisition steps to be followed are:- (i) Authority must give the owners of the land written notice of its intention to acquire; (ii) a	Procedures followed through PPS, due diligence and file/record process. Reported within Program and Property monthly reports. Audited

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			Transport Projects may not give a proposed acquisition notice without the approval of the Director General.				<p>proposed acquisition notice need only be given to all the owners of the land who: (a) have a registered interest in the land, or (b) are in lawful occupation of the land, or (c) have, to the actual knowledge of the authority of the State, an interest in the land.</p> <p>A proposed acquisition notice must be given at least 90 days before the land is compulsorily acquired. A shorter period of notice may be given if: (a) the authority of the State and the owners of the land agree in writing to the shorter period, or (b) the Minister responsible for that authority approves of the shorter period, but only if that Minister is satisfied that the urgency of the matter or other circumstances of the case make it</p>	regularly.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
							impracticable to give any longer period of notice.	
D14	<i>Land and Environment Court Act 1979 (NSW)</i>	Technical Director Project Property Services	The Act establishes the Land and Environment Court which has jurisdiction to determine environmental, development, building and planning disputes. It has the power to review certain administrative decisions, enforce civil rights relating to planning or to impose penalties for certain breaches of environmental law.	Medium	Yes	N/A	Comply with Court Procedure and Orders.	Monitored through dispute resolution and litigation process with lawyers.
D15	<i>Land Sales Act 1964 (NSW)</i>	Technical Director Project Property	Regulates sales of certain lands: (i) Sales of a lot in a subdivision	Low	Yes	N/A	Where Transport Projects sells five or more lots where purchase price is to be	In accordance with the PPS and ADS.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
		Services	comprising five or more lots where contracts provide for the purchase money to be paid by four or more part payments. It does not include: (i) a contract effecting a sale without re-subdivision by a vendor who acquired less than five lots in a subdivision, or (b) (ii) a contract for the sale of a lot within Strata Schemes Freehold or Leasehold.				paid by 4 or more instalments, then provide notice to purchasers (form in 4th & 5th Schedule) of the contract. The Act states that no person shall tender an instalment contract for execution by a purchaser unless at least twenty-four hours before tendering the contract the person gives the purchaser these notices.	
D16	<i>Land Tax Management Act 1956 (NSW)</i>	Technical Director Project Property Services	Imposes a land tax upon the taxable values of land owned by NSW taxpayers, including corporations. There are exemptions and reductions to	Low	Yes	N/A	Land owned by a State agency or the Crown is exempt from State taxes.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			certain types of land.					Office.
D17	<i>Residential Tenancies Act 2010</i>	Technical Director Project Property Services	Regulates leasing of residential premise.	Low	Yes	N/A	If Transport Projects holds residential property subject to tenancies, Transport Projects must comply with the Act. TP usually appoints an external property manager to manage and ensure compliance of residential leased premises. Standard forms to be completed.	In accordance with the PPS, monitored through delegations from DDG.
D18	<i>Minors (Property and Contracts) Act 1970 (NSW)</i>	Technical Director Project Property Services	Regulates the contractual and testamentary capacity and proprietary rights and obligations of persons under 21 years.	Low	Yes	N/A	Where a minor is legally entitled to property, the Supreme Court may make orders authorising a person to make any disposition of the property, to receive the proceeds of the property, to receive income of the property, to sue for and recover the property etc.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D19	<i>National Rail Corporation (Agreement) Act 1991 (NSW)</i>		An Agreement between NSW Government and the National Rail Corporation. Regulates shares within the Corporation and the transfer of freight assets.				The Minister may, with the approval of the Corporation, transfer any specified rail freight assets of the State to the Corporation. Shares are issued as consideration for the transfer. On the transfer, the rail freight assets become the rights and liabilities of the Corporation.	
D20	<i>Pipelines Act 1967 (NSW)</i>	Technical Director Project Property Services	Regulates the construction, operation and maintenance of pipelines. A pipeline means a pipe or system of pipes for the conveyance of any substance excluding petroleum.	Low	Yes	N/A	Anyone who proposes to construct a pipeline may apply to the Minister for a licence. The application shall include the design, construction, size, capacity of the proposed pipeline. The application shall show proposals of the applicant for work and expenditure for the construction of the proposed pipeline, the technical qualifications of the applicant and employees, financial	In accordance with the PPS, monitored at every transaction through lawyers. Constraints provided from due diligence for design and construction solution which mitigates risk from

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
							resources available to the application and shall be accompanied by a plan.	operation and maintenance of pipe line.
D21	<i>Real Property Act 1900 (NSW)</i>	Technical Director Project Property Services	Provides for declaration of title to land and situations where proceedings for compensation are required to be raised (section 129 (1)). Provides indefeasibility of title for land bought under the Act.	Medium	Yes	N/A	Dealings are not effectual until recorded in the Register (section 41). Transport Projects should transfer old system land to land under the Real Property Act to gain indefeasibility of title. Once Transport Projects' interest is registered, it cannot be upset except for fraud. Where there is no subdivision, easements and restrictive covenants can be created under the Act. Caveats can be lodged under the Act.	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.
D22	<i>Property, Stock and Business Agents Act 2002 (NSW)</i>	Technical Director Project Property Services	Regulates licences and registration certificates for a real estate agent, a stock and	Low	Yes	N/A	Comply with the registration and certification processes.	In accordance with the PPS, monitored at every appointment

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			station agent, a business agent, a strata managing agent or community managing agent, an on-site residential property manager.					through procurement plan with legal advice.
D23	<i>Real Property and Conveyancing Legislation Amendment Act 2009 (NSW)</i>	Technical Director Project Property Services	The Act amends the relevant legislation with respect to mortgagee, sales, identity of mortgagor and compensation.	Medium	Yes	N/A	N/A	In accordance with the PPS, monitored at every transaction through lawyers and Land Titles Office.
D24	<i>Residential Tenancies Act 2010 (NSW)</i>	Technical Director Project Property Services	Sets out rights and responsibilities of tenants and landlords. Legislation covers the powers of the Consumer,	Low	Yes	N/A	Enter into a standard form of tenancy agreement. Landlord must provide the tenant with a copy of the executed agreement. Both parties must comply with their obligations and responsibilities set out in	In accordance with the PPS, and DDG delegations.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			Trader and Tenancy Tribunal in dealing with disputes between landlords and tenants.				<p>the agreement e.g. the tenant must pay the rent on or before the day set out in the agreement.</p> <p>The landlord shall pay all rates, taxes or charges with the residential premises (other than charges for electricity, gas, excess water and any other prescribed charges).</p> <p>Landlord will require to make the premises "water efficient" if landlord wishes to charge tenants for water usage.</p> <p>The maximum rental bond that can be charged will be 4 weeks rent.</p>	
D25	<i>Retail Leases Act 1994 (NSW)</i>	Technical Director Project Property Services	Applies to "retail shops" and regulates the term of the lease, core trading hours of a shopping centre, rental provisions,	Low	Yes	N/A	<p>Landlord to provide tenant with a copy of the proposed lease, Retail Tenancy Guide and a Disclosure Statement.</p> <p>Lease to comply with the Act.</p>	In accordance with the PPS, and DDG delegations and Land Titles Office.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			disturbance, relocation and demolition provisions.					
D26	<i>Rural Fires Act 1997 (NSW)</i>	Technical Director Project Property Services	Establishes the NSW Rural Fire Service and defines its functions; provision for the prevention, mitigation and suppression of rural fires.	Low	Yes	N/A	Permission of RailCorp, Rail Infrastructure Corporation (RIC) or Transport Projects required if the Authority needs entry into land/property owned by Railcorp, RIC or Transport Projects (Section 27).	In accordance with the PPS, asset management principles.
D27	<i>Sheriff Act 2005 (NSW)</i>	Technical Director Project Property Services	Functions are conferred on the Sheriff by various Acts in relation to the enforcement of civil judgments, the maintenance of court security, the preparation of jury rolls and the selection of juries.	Low	Yes	N/A	N/A	In accordance with the PPS, asset management principles.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D28	<i>Shop Trading Act 2008 (NSW)</i>	Technical Director Project Property Services	Provision for the de-regulation of shop opening hours and restricted trading days. Bazaars, fairs or markets if conducted for charitable or public fundraising purposes are exempt. Other exemptions are listed at Schedule 2 of the Act.	Low	Yes	N/A	All shops must be kept closed at all times on Good Friday, Easter Sunday, at all times before 1pm on Anzac Day, at all times on Christmas and Boxing Day.	In accordance with the PPS, asset management principles.
D29	<i>State Property Authority Act 2006 (NSW)</i>	Technical Director Project Property Services	Constitutes the State Property Authority as a corporation with functions relating to the acquisition, management and disposal of property vested in the Crown and government agencies; allows	Low	Yes	N/A	Minister's consent required to be obtained for the Authority to sell, lease, exchange or otherwise dispose of or deal with any land vested in the Authority and grant easements or rights-of-way over such land or any part of it.	In accordance with the PPS, asset management principles and DDG delegations.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
			the transfer of property to the State Property Authority.					
D30	<i>Strata Schemes Management Act 1996 (NSW)</i>	Technical Director Project Property Services	A system of financial management and decision making by defining rights and responsibilities of the owner's corporation and each owner/occupier in a strata scheme.	Low	Yes	N/A	Comply with the management of funds, holding of meetings and settling disputes.	In accordance with the PPS, asset management principles.
D31	<i>Strata Schemes (Freehold Development) Act 1973 (NSW)</i> <i>and</i> <i>Strata Titles Act 1973 (NSW)</i>	Technical Director Project Property Services	A system of title giving exclusive ownership of part of a building known as "a lot" and supporting rights over other parts of common property. A system of informal dispute-resolution mechanisms.	Low	Yes	N/A	For land to be subdivided into lots, or into lots and common property, a strata plan must be registered. The plan must include a location plan, a floor plan and a schedule of unit entitlements. Any plans for subdivision and alteration and notices of conversion must be accompanied by	In accordance with the PPS, asset management principles and procurement plan.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
							the certificate of title comprising the common property Comply with any special by-laws made by the owners.	
D32	<i>Strata Schemes (Leasehold Development) Act 1986 (NSW)</i>	Technical Director Project Property Services	Enables land which is leased from a person to be subdivided in a similar manner to the Strata Schemes (Freehold Development) Act 1973.	Low	Yes	N/A	To create a strata scheme, a plan must be supported by leases for each of the lots and the common property.	In accordance with the PPS, asset management principles.
D33	<i>Surveying and Spatial Information Act 2000 (NSW)</i>	Technical Director Project Property Services	Governs procedures for the registration of surveyors, control of surveys and the function of the Board of Surveyors and Spatial Information.	Low	Yes	N/A	Comply with the registration and certification processes.	In accordance with the PPS, asset management principles.
D34	<i>Trees (Disputes Between</i>	Technical Director Project	Enables the Court to make orders to remedy,	Low	Yes	N/A	Make an application to the Court (form to be obtained from the NSW	In accordance with the PPS,

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
	<i>Neighbours) Act (NSW) 2006</i>	Property Services	<p>restrain or prevent damage to property or to prevent injury to any person when a tree that is situated on adjoining land might cause that damage or injury. Permits the Court to order compensation for or rectification of damage caused by a tree.</p> <p>Applies to trees which are on privately owned land in a "residential" zone (but not "rural-residential" zones) or in zones called "village", "township", "industrial" or "business"</p>				<p>Land and Environment Court)</p> <p>The Court cannot make an order unless it is satisfied that the applicant has made a reasonable effort to resolve the matter with the owner of the land on which the tree is situated.</p> <p>The Applicant has to give at least 21 days notice of the lodging of the application and the date for the first hearing to the owner of the land on which the tree is situated. Twenty one (21) days notice requires to be made to the local council and/or the Heritage Office.</p>	asset management principles.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D35	<i>Valuation of Land Act 1916 (NSW)</i>	Technical Director Project Property Services	Regulates the valuation of land. Establishes the office of Valuer-General and makes provision for the appointment of contract valuers. In determining the land value of any land, it is assumed that the land may be used, or may continue to be used, for any purpose it was being used at the valuation date, and improvements may be made on the land as required in order to enable the land to continue to be used.	Low	Yes	N/A	The land value of the Crown, or the value of the land that is within the Western Division and is not within the area of a rating or taxing authority does not require to be ascertained each year.	In accordance with the PPS.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
D38	<i>Valuers Act 2003 (NSW)</i>	Technical Director Project Property Services	Provides for the qualifications, registration and regulation of valuers. Powers to suspend registration by the Director General.	Low	Yes	N/A	A corporation must not practise or advertise as a valuer unless at least one director or at least one employee of the corporation is a registered valuer. Registration as a valuer remains in force (unless it is sooner suspended or cancelled) for 3 years and thereafter must be renewed.	In accordance with the PPS, asset management principles.
DM 45	<i>C2009-30: Bush Fire Mitigation Reporting</i>	Technical Director Project Property Services	Public authorities with responsibilities for managed land must report to the RFS Commissioner their activities to reduce bush fire hazards.	Low	Yes	N/A	During the construction phase of each project, the project-specific environmental management plan must address bush fire threats. Post-construction but before vesting, bush fire management is part of property management obligations. Bush fire management to be reported annually in accordance with the Rural Fires Act 1997.	In accordance with the PPS, asset management principles.

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
DM 46	<i>M2003-02: High Environmental Performance for Buildings</i>	Technical Director Project Property Services	Agencies must incorporate the requirements of the <i>Environmental Performance Guide for Buildings</i> in their asset strategies. Agencies must submit to GAMC environmental performance reports for new buildings with a construction value in excess of \$5 million.	Low	Yes	N/A	Environmental impacts should be considered in the planning, acquisition, operation and disposal of buildings. Assets should be assessed to ensure high environmental performance with lease impact on cost. Property management plan should be updated to reflect this.	In accordance with the PPS, asset management principles.
DM 47	<i>M2007-21: Water & Sewerage Leaks on Govt-Owned Property</i>	Technical Director Project Property Services	Specifies what agencies must do in the event of water leaks on their property.	Low	Yes	N/A	Immediate action must be taken when it is clear the leak is occurring from pipes within the property boundary. Agencies must notify the water utility where the leak is significant.	In accordance with the PPS, asset management principles.
DM49	<i>M2003-03: Property Disposal</i>	Technical Director Project	Agencies are required to prepare a	Low	Yes	Exemption for ADP	Not applicable as Transport Projects Asset Divestment Program	Reported monthly to DDG and

Property								
Ref.	Instrument	Position Responsible for Compliance	Accountabilities	IMPORTANCE (high/medium/low)	Compliant (yes/no)	Details of Non-Compliance	Compliance Strategy (including any actions to attain compliance/policies)	Monitoring and Reporting Strategy
	<i>Reforms</i>	Property Services	Property Disposal Plan which should contain the guidelines in the Total Asset Management Manual; to be updated annually and submitted to GAMC.				approved by Cabinet in 2010. Transport Projects operating under the Cabinet approval.	DG.
DM50	<i>M2005-05: Government Property Register (GPR) – Agency Reporting Requirements</i>	Technical Director Project Property Services	All Departments and Statutory bodies must provide details of all land vested in, owned, occupied or controlled by them to Director General, LPMA for inclusion in the GPR.	Low	Yes	N/A	All land is currently reported annually to the Product Manager, GPR in order to fulfil the statutory requirements.	In accordance with the PPS, asset management principles.

5. Related Documents & References

Related Documents & References

Project Property Management Standard – 4TP-ST-036



Scheduling Standard

4TP-ST-123/1.0

Standard – Applicable to Infrastructure & Services

Quality Management System

Status:	Approved
Version:	1.0
Branch:	Infrastructure and Services
Business unit:	Project Controls
Date of issue:	29 November 2016
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Audience:	Branch Wide
Asset classes:	<input checked="" type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input checked="" type="checkbox"/> Multi Sites; <input checked="" type="checkbox"/> Systems; <input checked="" type="checkbox"/> Fleets
Project delivery model:	I&S Project/Alliance/Novo Rail/
Project type:	For all project types
Project lifecycle:	<input checked="" type="checkbox"/> Feasibility; <input checked="" type="checkbox"/> Scoping; <input checked="" type="checkbox"/> Definition; <input checked="" type="checkbox"/> Construction readiness; <input checked="" type="checkbox"/> Implementation; <input checked="" type="checkbox"/> Finalisation; <input type="checkbox"/> Not applicable
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Document History

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1. Purpose

Project delivery within I&S requires analysis and reporting in a complex multi-project environment with multiple interfaces to stakeholders and transport operators there are, constraints due to availability of critical roles and resources with tie-ins to existing and live network infrastructure availability and access to planned possessions. Therefore the purpose of this standard is to define how project schedules are to be developed and managed in TfNSW Infrastructure and services division (I&S) and to aid with project delivery.

The standard aims to improve the quality of I&S project outcomes through consistent and appropriate use of scheduling practices and schedule components this will ensure that project schedules are useable and effective as a management, reporting and communication tool that will assist projects with timely delivery.

This standard will ensure project management best practices are maintained to deliver benefits at both the individual project level and to the wider portfolio and program environment at I&S.

2. Scope

This is an I&S standard, and covers all phases of the project lifecycle. In addition to the planning and scheduling of external contractor works and scope, this standard extends to all internally delivered project scope such as project management activities, technical services, property, environmental and all other internally resourced teams contributing to the delivery of a project.

This document details the planning and scheduling principles that must be used by a project team or supplier to plan, monitor and control a project. I&S contractors will often have in-house scheduling and schedule management guidelines which can be used provided that they do not conflict with this standard's requirements. Where a contractor cannot meet the requirements of this standard, the PMO will advise the I&S Project team on other internal controls that may be required. Access to the Primavera database will be provided to external contractors and other transport agencies as required.

The I&S planning database (Primavera P6) will hold all project information which has been developed by Transport for New South Wales (TfNSW) for the purpose of facilitating the co-ordination of works, projects and programmes. As a minimum requirement all project participants are required to maintain and update project schedules at regular reporting intervals in a format and level of detail consistent with the requirements described in this standard and any further project specific requirements would be included in contractual documents.

I&S Project teams and contractors may make use of other tools such a BIM, Synchro, Time Chainage etc. to assist with the planning of their work however they should be linked to the Primavera schedule which will remain the source of truth for all control purposes.

I&S	Suppliers
Info	Info

Where the Standard refers to a section that is Mandatory this must be implemented where applicable unless otherwise specified in the contract or through an agreement with the PMO. (An example where these mandatory requirements may not be applicable could be some pre-existing contracts)

3. Definitions

Acronym	Definition
AC	Actual cost (ACWP)
ACWP	Actual Cost of work performed (Actual)
BAC	Budget at Completion
CBS	Cost breakdown structure
BCWP	Budget Cost of work performed (Earned)
BCWS	Budget Cost of Work scheduled (Planned)
CCB	Configuration change board
CPI	Cost performance index
EAC	Estimate at completion
EPS	Enterprise project structure
ETC	Estimate to complete
EV	Earned value (BCWP)
EVM	Earned value management
FIC	Financial investment committee
FFC	Forecast final cost
I&S	Infrastructure and Services
IMP	Interface management plan
KRA	Key result area
LOE	Level of effort
OBS	Organisation breakdown structure
P6	Primavera P6
P6 database	I&S Primavera planning database
PMB	Performance measurement baseline
PMBOK	Project management book of knowledge (PMI)
PMO	Program Management Office
PMF	Project management methodology framework
PV	Planned Value (BCWS)
SME	Subject matter expert
SMP	Schedule management plan
SPI	Schedule performance index
SV	Schedule variance
TAE	Target adjustment event
TINSW	Transport for New South Wales

I&S	Infrastructure and Services
TSR	TfNSW Standard Requirement
WBS	Work breakdown structure

4. Accountabilities

The Director Program Management Office (PMO) is accountable for this standard including authorising the document, monitoring its effectiveness and performing a formal document review.

Direct reports to the Deputy Secretary, Infrastructure & Services are accountable for ensuring the requirements of this document are implemented within their area of responsibility.

Direct reports to I&S branch managers, who are accountable for specific projects / programs, are accountable for the implementation of this standard, where it is felt that this standard is not applicable to a project or program then agreement should be reached with the Director PMO.

I&S Project Directors may delegate their responsibilities for implementing the requirements of this standard. The Project Director will typically delegate to the Project Manager and in turn to the Project Controls Manager.

Project Managers are responsible for ensuring project contractors comply with the requirements of this document.

5. Project Lifecycle and Schedule Development

I&S	Suppliers
Info	Info

All TfNSW capital investment projects, programs and investment portfolio are governed by a framework for investment gating and assurance. Financial Investment Committee (FIC) stage gates, referred to as the FIC gates 0 through 5, align with the project phases depicted in figure 1 and are a mandatory inclusion of all project schedules developed using this standard.

More information on project gates and milestones is documented in section Appendix A - Project Milestones and Gates and in the TfNSW Investment Gating and Assurance Guidelines: [TfNSW Investment gating and assurance - guidelines \(pdf 840KB\)](#)



Figure 1: Project lifecycle and schedule standard

Whilst planning activities commence during the strategic planning phase, the use of this scheduling standard commences at pre-feasibility and then remains in use through all phases of the project lifecycle up to final handover of the operational asset or service. The finalisation phase which includes the defects liability period and benefits realisation are part of the project lifecycle but the management of these is beyond the scope of this standard [There is a P6 template module available to be used for this phase is required]. Early Pre-Feasibility Phase may not necessarily implement the Scheduling standard in its entirety but will ensure that a schedule is developed to a Level 0 within the P6 Database that identifies the target and forecast dates for finish/start milestones of each stage to follow. (Refer Section 6.1 Schedule Hierarchy).

I&S's responsibility for planning and schedule development generally commences at the completion of the financial investment committee (FIC) Stage Gate 0 where a "Commitment to Develop" signals the project team to proceed and schedules are then progressively developed through the project stages. The PMO have developed a P6 schedule template which aligns the schedule to the PMF and must be used for all new projects.

The Schedule development can be split into two key stages as defined in the Project management methodology framework (PMF); these are the Development and Delivery phases.

5.1. Development Stage

At commencement of the development stage and the feasibility phase the Initial P6 schedule, already created as part of the PPD Pre-Feasibility work, is to be set up on the I&S Primavera database. This will be the first version of the I&S control schedule for the project. This schedule will be further developed and detailed as the project progresses through the scoping and definition phases, and at the end of the development stage it is expected the schedule will be defined to level 3.

The setup of the P6 schedule in this early phase is a key step in ensuring the successful outcome of the project. A Standard template has been developed in Primavera and should be used as the starting point for schedule development.

5.2. Delivery Stage

Approval of the final business case coincides with the end of the definition phase, following its approval, the project moves into the Delivery stage with the accountability and responsibility for the project fully passing to I&S. The schedule is to be developed further during the construction readiness phase and at the end of this phase the I&S control

schedule should be planned to level 3, with the level 4 and 5 contractor's schedules integrating and aligning with it through the use of WBS and codes level of effort bars, the transfer of e data between these schedules must be described in the schedule management plan.

6. The I&S Working Environment

6.1. Schedule Hierarchy

I&S	Suppliers
Info	Info

To allow effective reporting of schedule activities and status, both within a project and to other parties such as program managers, project board, PMO, portfolio managers, a schedule hierarchy will be generated by the PMO.

The PMO will make available to generate these summaries available to all stakeholders. (Levels 0, 1 and 2 – will be summary schedules, Level 3 will be the I&S Integrated control schedule, and Level 4 & 5 will be the suppliers detailed work schedules.

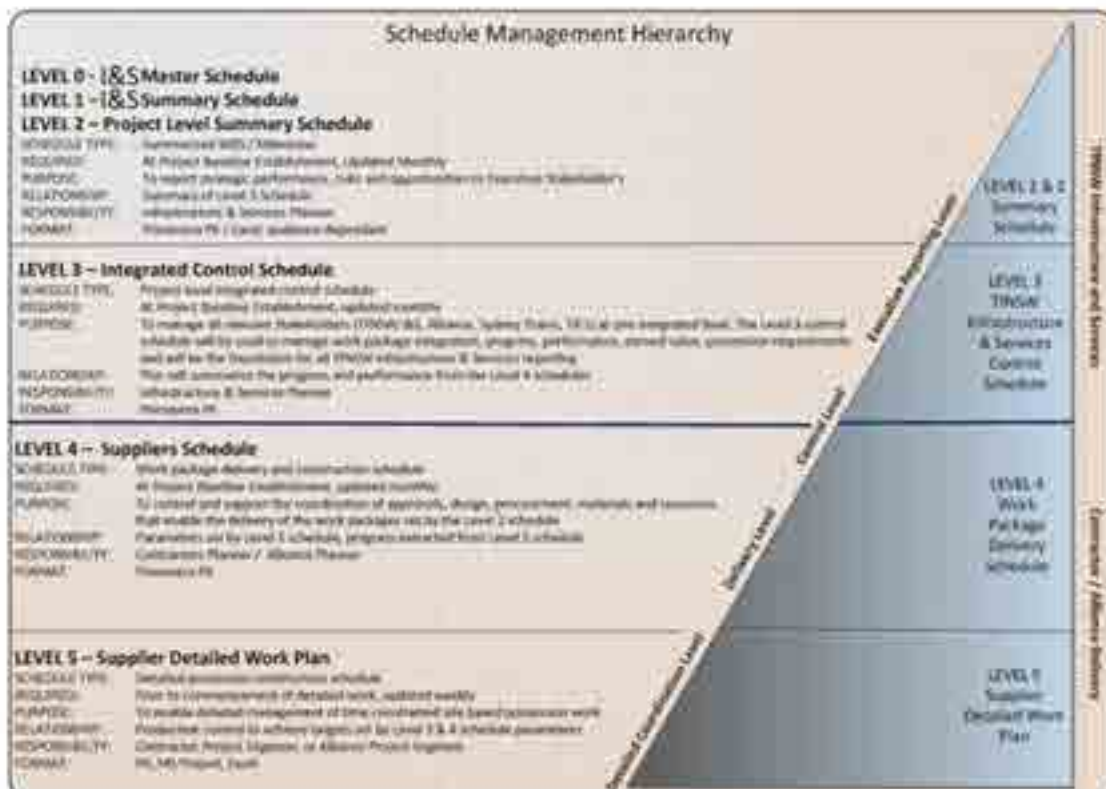


Table: The Schedule Hierarchy

6.1.1. Schedule Level 0 (I&S – Master Schedule)

I&S	Suppliers
Info	Info

Schedule Level 0 (I&S – Master Schedule) provides the overall management level summary Gantt chart for the entire I&S portfolio. Programs first appear on this schedule as they are referred to I&S it will include detail down to Programs, Sub-Programs, Stage and Phase level, each represented by single bars for baseline and progress. This is a rolled up Summary of the Level 3 Control Schedules in P6.

6.1.2. Schedule Level 1 (I&S – Subprograms, Projects Summary)

I&S	Suppliers
Info	Info

Schedule Level 1 (I&S – Subprograms, Projects Summary) provides the management level summary Gantt chart for a single program and the comprising subprograms and projects.

These sub programs may be broken down further for multi-site programs. This is a rolled up Summary of the Level 3 Control Schedules in P6.

6.1.3. Schedule Level 2 (I&S Integrated – Project Level Summary)

I&S	Suppliers
Info	Info

Schedule Level 2 (I&S Integrated – project level summary) integrates project schedule from I&S, contractors and other parties and provides a management level summary Gantt chart for an individual project. This is a rolled up Summary of the Level 3 Control Schedules in P6.

6.1.4. Schedule Level 3 (I&S Integrated Control Schedule - Project Level Detailed)

I&S	Suppliers
Mandatory	N/A

The Level 3 or control schedule integrates all project activities for I&S, contractors and other parties. The schedule is organised around activities for Project Management, Engineering, Design, Procurement, Construction, Commissioning and Operational Readiness and aligned to the delivery strategy. The level 3 schedule may also be referred to as the I&S Integrated Control schedule and by integrating all parties works; this schedule represents 100% of the scope of the project.

Each Project must have a I&S Control Schedule as it is the foundation for all TNSW Infrastructure & services reporting.

6.1.4.1. Components

This schedule will include:

- Must use the Standard I&S Scheduling template and WBS.
- Clearly defined relationships between each Project phase and identification of key review activities;
- It must have all mandatory milestones, codes, calendars, roles and resource assigned;
- It must be cost loaded for the use of EVM to the Work Package Level
- Preliminary package schedules are shown and later aligned to the I&S contractors Level 4 schedule post award;
- Identifies the critical and sub-critical paths;
- Is the 'live' schedule from which schedule analysis, float, critical path(s) and resource bottlenecks shall be identified;
- Network logic incorporating all contractors and other participant schedule data;
- An appropriate level of detail such that start and end dates can easily be identified and activities do not extend beyond durations recommended in the I&S schedule quality guide.
- It must show any allowances for wet weather or event contingencies using single bars shown at the end of the critical path or critical milestones.
- Calendars must be dry weather calendars, and make no contingency allowances of any sort.
- Must show commissioning and handover activities, including time allowed for testing and commissioning of major items.

6.1.4.2. Responsibility, Timing and Format

The assigned project controls manager and scheduling team is responsible for the production of the Level 3 schedule. The schedule is located within the I&S P6 database as a separate project integrating all contractor schedules and I&S project management and procurement activities and shall represent the full project lifecycle. The Level 3 schedule is achieved though using the Level 3 layout in P6.

6.1.4.3. Reporting

The PMO requires the schedule is to be updated at least once at the end of each month. The project team may decide to increase update frequency should they require it.

6.1.5. Schedule Level 4 (Supplier) (Work Package Schedule)

I&S	Suppliers
N/A	Mandatory

Schedule level 4 (Contractor) is developed by the contractor, Subcontractor, or the project team prior to commencing work during the implementation phase, or work in a phase or area of the project. The level 4 schedule may be for the whole of the project or a part of the project depending on the size of the project and complexity of the work. 'Level 4' schedules may be for major sections of the work or for discrete processes such as a 'Design Schedule', 'Construction schedule' and/or a 'Commissioning Schedule'.

Prior to contract award the I&S project scheduler will have identified the major contractor work packages based on team knowledge of typical design and construction practices.

These will be represented in the level 3 schedule and be part of the project baseline. Once the contractor has baselined the level 4 schedule this will be loaded into the I&S planning database as a separate project and could be linked to the level 3 summary, Level of effort (LOE) activities or milestones. Any links from the contractors schedule to the I&S schedule will be outward bound only; contractors should ensure that the option to "ignore external links" is turned off, inter-project relationships are however not encouraged.

A clearly defined WBS, using the WBS functionality of P6 must be used and the I&S project team should ensure that there is alignment between the contractors WBS and the I&S WBS to aid with the integration of the schedules.

The P6 schedules must include all third party review periods, including the principles.

The contractors schedule must refer to the I&S Standard Requirement (TSR) as part of the awarded contract, the contractor will be required to create and maintain the 'live' schedule within the I&S P6 database and be updated at least monthly unless otherwise stated in the TSR. These schedules must be compliant to the TSR-s and contracts with particular attention paid to the section on the Contractors program,

It is recommended that a Basis of schedule is created for each contractors schedule to ensure that all parties agree and understand what is covered in the P6 schedule.

It is also recommended that the I&S scheduler creates a list of requirements from the contract / TSR and ensures that they have been covered in the schedule prior to agreeing the baseline.

6.1.6. Schedule Level 5 (Supplier Detailed Work plan)

I&S	Suppliers
N/A	Mandatory

Schedule Level 5 (Contractor) is a further breakdown of the activities of a Level 4 Schedule. A short term schedule used to map out the detailed tasks needed to coordinate day to day work in specific areas. Level 5 schedules are developed by contractor workforce supervisors to plan and coordinate their work at the detail level. This schedule is not normally required by I&S but if requested, the contractor should be able to demonstrate the detailed level of planning they are using to manage the works on a daily basis. A typical example of a level 5 schedule would be the hour by hour possession plan.

6.1.7. Schedule Hierarchy through the PMF Stages

I&S	Suppliers
Info	Info

Table below depicts the six phases of project delivery where the I&S Scheduler is responsible for the scheduling of the level 3 control schedule and 3rd party suppliers provide the level 4 and Level 5.



Table : Project Phases and Corresponding Level of Schedule Hierarchy and Definition

6.2. The P6 Database

I&S	Suppliers
Mandatory	Mandatory

All Project scheduling will be carried out using primavera P6. This will be maintained and administered by the PMO. It will be regularly updated to ensure all of the latest features and functionality is available to the users.

Contractors will be given access to the I&S database via Citrix at no extra cost to the contractor.

There will be no access provided to import projects, if a project schedule requires importing it can be done by the PMO.

6.3. The EPS Structure

I&S	Suppliers
Mandatory	Mandatory

The EPS in the I&S database is structured to provide a separate node for each program / project. A similar Organisation Breakdown Structure (OBS) is created to identify the program / project "Responsible Manager". The OBS determines the user level access and is administered by the PMO.

Under the main EPS node the next level in the structure (shown in blue in the illustration below) is to identify the responsible party: I&S and the constructor. The next level (shown in pink in the illustration below) is to identify the type of schedule includes: Current, Scenario or Archives.

The following diagram for a project called Pit to Port illustrates the EPS:

6.3.1. Current

Under this node there should be **ONE** project reflecting the latest schedule

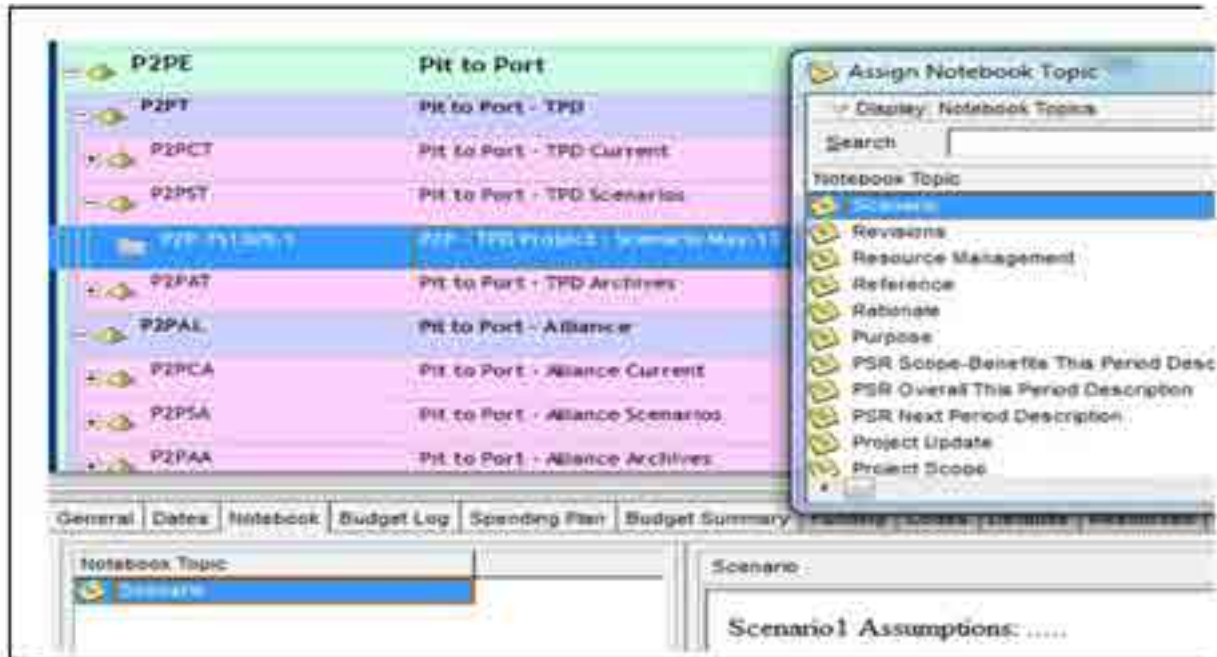


6.3.2. Scenarios

Under this node what-if scenarios or other trials are stored. The EPS ID for this node will always end with “S” for scenarios.

The purpose of the scenario is to be declared in the notebook topic “Scenario”.

The scenarios node will be cleaned out on a quarterly basis noting that scenarios of value should be archived. The PMO will advise all users before the project files under the scenarios node are deleted.



6.3.3. Archives

Under this node the agreed monthly status of the schedule is stored for later reference.

Once a schedule is moved into Archives it can only be viewed, no changes can be made.

To Archive the current schedule:

- Copy the schedule into the "Current" Node
- Change Project ID and Project Codes as identified
- Move the Project into Archives Node

The third level of the EPS identifies the responsible party. In general I&S is responsible to schedule activities for the construction Readiness Phase and after the Implementation Phase with a time allocation for the Implementation Phase. The constructor is responsible for the Implementation Phase schedule. The two "current" schedules under the I&S and Constructor nodes illustrate the full life cycle of the project.

6.4. Tools

I&S	Suppliers
Info	Info

Solution / Function	Description
Primavera P6	This is the system that will be used to schedule the project and record progress against the baseline.
P6 Database	This is the Primavera Environment that will house all of the live schedules. This will be the primary source for the majority of I&S reporting

Acumen Fuse	This is the system that will be used to carry out regular quality checks on all schedules.
Acumen Risk	This is the Acumen tool used to carry out schedule risk analysis on Project schedule
Finance System	This is the financial system used by project managers. Used for actual and future costs is Scenario
Primavera Risk	This is the Primavera tool used to carry out Risk analysis.
CURA	This is the I&S's corporate governance, risk and compliance system.
Microsoft Project	Tool used for Possession planning, must always align with the live P6 schedules.

7. The Framework

7.1. Scheduling Documentation

7.1.1. The Initiation Plan

I&S	Suppliers
Mandatory	N/A

The first 90 (ninety) days after commencement of a project phase are often the most critical period in the life of a Project. It is therefore important that the entire project team is aligned as to the project scope, procedures to be followed, the overall project management plan, any unresolved issues, and above all, with a plan for the first 90 days of the work [this may vary depending on the overall duration of the project]. The initiation plan should be typically ready for first Issue within the first 5 or 10 days of the commencement of the project.

Where there is no approved Level 3 detailed control schedule, the Project Controls Manager, working under the direction of the Project Manager, and with input from the other key Project Team members, will develop the Initiation Plan, the plan is not necessarily a P6 schedule it may start as a spread sheet. This plan should be a detailed listing of all activities and actions required for the first ninety days of the project including staffing requirements; this may be part of the initial kick off meeting. For multi-site projects a single initiation plan may be created for a tranche or portfolio of new projects.

The Initiation plan will ensure that control and guidance to the project is established as quickly as possible, and identifies, at a level of detail comparable with the Level 3 schedule, all those activities, that are scheduled to commence during the first three months of the project. The initiation plan will be monitored on a weekly basis.

This schedule is discontinued upon approval of the P6 Level 3 detailed control schedule.

7.1.1.1. Components

The initiation plan identifies the key activities to be completed within the first 90 days such:

Project kick-off meeting ; Key milestones ; Critical activities ; All activities that lead to a deliverable ; Identified project review activities and assurance gates ; Deliverables ; Project risks ; Unresolved issues ; Early work plan ; Information needs list (identify any additional information required by the team) ; Staffing requirements ;

7.1.2. Schedule Management Plan

I&S	Suppliers
Mandatory	Recommended

The Schedule Management Plan (SMP) defines the approach the project team will take to create and maintain the project schedule. It defines how the team will monitor, manage and control the project schedule. It will describe how internal schedule process will function and how supplier's schedules will be managed.

All projects must have an approved SMP. The SMP ensures a planned and structured approach to developing and managing project schedules.

A Project SMP should be prepared during the development phase of a Project and should be regularly maintained and updated, as a minimum, before each stage or phase gate. The SMP should contain the schedule development, maintenance, and control processes that will be used to manage the project schedule; it must reference all the necessary standards, process and contractual documentation relevant to the planning and scheduling for the project. This plan will also describe the schedule management tools that will be used.

The SMP can be a stand-alone plan or a subsidiary component of the Project Management Plan. The SMP should be reviewed, approved, and signed-off by the appropriate Project Manager and communicated to project team members and contractors.

The SMP is not intended as a detailed procedure for performing scheduling. Rather, it is a guideline for applying generally accepted project scheduling practices.

7.1.3. Basis of schedule document

I&S	Suppliers
Mandatory	Recommended

The Basis of schedule document is used to provide an understanding of how the schedule was developed, the information and project definition provided for the development, and the team members involved in the process and it should provide a better understanding of what is included and what is specifically excluded in the project schedule. The document will accompany the project schedule, The Basis of schedule increases the awareness of the development of the schedule, provides an increased level of confidence, as well as an increased state of preparedness executing the project to successful completion.

The Preparation of the basis of schedule document should begin concurrently with the first summary version of the project schedule and updated as the schedule is developed. The preparation and maintenance of the document is the responsibility of the project Scheduler.

The schedule basis document describes essential elements of information such as these listed below:

Project Description, Schedule Integration Process	Key milestone dates
Scope of Work (WBS, OBS, CBS)	Planning & Cost Basis
Execution Strategy / Construction Methodology / Staging	Critical Path
Assumptions	Issues and Concerns
Key decisions	Risks and Opportunities
Deliverables	Assumptions
Exclusions	Contingencies
Exceptions	Project Calendars Used
Describe all TSR requirements covered	

A sample template is available at request from the PMO.

7.2. The Standard Scheduling WBS

I&S	Suppliers
Mandatory	Mandatory

The Scope is to be decomposed or subdivided into more discreet and manageable, deliverable based packages of works. This provides the framework from which the project management and project control systems will be set-up to facilitate the tracking and reporting of the project status and cost. The WBS may be broken down into further detail as the project moves through its lifecycle.

The WBS is used by the PMO and P6 as the primary method for grouping, sorting and organising project schedules and it is used by many of the standard reports set up by the PMO

Defining the WBS is a joint activity involving the project manager, project controls manager, project planner or scheduler, technical leads and the commercial manager and should be reviewed with the PMO to ensure conformance to portfolio level WBS and coding structures.

A standard I&S WBS has been developed by the PMO to assist project teams with, This WBS Aligns with the PMF and all I&S Level 3 and Contractors Level 4 schedules must use this WBS to at least level 3.

It is important to ensure that all Work Packages are included in the P6 schedule to ensure alignment between cost and schedule.

The I&S recommend that the WBS should follow the PMF and the project should be broken down as follows:

EPS Level		
--------------	--	--

1	PGR	Program
2	PRJ	Project
WBS Level		
1	SDG	Stage
2	PHS	Phase
3	OBS	OBS \ Stage requirement

7.3. The Standard P6 Schedule Template

I&S	Suppliers
Mandatory	Recommended

The PMO have developed a standard template that is to be used to build all I&S Level 3 schedules; this may also be accessed by contractors.

The template has been developed to bring together a number of the complex process that needs to be considered when building a project schedule; it integrates the Standard Scheduling WBS, with the Mandatory Milestones, Mandatory Activity codes and the FIC, CCB and PMF requirements it also contains many of the typical repetitive delivery process a project may go through and these items can be used and modified as required.

It is used to enable the project scheduler to get a schedule built quickly, with all of the required approvals and processes already set up, having a common structure allows for planning resource transferability, it provides a consistent format for reporting and general use of the schedule.

The standard template is available in P6 under the standard templates EPS node.

7.4. Naming Conventions

I&S	Suppliers
Mandatory	Mandatory

7.4.1. Project ID and Project Name - Current

The Project ID and Name will be as short as possible. ID will be preferably a 3 to 4 letters project identifier. E.g. ETTT

The Project names are to be used to describe the project it should be the name that has been chose and recorded in the I&S Master Project Register, there is to be no prefix or suffix added. E.g. ETTT-EV , Epping to Thornleigh Third Track- Current. The project name must be consistently maintained throughout the life of the project.

Project ID	Project Name
ETTE	Epping to Thornleigh Third Track
ETTC	Epping to Thornleigh Third Track - Current
ETTT ✓	Epping to Thornleigh Third Track ✓
ETTT-EV ✗	Epping to Thornleigh Third Track - Current ✗

Table – Showing correct and incorrect naming convention

7.4.2. Project ID and Project Name – Archive and Baseline

The Project ID of the archived version of a current schedule will consist of the original Project ID followed by the date of the schedule status - usually the month and year of the data date. e.g. **ETTT-1307**

If there are several schedules archived during the same month an additional digit to identify the order of saving in that month. e.g. **ETTT-1307.1**, **ETTT-1307.2**

The Project Name does not change and should be the same as the current schedule.

The Project Baseline will follow the same format as the Archived versions followed by "-B". E.g.

ETTA	Epping to Thornleigh Third Track - Archives
ETTT-1307.1	Epping to Thornleigh Third Track
ETTT-1307.2	Epping to Thornleigh Third Track
ETT-1307-B	Epping to Thornleigh Third Track

Table – Showing correct naming convention

8. Set Up and Maintenance

8.1. Mandatory Milestones and Codes

I&S	Suppliers
Mandatory	Mandatory

Milestones are an important part of the project schedule. Milestones will typically be used to facilitate reporting at various levels with I&S, PMO, Program, Project or Contractors schedules.

As part of ongoing improvements by the PMO, project teams and contractors may occasionally be asked to add, modify, code and delete milestones and codes, these

requests will be kept to a minimum and as will the effort required to implement by teams and where possible the PMO will carry out the changes or provide assistance.

8.1.1. Mandatory Milestones

I&S have identified mandatory milestones that are required to be used on all Infrastructure and Services reportable schedules within the TfNSW Primavera database, this will allow for consistent reporting across all project in the organisation. Project teams should supplement these milestones that are relevant to the project that is being delivered.

There are 40 mandatory key reporting milestones that can be used across the entire PMF lifecycle of any new project schedule. The PMF lifecycle is currently divided into two modules:

1. Development and Delivery Template Module (hosts around 27 milestones)
2. Finalisation Template Module (around 3 milestones)

These mandatory milestones fall in to three general categories:

1. Investment Assurance Milestones
2. Configuration Assurance Milestones
3. Lifecycle Milestones

[A User guide – “Mandatory Milestones and associated Primavera Global activity codes”. Please contact the PMO for the latest version is being used.](#)

8.1.2. Global Project and Activity Codes

Primavera has a number of types of codes that can be used to carry out a number of functions. The codes typically used in the I&S environments are Projects and Activity codes

I&S PMO manages the Global Project and Activity codes and Project teams manage their own project level codes. EPS codes can be used but are not encouraged as they are not flexible when projects need to be moved from one EPS node to another will potentially create additional work for the Project planners and could affect reporting etc.

8.1.2.1. Global Project Codes

Project codes help to track different projects based on characteristics they share. Project codes help to group and filter potentially vast amounts of information spanning different areas of the organisation. The PMO manages and maintains these project codes. It is the responsibility of the project teams and contractors to ensure these are updated and correct; this should form part of the regular monthly update cycle as most of these are mandatory.

[A User guide – “Mandatory Global Project and Activity codes” Please contact the PMO for the latest version is being used.](#)

8.1.2.2. Activity Codes

Activity codes enable you to categorise activities into logical groups based on your organisation's criteria. An activity code can be one of three types: Global, EPS, or Project. Global activity codes organize activities across all projects in an organization. EPS activity codes organize activities within a specific branch or node of the enterprise project structure (EPS). Project activity codes categorize activities based on specific features within a project. The WBS remains the primary method for organising project schedules as described in this document.

Global codes are controlled by the PMO and are used with milestones; activities and LOE activities and play an extremely important part in the facilitation of reporting to various levels. It is the responsibility of the project teams and contractors to ensure these are updated and correct; this should form part of the regular monthly update cycle as most of these are mandatory.

[A User guide – "Mandatory Global Project and Activity codes" Please contact the PMO for the latest version is being used.](#)

8.2. Earned Value

I&S	Suppliers
Mandatory	Mandatory

All Projects are to implement Earned Value Management within the P6 environment as per [Earned Value Management using Primavera P6 – 4TP-PR-143](#). Methods, metrics, measures or rules of credit used to assess progress of a schedule and the team's performance must be agreed by the project team and be clearly documented in the Schedule Management Plan.

8.3. Possession Planning

I&S	Suppliers
Mandatory	Mandatory

All Projects that require possessions or isolations are to provide detailed working schedules; these may be in P6 or Microsoft Project. They are to comply with any TSR's and the Sydney trains possession management processes. All critical resources must be identified in the current P6 schedule in accordance with the AEOC guidance documents.

The level 3 control and contractor's schedules must clearly identify all activities being carried out in possessions and isolations, the use of the correct version of the possession calendars are required and the tasks need to be coded to clearly identify the days they are working and the track configuration they are working on.

8.4. AEO Design & Construction Critical Resources

I&S	Suppliers
Mandatory	Mandatory

Critical resources for Authorised Engineering Organisations (AEOs) for design (AEOD) and construction (AEOC) it is mandatory that these are identified within the P6 schedule for the scope they are to perform. These resources should be added to the schedule as soon as possible and as the scope of works starts to become clearer, these can be refined as part of the regular schedule update process, for further information.

8.5. Calendar Updates

I&S	Suppliers
Mandatory	Mandatory

There are a number of global calendars predefined within P6 for use by projects. This alleviates the need to recreate calendars for every project. These range from commonly used calendars such as 5 Days Per Week (5D/W No Hol) or (5D/W Public Hol), to the Global Possession Calendars.

Changes to Global Possession Calendars, periodically received from Sydney Trains, are maintained by the PMO who then advises project teams whenever a change occurs.

The recommendation is that all global possession calendars are copied for use as a project calendar by the project teams every time there is a change. This will allow the project team to analyse the effects of change on their projects and document this as required. The Project team is to ensure that the project schedules are reflective of these calendars and should monitor the effects of change to the project schedule. The use of project calendars are encouraged, as baselines and historical XER files using global calendars will take on any revised dates when restored.

When a Project possession calendar is created, it must be named to include the configuration it belongs to and must include the version name this ensures that the project team has recognised and acted upon a revision of the global calendars. This should be done every time there is a change to the global calendar change, failure to do so will be flagged as the schedules may not be correct.

I&S Global Calendar	Project Calendar
---------------------	------------------

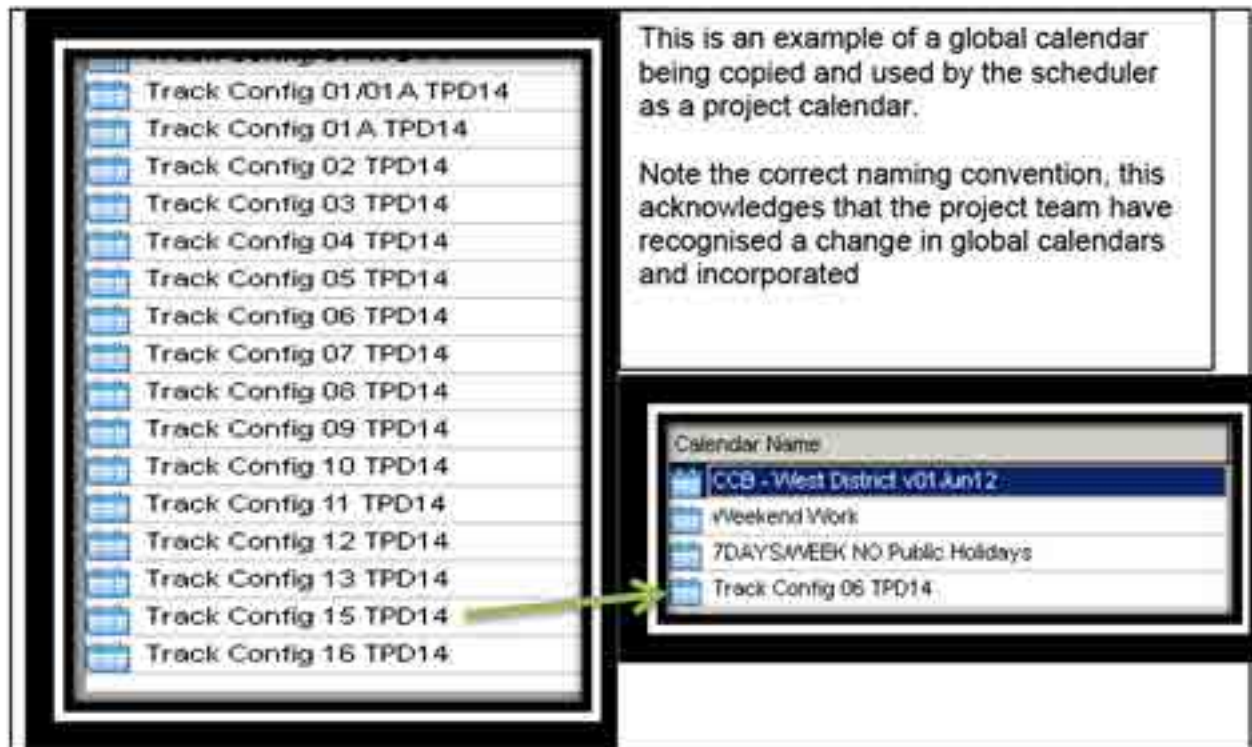


Figure 4: Project Calendar naming convention in P6

8.6. Setting the Project Baseline

I&S	Suppliers
Mandatory	Mandatory

For a project to be under control, it needs to be organised as a closed system. This is done by establishing baselines for scope, cost and schedule and then putting them under version control. Once the project has been contained in these three dimensions, it can be measured, monitored and controlled, without it no meaningful performance measurements can be made and changes cannot be controlled.

8.6.1. I&S Level 3 Control Schedule Baseline (Formal)

The formal baseline will be used for all performance measurement and reporting. A formal baseline will be set at five points during the life cycle of an I&S project. These five points closely align with the stage gates process for Financial Investment Committee (FIC) stage gates and project phases documented in Section 6 - Project Lifecycle and schedule Development.

Following the commencement of a new phase of the project, further definition of the scope and detailed planning is conducted. Additional activities, identified as part of a "Rolling Wave" approach to planning, means the schedule will need to be updated and re-baselined.

During this initial period for each phase it is important that work proceeds in a controlled manner. Until this baseline is achieved the project will revert to a 90 day initiation schedule (refer Section 9 – 90 Day initiation Plan).

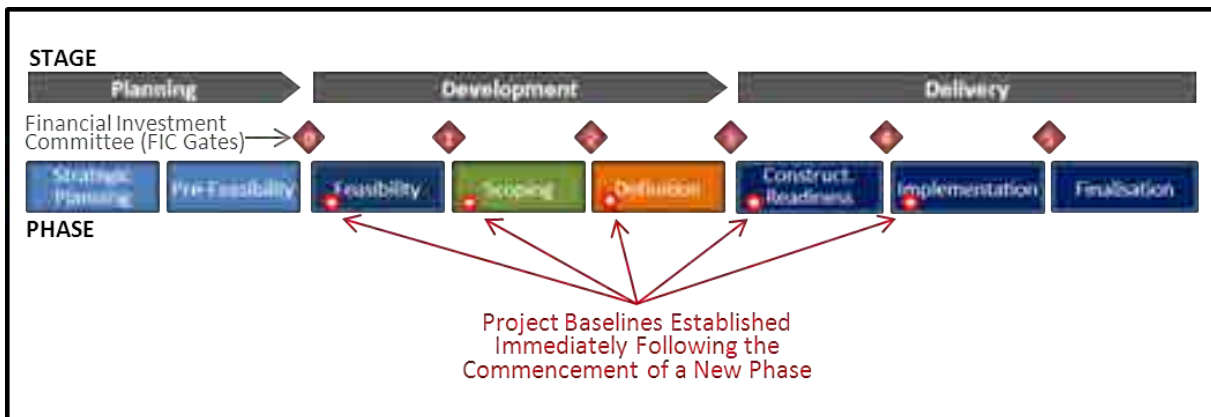


Figure 5: formal baselines established five times during project lifecycle

A project schedule is a key deliverable for each project phase and gateway review. It is this schedule that becomes the starting point for the development of the new schedule as each phase commences. See Figure 5.

The approval of baseline will typically go through a two stage process, see figure 6. The first stage being the checks carried out by the project team to ensure the schedule meets all of the needs of the project from a compliance, scope and time perspective, once this has been agreed by the project team the PMO will then carry out a check against the published quality metrics and ensure that the schedule is compliant with the scheduling standard. Once a project baseline has been approved it can then be assigned as the project baseline by the PMO.

I&S Control Schedule	
Baseline Approval Stage 1 - Project Team sign off	Baseline Approval Stage 2 - Project Team sign off
Carry out Peer Review of Schedule	Review Quality of the schedule
Ensure all Scope is captured	Ensure Compliance with the scheduling standard
Ensure meets all time related milestones and interfaces	PMO Assign as Project baseline
Ensure Project sponsor has agreed to baseline	
Ensure all work packages have been assigned	
Ensure schedule is cost loaded	
Ensure all mandatory codes, calendars and resources have been assigned	
Ensure that there is a back of schedule documents	
Ensure there is a schedule management plan	
Ensure Project schedule quality is acceptable	
Sign off by Project Manager	

Figure 6: Example of the types of checks to be carried out to approve a baseline

8.6.2. Supplier baselines

The Suppliers baseline will be approved as per the contract usually within 10 days of contract award. This should be approved by the I&S project manager provided an approval process as described below has been followed and documented.

A similar two stage process will followed to gain approval of the baseline. If a project requires a re-baseline then the approval process should be repeated.

Contractors Schedule	
Baseline Approval Stage 1 - Project Team sign off	Baseline Approval Stage 2 - Project Team sign off
Carry out Peer Review of Schedule	Review Quality of the schedule
Ensure all Scope is captured	Ensure Compliance with the scheduling standard
Ensure meets all time related milestones and interfaces	PMO Assign as Project baseline
Ensure all work packages have been assigned	
Ensure schedule is cost loaded	
Ensure all mandatory, codes, calendars and resources have been assigned	
Ensure that required schedule documentation is provided	
Ensure Project schedule quality is acceptable	
Ensure schedule is compliant with all TSR's, standard and contracts	
Sign off by Project Manager	

8.6.3. Primary, Secondary and Tertiary Baselines (Monthly)

P6 has the facility to assign 3 additional baselines to the project schedule; These are user baselines and can only be assigned and seen by the user, these may be used by the project team to report monthly variances and other standard reports. It is a useful tool for the project teams to use to assess the accuracy of the previous months update and to quickly identify areas of concern.

8.7. Status Updates

I&S	Suppliers
Mandatory	Mandatory

The P6 schedule must be updated and submitted at least once a month if updating monthly and completed by the 1st working day of the next month with status up to the last working day of the previous month, unless stated otherwise in the contract. The data date must be the first calendar day of the current month. Additional update requirements may be specified in the TSR or the project management plan, it is essential that actual dates must reflect the actual date the activity started or finished, to provide an accurate benchmarking data and record of actual events.

Additional updates may need to occur outside of this regular update cycle for example:

- Adhoc or requested updates for design
- Design Package submissions that require reviews by I&S reviewers.
- Updates during each possession, expected at the end of each worked shift.

When updating the P6 schedule the "Auto update" feature in P6 should not be used as it may overwrite actual dates in the schedule and may cause unnecessary additional work for the project schedulers. As part of the status update process schedulers must ensure that all necessary codes, milestones, resources, calendars have been checked and updated.



Figure 3: A typical schedule update cycle

8.8. Schedule Quality, Compliance and Accuracy

I&S	Suppliers
Mandatory	Mandatory

8.8.1. Acumen Fuse and checking for quality

All schedules, internal and contractors shall meet minimum quality criteria, firstly when compared against this schedule standard document and secondly, against parameters listed schedule quality assessment criteria, in the Schedule Quality Guide. This can be provided in excel format if required, contact the PMO.

The parameters can be assessed by the scheduler themselves or the process may be facilitated by using an assessment tool such as Acumen Fuse.

The "Schedule Quality" will be examined following the initial submission and upon each subsequent submission. For third party and contractor schedules, the quality checks will be self-performed prior to submitting the schedule as part of a baseline, the update process or for approved changes in scope and will then be assessed by the I&S Project Controls team. Where a contractor schedule fails to meet the Schedule Quality Assessment Criteria, the schedule will be deemed to be not acceptable and the results will be provided to the contractor to assist them in rectifying the deficiencies.

It is acknowledged that there may be exceptional cases where the thresholds provided in the Schedule Quality Assessment Criteria cannot be strictly adhered to. In these cases, the deviation from the acceptance criteria must be approved by the I&S Project Manager and the I&S PMO and then tagged within the P6 schedule as approved exemptions using a secure Activity code.

The Schedule Quality will be assessed for all normal activities and milestones that are planned, in-progress, or complete. Guidance on the checks carried out will be provided by the PMO.

8.8.2. Schedule accuracy

Monthly checks will be carried out by the PMO to assess how well the projects are delivering against the previous months updates, only activities (excludes Milestones, LOE, WBS summary) planned to be completed in the month are reviewed. The target is set at 70 % accurate. The PMO will provide project teams with their results each month and encourage the teams to understand the reasons for missing activities and come up with action plans for dealing with common cause delay.

The reports are distributed to the I&S project controls managers and schedulers who should in turn discuss with their contractors where required. Raw data can be provided to project teams upon request.

8.8.3. Schedule compliance

Monthly checks will be carried out by the PMO to assess how well the projects performing from a compliance perspective and will track progress towards the goal of reporting from the single P6 database. The reports required are AEOC, EVM, Basic variance, Sydney Trains, Possession reports, BI reporting and Portfolio level summary reports. The requirements for running these reports have assessed and 13 metrics have been set up to establish the baseline position.

The reports will be distributed to the I&S project controls managers and schedulers who should in turn discuss with their contractors where required.

8.9. Schedule Reporting

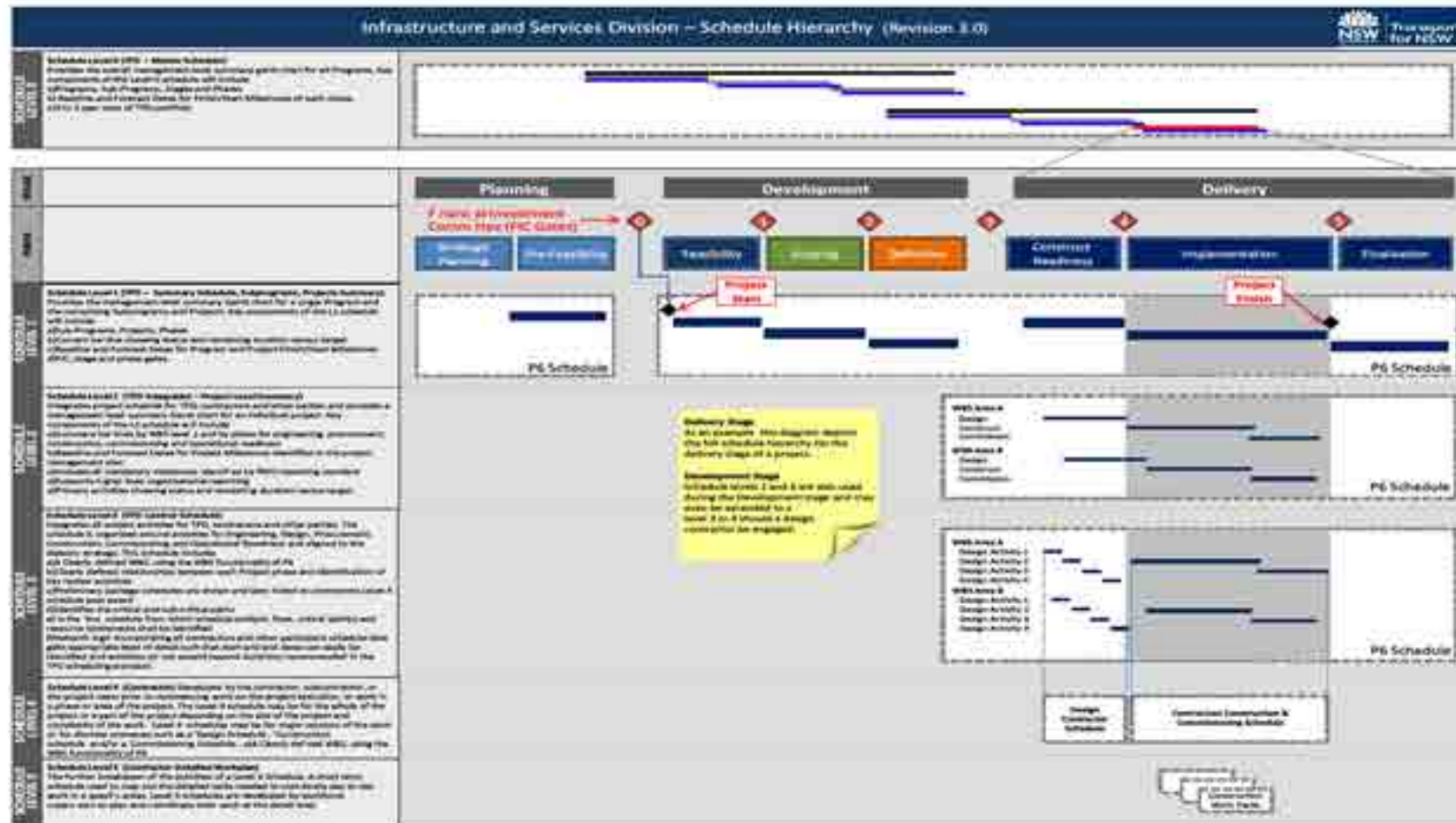
I&S	Suppliers
Optional	Optional

The types of reports will generally be determined by the stage the project is in and the project type as well as projects specific requirements. To assist, the PMO has set up several standard layouts that may be used by the project teams and if required modified to suit the team's needs. The Global Layouts will periodically updated and improved by the PMO. If there is any explanation required or assistance required to develop new reports contact the PMO.

I&S Global Layouts in P6			
2 Week Lookahead	PSU - Milestone Reporting [By Sector]	I&S - AEO - 1 Month Lookahead	I&S - Possession - [Config]
4 Week Lookahead	PSU - Milestone Reporting [By Sector] 2	I&S - AEO Electrical Roles Stacked	I&S - Possession - [Final Commissioning]
Calendar and Ordinal Timescale	Resource Availability Spreadsheet	I&S - AEOC Assign Activity Codes	I&S - Possession - [Project]
Classic EPS/WBS Layout	Resource Cost Profile	I&S - AEOC Midweek - Day Scale	I&S - Signalling Resources - Detail 39pa
Classic Schedule Analysis	Resource Cost Spreadsheet	I&S - AEOC Possessions - Hour Scale	I&S - Signalling Resources - Summary
Classic Schedule Layout	Resource Over allocation Profile	I&S - Design Review Complete	I&S - Standard
Classic WBS Layout	Resource Over allocation Spreadsheet	I&S - Design Review Priority	I&S - Standard [BL Slippage]
Costs - Actual	Resource Units Profile	I&S - EVM	I&S - Standard [V2]
Costs - Budgeted	Resource Units Spreadsheet	I&S - EVM (CBS)	I&S - Summary - One Bar
Costs - Earned Value	Resources - Budgeted Labour	I&S - EVM (WBS)	I&S - Summary - PSU
Current vs. Baseline Schedule Analysis	Resources - Budgeted Non-labour	I&S - EVM [Gridlines Only]	I&S - Summary [AEO Resourced Projects]
Earned Value - Costs	Resources - Budgeted Total Units	I&S - EVM [Profile]	I&S - Summary [AEO Resourced Projects]_1
Earned Value - Variances	Standard Activity Status	I&S - IWLR	I&S - Summary [I&S Milestones]
Float Path Layout	TAP - Programme Summary Report	I&S - Milestone Reporting	I&S - Summary by Delivery Phase
Group By Status	Three Line Timescale (Year-Month, Week)	I&S - Milestone Reporting [NIV]	I&S - Summary by Delivery Phase [Alterna
Predecessor/ Successor Analysis	I&S - TMR Standard	WBS - Detailed	Work Load Analysis

Table: example of Standard P6 Layouts

Appendix A - Schedule Hierarchy Example





Significant Incident Management Procedure – I&S Delivered Infrastructure & Fleet Projects

1TP-PR-008/5.0

Procedure – Applicable to Infrastructure & Services

Quality Management System

Status:	Approved
Version:	5.0
Branch:	Safety
Business unit:	Operations Safety
Date of issue:	06 May 2016
Review date:	06 May 2017
Audience:	Organisational Wide
Asset classes:	<input checked="" type="checkbox"/> Heavy Rail; <input checked="" type="checkbox"/> Light Rail; <input checked="" type="checkbox"/> Multi Sites; <input checked="" type="checkbox"/> Systems; <input checked="" type="checkbox"/> Fleets
Project delivery model:	Not Applicable
Project type:	Not Applicable
Project lifecycle:	<input type="checkbox"/> Feasibility; <input type="checkbox"/> Scoping; <input type="checkbox"/> Definition; <input type="checkbox"/> Construction readiness; <input type="checkbox"/> Implementation; <input type="checkbox"/> Finalisation; <input checked="" type="checkbox"/> Not applicable
Process owner:	Director Safety

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Document History

Version	Date of approval	Doc. Control No.	Summary of change
1.0	1 Nov 2011		First issue
2.0	15 June 2012	1979159_3	Minor changes.
3.0	11 September 2012	1979159	Updated to recognise relationship to the role of the DDG Projects in the TfNSW corporate structure. Procedures amended to nominate the Director Project Delivery as CMT activator. Alterations to document numbering to reflect TfNSW document control system
4.0	17 December 2012	1979159	Minor changes to the preface
5.0	06 May 2016	1979159_16	Updated to align with organisational changes within Project Delivery with comments from the Executive Management Team.

1. Purpose and Scope

This Procedure draws upon Transport for NSW's Procedures and on national and international standards to give best practice guidance to I&S personnel at senior management level to respond to a disruptive incident which may have significant impact on its operations and performance, reputation and stakeholder relations, value, or even viability .

1.1. Purpose

This Significant Incident Management Procedure (SIMP) provides the guidelines for the TfNSW I&S executive team to manage significant incident level disruptive incidents that impact infrastructure and fleet projects delivered by the Division.

The Procedure is not intended to provide comprehensive instructions for the precise actions to take in any given scenario, as each situation will be unique. It does, however, provide basic checklists, generic guidelines, and reminders about the main elements of the process and the key success factors in an effective response.

It also details the roles and responsibilities of I&S and Principal Contractor personnel located at the site and at the Project Office and describes the liaison and reporting regimes between each of them.

It is aligned to the TfNSW [Executive Major Incident Management Procedure 30-PR-459](#) which details a process for a portfolio-wide response to a catastrophic incident.

1.2. Scope

This procedure is specifically written to manage significant incident level events in relation to I&S delivered infrastructure and fleet projects. The following are out of scope:

- Business Continuity (managed via a different, though aligned, process)
- Technology related projects (e.g. software upgrades and IT systems implementation)

I&S operates under Transport for New South Wales' accreditation as a Rail Transport Operator for the construction of railway infrastructure in accordance with the requirements of the Rail Safety National Law National Regulations 2012, the scope of which is set out in the Notice of Accreditation.

On rail-related sites, Principal Contractors generally work under TfNSW's accreditation. As such, TfNSW is responsible for the rail operations carried out by the Principal Contractor and its associated participants. The Principal Contractor is responsible for all occupational health and safety and emergency response systems on the site.

TfNSW's Safety Management System (SMS) documents management requirements which meet legislative and corporate responsibilities. To ensure efficiency of response to significant incident situations, the SMS aligns with that of Sydney Trains (for the Metropolitan Rail Network), John Holland Rail (for the Country Rail Network) and ARTC (for the Defined Interstate Rail Network).

This Significant Incident Management Procedure is likely to be activated in conjunction with several other TfNSW systems and plans (as shown in Section 3.1) together with those of affected infrastructure owners and the incident, emergency and significant incident response plans of the Principal Contractor.

The Procedure should be read and applied in conjunction with these systems and plans, as well as other associated internal and external procedures.

2. Accountabilities

The Director Safety, I&S is accountable for this procedure. Accountability includes authorising the procedure, monitoring its effectiveness and performing a formal document review.

Direct Reports to the Deputy Secretary I&S are accountable for ensuring the requirements of this procedure are implemented within their area of authority.

3. Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

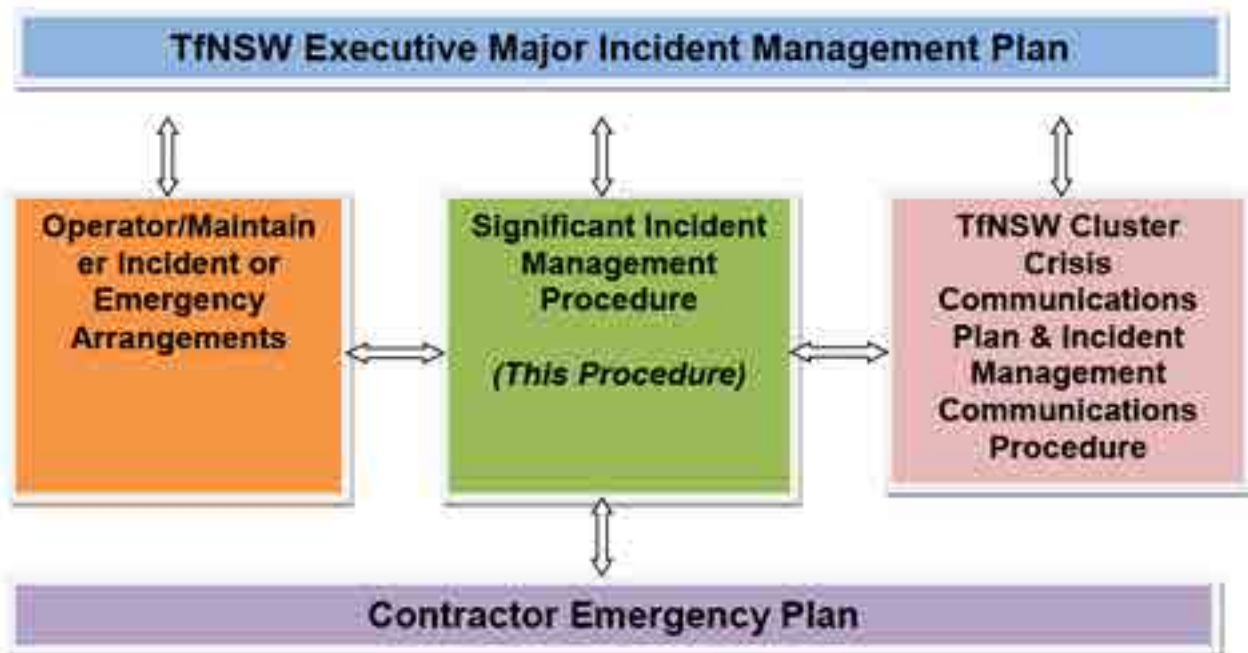
Alliance	A consortium of companies gathered to undertake a TfNSW project
ATSB	Australian Transport Safety Bureau, the federal agency for transport safety investigations. It has investigation protocols in NSW with OTSI.
Battle Box	A green coloured document box containing checklists and essential information for each Significant Incident Management Team Member.
DISPLAN	Disaster Recovery Plan, established under the NSW Emergency Management Act. The Plan outlines an escalation process for Emergency Services to gather support relevant to combat each emergency
EMP	Emergency Management Plan – developed and implemented as necessary by the Principal Contractor
EMT	Emergency Management Team established by the Alliance or Principal Contractor, whose primary responsibility is to provide support services to the Site
EMT Liaison	The most senior I&S person in the Project office. Nominally the I&S Project Manager. Responsibility is to liaise with the Principal Contractor's Emergency Management Team and report to his direct manager or the SIMT Operations Coordinator when appointed
ICT	Information and Communications Technology services of TfNSW
IEMP	Incident and Emergency Management Plan
I&S	Infrastructure & Services Division of Transport for NSW
ITSR	Independent Transport Safety Regulator. ITSR carries out a range of regulatory compliance and enforcement activities as the NSW Branch Office of the Office of the National Rail Safety Regulator (ONRSR).
Notifiable occurrence	An accident or incident associated that has, or could have, caused serious injury, or death, significant property damage, or serious environmental damage and requires notification to an appropriate Regulator
Occupational health and safety legislation	The NSW Work Health and Safety Act 2011 and its Regulations
OTSI	NSW Office of Transport Safety Investigations - responsible for investigating public transport safety occurrences. OTSI has protocols with the ATSB and provides reports to the NSW Minister for Transport.

Principal Contractor	A principal contractor is the company which must ensure that a site specific occupational health and safety management plan is prepared, maintained and kept up to date and is the responding organisation to an incident on the worksite
SIMT	Significant Incident Management Team
Site Incident Manager (SIM)	The Principal Contractor's senior person on site who takes initial control of an incident and liaises with the Emergency Services
Site Representative	The most senior I&S person on site who is required to liaise with and assist the Principal Contractor's Site Incident Manager and report to the I&S EMT Liaison
SITREP	Situation Report
Warden	A person who is trained that on hearing an alarm encourages staff, contractors and visitors to leave the area as quickly as possible and check the designated area is clear

4. Framework

4.1. Overview of Interfaces

This procedure sits within a wider framework of other related arrangements. Key interfaces are summarised below.



The double-headed arrows indicate interfaces.

4.2. Categorisation of Events

I&S categorises untoward events related to the delivery of infrastructure and fleet projects into three levels of severity:

Incident	<p>Any occurrence that causes minor harm to an individual or short-term disruption in the workplace, but which can be dealt with by available resources - whether or not the Emergency Services are called (e.g. slips, trips or falls).</p> <p>These accidents would be dealt with by a Principal Contractor and reports reviewed by I&S.</p>
Emergency	<p>A major event at a Project site that requires a coordinated response to preserve life, property and the environment.</p> <p>For I&S it includes sites where there may be construction failure, serious safety oversights, train collisions/derailments, fire, explosions, spills, gas leaks, road accidents, natural disasters and civil disturbances (riots or bomb threats).</p> <p>Such events would be managed by an Emergency Management Team formed at the Principal Contractor's discretion, with an I&S Project observer included. An emergency may lead to activation of this significant incident management procedure.</p>
Significant Incident	<p>A significant incident is an actual or potential untoward event which could cause major disruption to the Division as a whole, and have significant impact on its operations and performance, reputation and stakeholder relations, value, or even viability.</p> <p>A significant incident may be physical in nature, e.g. resulting from an escalating operational, safety or environmental emergency. Significant incidents are characterised by the severity of impact in the context in which they occur, and by the need for urgent strategic management action to protect the organisation.</p>

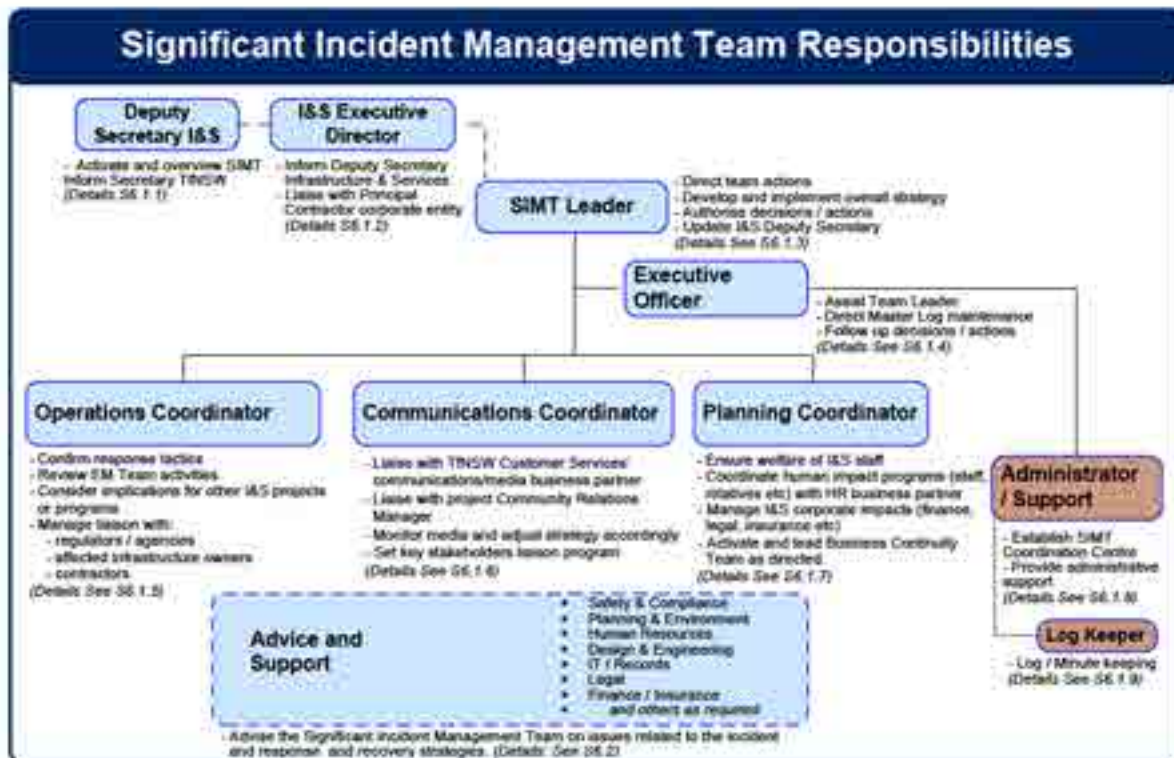
4.3. Significant Incident Response

A significant incident is a disruptive event with impacts that affect other parts of I&S or TfNSW operations and requires a strategic response. It can occur as a single incident or as an accumulation of a series of matters.

Having being informed of such an event, the Project / Program Director will, consult with the Executive Director and assess whether it has significant impact of I&S's operations or reputation.

If it does not, the Project / Program Director will manage the event and provide regular situation reports (sitreps) to the Executive Director for ongoing review.

If it is assessed that the event does have, or there is potential for, corporate impact I&S will respond using the overall organisational structure of a core team of senior executives. They will call on specialist and technical support to advise them and carry out the tasks. The normal team structure is detailed below.



The Deputy Secretary in conjunction with the Executive Director (Program Delivery, Operational Systems or PDMO) or Delegate appoints the Significant Incident Management Team (SIMT) from the affected Program / Project Director and establishes overall strategy.

The Deputy Secretary receives regular updates and becomes the principal liaison with the Secretary TfNSW and other Deputy Secretaries and, if appropriate, the Ministers.

The SIMT Leader has financial and organisational authority to deal with the significant incident. He/she is chosen as the person with the most appropriate knowledge and skills to lead the response.

The SIMT Leader may appoint a senior manager as Executive Officer. The role of this person is to share the load and enable the SIMT Leader to concentrate on managing the immediate significant incident.

The SIMT Coordinators manage teams of specialists with access to skills and resources to support the response.

The role of the Operations Coordinator is to comprehend and support immediate efforts to bring any physical significant incident under control and source technical information or resources that assist in making the site safe. The Operations Team is the interface with the Principal Contractor's Emergency Management Team through I&S EMT Liaison.

The Operations Team will also liaise at corporate level with Contractors; the network response manager (e.g. Sydney Trains or other Rail Operators); Regulators; assess operational implications for other projects; and oversee Project recovery.

The Communications Coordinator acts as the interface between the Community Engagement Manager on the Project or Program, and the Public Affairs team in the TfNSW Customer Experience Division. The Communications Coordinator will keep the SIMT

updated with communications and reputational issues and manage local I&S responses as directed.

The **Planning Team** assesses the significant incident in terms of its impact on the business. This may be the human impact - ensuring that Human Resource actions are initiated and coordinated to attend to enquiries about the welfare of TfNSW staff from their family members. This team is also responsible for responding to other impacts, such as on property, insurances, or legal implications.

If the impact of the incident is assessed that it may have long-term implications for TfNSW's business, one or more of the Business Continuity Plans may be activated. In this case, the Planning Coordinator will be instructed to arrange activation of the Business Continuity Team to manage and coordinate the Business Continuity Plans (see separate procedure).

The **Significant Incident Team Administrator** manages the activation of the Significant Incident Coordination Centre, establishment of log keeping and other administrative functions. In the long term, working with the Executive Officer he/she manages the team's needs and anticipates any long term requirements.

5. Key Activities

Effective response to and management of a significant incident, involves a number of key processes:

- 5.1 Notification and assessment
- 5.2 Activation of SIMT
- 5.3 Significant Incident Coordination Centre activation
- 5.4 Command and Control
- 5.5 Working methods
- 5.6 Recovery and termination

5.1. Notification and Assessment

I&S has processes in place for notifying and managing incidents related to project sites both inside and outside the rail corridor. For full details, see the [Incident Reporting, Recording & Investigation Standard 90-ST-001](#).

Notification should follow the normal line manager processes within I&S. A quick guide notification form is in all Battle Boxes and appears as **Appendix 1**.

For **Project / Program Directors**, an easy-to-use chart which helps to assess the severity of an incident appears in Battle Boxes and as **Appendix 2**.

5.2. Activation of SIMT

5.2.1. Criteria

Activation criteria for the SIMT are largely based on the likelihood that the incident will:

- involve multiple serious injuries/fatality to staff, contractors or the general public
- cause major damage to assets, infrastructure, property or environment
- impact on rail operations (trains or stations), roads, or other public transport infrastructure
- demonstrably compromise the safety of the travelling public
- raise issues for the NSW Government: Premier, Minister for Transport, Secretary TfNSW, local Members of Parliament
- come to the attention of other key stakeholders: community groups, local councils, or
- attract significant attention from print or electronic media
- have caused activation of the Transport Sub-Plan of the State DISPLAN

5.2.2. Decision to Activate the SIMT

The Deputy Secretary or Delegate decides whether a SIMT should be activated, nominates who will lead the SIMT, and briefs him/her on policy, issues, and any other matters to be considered.

5.2.3. Escalation examples

The following table provides some examples of levels of incident response for various event types. This is intended as a guide only, but combined with the experience of I&S personnel, should aid determination of when an incident should be escalated to the next level.

	Incident (Level 1)	Emergency (Level 2)	Significant Incident (Level 3)	
Public Safety	<ul style="list-style-type: none"> Isolated minor injury, whether medical attention is requested or not Staff/contractor fall Minor traffic/pedestrian accident 	<ul style="list-style-type: none"> Multiple injuries or significant ongoing threat Serious rail/road accident Investigation by statutory authorities Recurring related operational incidents 	<ul style="list-style-type: none"> Construction 	<ul style="list-style-type: none"> Vehicles, Vessels & Rolling stock
			<ul style="list-style-type: none"> Fatality Any serious public safety issue likely to attract significant media or political attention Gas alert or explosion Endemic safety/health issues attributed to I&S project delivery operations 	<ul style="list-style-type: none"> Procurement error leads to concern over public safety Serious public safety issue detected/highlighted elsewhere likely to attract significant media or political attention Failure by key supplier to address known safety faults Recall of faulty equipment causing service disruptions
Railway	<ul style="list-style-type: none"> Delays train operations by minutes Will disrupt a relatively small number of Sydney Trains or other Rail Operators customers Can be managed within normal Operator daily operating procedures 	<ul style="list-style-type: none"> Causes significant disruption to train operations Will adversely impact a large number of Sydney Trains customers All incidents requiring a rail line to be closed Emergency Services take control of incident site 	<ul style="list-style-type: none"> Real or immediate danger of injury or loss of life Causes significant disruption to train operations, rail customers or the public Requires significant coordination between I&S, Sydney Trains or other Rail Operators, external Transport Agencies and Emergency Services 	<ul style="list-style-type: none"> Continued failure of procured rolling stock causing passenger disruption and outrage Recall of equipment to rectify fault causing service disruptions Loss of consumer confidence in newly procured transport equipment Refusal by Operator to accept procured equipment

	Incident (Level 1)	Emergency (Level 2)	Significant Incident (Level 3)	
Light Rail	<ul style="list-style-type: none"> Delays tram operations by minutes Will disrupt a relatively small number of Light Rail network customers Can be managed within normal Operator daily operating procedures 	<ul style="list-style-type: none"> Causes significant disruption to light rail operations Will adversely impact a large number of light rail customers All incidents requiring a tram line to be closed Emergency Services take control of incident site 	<ul style="list-style-type: none"> Construction Real or immediate danger of injury or loss of life Causes significant disruption to light rail operations, customers or the public Requires significant coordination between I&S, Transport service providers and Emergency Services 	<ul style="list-style-type: none"> Vehicles, vessels & Rolling stock Continued failure of procured rolling stock causing passenger disruption and outrage Recall of equipment to rectify fault causing service disruptions Loss of consumer confidence in newly procured transport equipment Refusal by Operator to accept procured equipment
Environment	<ul style="list-style-type: none"> Minor spill/emission which can be dealt with internally Minor spill which is contained and easily cleaned up 	<ul style="list-style-type: none"> Spill/emission which requires external resources to mitigate Dust/noise pollution resulting in EPA action Breaches of environmental laws 	<ul style="list-style-type: none"> Serious spill/emission which attracts public outrage. Wilful breach of environmental conditions by a Principal Contractor 	<ul style="list-style-type: none"> Procured equipment fails existing environmental standards Supplier manufacturing practices breach environmental laws
	<ul style="list-style-type: none"> Isolated injuries not affecting business operations Minor site accident Minor personal injury 	<ul style="list-style-type: none"> Serious injuries, affecting the operation of a depot or office Personnel entrapment Localised health issues, e.g. Legionella 	<ul style="list-style-type: none"> Multiple casualties or fatalities Major or project office building fire Widespread workplace health issues 	<ul style="list-style-type: none"> Staff put at systemic risk from failure to address known safety issues <ul style="list-style-type: none"> Union reaction on safety grounds to procured equipment

	Incident (Level 1)	Emergency (Level 2)	Significant Incident (Level 3)	
Technical procurement	<ul style="list-style-type: none"> • Commissioning issues • Minor technical faults 	<ul style="list-style-type: none"> • Recurring faults causing widespread remediation / recall • Dispute between I&S and end user Agency • Contract impropriety / mismanagement 	<ul style="list-style-type: none"> • Catastrophic failure of constructed assets causing injury • Catastrophic failure causing prolonged disruption to transport services • Technical review identifies severe or known technical problem 	<ul style="list-style-type: none"> • Catastrophic failure of procured assets causing injury • Catastrophic failure causing industrial action • Technical review identifies severe or known technical problem in procured objects

5.3. Significant Incident Coordination Centre Activation

Once the SIMT is activated a decision will be made on the appropriate location to meet. The preferred location is the White Room on Level 6, Tower A, Zenith Centre, Chatswood.

The SIMT Leader should then contact the **SIMT Administrator** to arrange activation of the Significant Incident Coordination Centre, required administrative support and assist in notifying the remaining SIMT nominees and specialist advisors. A flowchart in **Appendix 3** describes the process. Details of layout, activation kit contents and other requirements (e.g. video conferencing) are in the SIMT Administrator's Battle Box.

5.4. Command and Control

The SIMT Leader should quickly assume control of the team, outline the issues to be addressed and be mindful of any policy considerations set by the Deputy Secretary.

Attendance should be limited at each meeting to the core Coordinators. Any Subject Matter Experts or Advisers should be briefed in their tasks by the Coordinators and report back through that channel.

Meetings should be limited to concise situation updates and concentrated on review of objectives and adjustment of strategy

5.5. Working Methods

The SIMT is expected to work quickly to respond to a significant incident. As they arrive, SIMT Members should take the time to review and familiarise themselves with their likely role and responsibilities (see Section 6).

- The SIMT Leader will confirm roles and responsibilities (including the I&S EMT Liaison), establish known facts, assign tasks, ensure contact is established with the site and with key stakeholders, and specify the intended course of action, authorisation levels, and priority tasks/areas of responsibility.
- The Deputy Secretary or Delegate will establish context and offer direction on strategic issues. He/she will indicate any directives issued by the Secretary TfNSW.

Agenda for start-up and ongoing meetings are at **Appendices 6 and 7** and in the **SIMT Leader** and **Executive Officer Battle Boxes**.

5.5.1. Periodic Updates

To ensure that the SIMT activities are cohesive and synchronised, periodic update (Sitreps) meetings need to be held. The SIMT Leader should determine the frequency of these updates.

At these updates, each SIMT Member should give a dot point style summary of status, progress on initiatives underway, and issues needing attention. Once all Team Members have given their updates, the SIMT Leader should review strategies being adopted and adjust as necessary, allocate / reallocate responsibilities as required, and confirm short-term actions required.

A proforma Sitrep is **Appendix 4** and in all Battle Boxes

Updates, actions, decisions, and directions should be referenced in the master log.

5.5.2. Extended Operations

During extended operations, SIMT Members and Advisors should be stood down for a rest every day. While there are no firm rules for this, good practice would be to stand members down for at least 8 hours in each 24-hour period. Alternates for each SIMT Coordinator position have been nominated in this Procedure to accommodate a rotation. New arrivals should shadow their incumbent for at least one periodic update in order to understand the status of all current issues.

It may be desirable for the SIMT to only convene as a team periodically for briefings, progress reporting, and strategy planning. In this case, the frequency of these sessions should reflect the nature and status of the incident. In the early stages this should be no less frequent every 2 hours but might extend to daily updates in a long-term incident. To avoid miscommunications, clarify information and ensure all are aware of changes in strategies being employed, it is imperative that all SIMT Members are present at these sessions.

5.5.3. Physical Co-location

It may be desirable for each of the SIMT teams to work out of separate locations, at the discretion of the SIMT Leader. However, the entire Team should assemble in one location or use video conferencing for periodic whole-of-team briefings, progress reporting, and strategy planning.

5.5.4. Summary actions

The following table summarises what should be done by the first SIMT members to arrive at the Significant Incident Coordination Centre after activation, pending the full formal team start up. Key tasks will include the following:

Significant Incident Management Team Summary Actions.	
Assembly	<ul style="list-style-type: none"> • The SIMT Administrator and Duty ICT consultant will identify room requirements and commence set up • SIMT nominees should advise own staff of whereabouts and delegate duties • SIMT nominees refresh themselves of the responsibilities of their likely role • Convene as directed as soon as possible, or at the time specified
Activation of the Significant Incident Coordination Centre	<ul style="list-style-type: none"> • ICT to fit and activate necessary equipment and material • Plug in allocated telephone line(s) (see section 8.2 for numbers), and advise all interested groups (including switchboard) of the numbers being used (see seating plan diagram in section 8.2.1) • Set up electronic log keeping computers. Link the Significant Incident Coordination Centre and Communications Team rooms to the log • Identify printing, copying, and email access • Issue role checklists, reference material, activity log proformas, etc. • Set up incident logs and brief log keeping team • Use whiteboards to establish status and task logs (See Appendix 12 for proformas) • Arrange security and access control • Set up TV + recording facility in the Communications Team room
Communication	<ul style="list-style-type: none"> • Establish communications with the I&S EMT Liaison (or incident site, if

Significant Incident Management Team Summary Actions:	
	<p>controlled by I&S).</p> <ul style="list-style-type: none"> Determine communication protocols and obtain latest situation report Communications Team establish communication with TfNSW Community Engagement Manager Consider site communications needs Notify authorities and infrastructure owners/operators, if not already done by the Site Team, and all key internal and external stakeholders
Organisation	<ul style="list-style-type: none"> Check attendance of all mobilised resources Identify and note on whiteboard key appointments, i.e. Site Representative, Principal Contractor's EMT Leader, I&S EMT Liaison and Contractor's nominated contact Organise team-seating arrangements and phones Consider need for additional specialist and support resources and facilities Provide full briefing for mobilised staff, and specify the intended course of action, authorisation levels, and priority tasks/areas of responsibility
Response	<ul style="list-style-type: none"> Log and assess known facts (keep personal logs) Consider the key issues and implications Arrange for provision of any immediate site support needs Develop initial response strategies (operations, communications, and stakeholder liaison), and consider immediate next steps. Prioritise tasks for each group Consider Human Resources needs Continually reassess severity / impact and adjust strategy accordingly Commence team operations and set schedule for next review session

5.6. Recovery and Termination

5.6.1. Termination of the SIMT

The **Deputy Secretary or Delegate** will determine when a significant incident is over and the level of future involvement of Significant Incident Management Team members.

The SIMT Operations Coordinator will manage any I&S continuing involvement at the site and of personnel involved with any ongoing Emergency Management Team to recover the Project.

5.6.2. Recovery and Restoration

Significant Incidents will almost invariably result in harm or damage to people, plant, property, environment, or corporate image, and remedial action may be required. On termination, the SIMT Leader will set recovery and restoration tasks, including:

- counselling and rehabilitation of staff
- repair of damaged facilities and environmental remediation
- a Project recovery process
- capture of evidence and logs
- replenishment of resources and facilities.

5.6.3. Investigation and continuous improvement

After termination of the significant incident and determination of business continuity activities, an incident report and a formal investigation may be initiated that would consider matters such as:

- root cause of the incident, and contributing factors
- additional actions to mitigate impact on TfNSW
- effectiveness of the direct response and management of the significant incident (both internally and in conjunction with other incident participants)
- applicability of learnings to other projects/programs
- need for preventive actions required in future

Outputs of any review should include the actions assigned to managers required to change work practices, contractual relationships, or management systems to improve future effectiveness.

5.6.4. Debriefing and Counselling

In order to utilise the experiences and lessons learned during an incident to make system and process improvements and to help I&S manage incidents more effectively in the future, formal debriefings should be conducted for all incidents requiring the activation of the Significant Incident Management Team.

The **Director Safety** is responsible for ensuring formal debriefings are held.

In the event of a critical incident involving personnel directly under I&S control (staff or contractors), the Director Safety should, as appropriate:

- Conduct a debriefing of involved personnel as soon as possible after the event in conjunction with Human Resources business partner
- Ensure trauma counselling or debriefing is made available to those in need
- Continue to monitor people and appropriately follow up in conjunction with Human Resources business partner

6. Significant Incident Reporting

6.1. Reporting Levels and Responsibilities

A significant incident involves I&S and project staff at all levels to respond, observe, report and assess impacts. The general principle is that each member of staff reports to his/her line manager and respond locally. The role of each level of managed is detailed below:

6.1.1. I&S Site Representative

On a Project Site, the Principal Contractor will lead and manage the response.

During significant incident (and emergency) events there is likely to be a need for I&S staff to be close to the Site Team.

I&S's Site Representative cannot direct a site response, except on I&S controlled sites. Instead, the role will be to liaise with the Principal Contractor's Site Incident Manager. The Site Representative's role in brief is to:

- offer assistance to ensure immediate safety actions have been taken
- assure I&S staff safety
- inform I&S project management and provide regular updates
- manage I&S activity at the incident site (if any)
- be aware of activation of the Principal Contractor's EMT and liaise with I&S's EMT Liaison
- advise I&S's Project Manager if the media is present at the site
- liaise with external agencies at the site, as necessary
- record the events (including taking photographs)
- ensure evidence is protected and that drug and alcohol testing is carried out

The Site Representative reports to the I&S Project Manager (who becomes the I&S EMT Liaison as the Principal Contractor established an Emergency Management Team

6.1.2. Principal Contractor's Emergency Management Team

If an incident requiring management support occurs on a Contractor controlled site, the Principal Contractor has the discretion to establish an Emergency Management Team (EMT).

This team of Project managers is responsible for providing assistance and expertise to the site to control the incident. The role of an Emergency Management Team is to:

- Allocate resources to assist stabilise the situation
- manage the return of the site from emergency services and investigators
- Plan the project recovery with I&S senior managers, and
- Debrief, investigate and institute revised practices in light of learning

It is vital that when a Contractor establishes an EMT, the Project / Program Director and I&S Project Director actively consider activating I&S Significant Incident Management Team.

6.1.3. I&S EMT Liaison

In all cases, I&S would seek to attend the Principal Contractor's Emergency Management Team. This would be the most senior manager present at the Project office, and most likely the Project Manager. (The Principal Contractor may nominate a person until the I&S staffer arrives).

This I&S EMT Liaison will provide the link between I&S Site Representative, the Emergency Management Team, and I&S senior management. He/she will

- nominate a Site Representative and set protocols for ongoing communication
- liaise with the Principal Contractor's Project Manager. Ascertain facts.
- inform his/her line manager and provide regular situation updates
- liaise with the Project's Community Engagement Manager
- Assume role of **I&S EMT Liaison** if the Project Emergency Management Team is activated

The EMT Liaison reports to the Project Director, or as a SIMT is established, to the Operations Coordinator.

6.1.4. Stakeholder Communications

For a high-impact project-oriented incident, I&S will receive support from TfNSW's Customer Service Division in accordance with their operating principals and protocols (see Transport Cluster Crisis Communications Plan and Incident Management Communications Procedure).

The EMT Liaison will contact the **Community Engagement Manager** for the Project the incident, then inform and be instructed by the I&S Community Relations team.

6.1.5. Project / Program Director

It is the responsibility of the most senior I&S manager available at the project to assess the situation and recommend to the relevant Project / Program Director whether to activate the Significant Incident Management Team.

In the first instance, the Project/Program Director should:

- ensure that every resource and assistance is being or will be available to stabilise the immediate situation
- inform the Executive Director and Deputy Secretary
- brief, consult and put on standby all potential SIMT members and specialist advisers
- assess implications for other projects and for the transport portfolio and advise the Executive Director
- if the Deputy Secretary activates the Significant Incident Management Team, assume role of Team Leader

6.1.6. Executive Director

The Executive Director is responsible for the incident response under line management reporting responsibilities. With the relevant Project/Program Director, will assess the incident for implications for I&S and TfNSW and advise the Deputy Secretary accordingly. In the

event that the SIMT is not activated, the Executive Director will regularly review response activity with the Project / Program Director and update the Deputy Secretary.

6.1.7. Deputy Secretary

Decides if the incident has strategic implications for I&S. If so, authorises activation of the Significant Incident Management Team. Provides an overview assessment of strategic direction. Reports to the TfNSW Executive.

6.2. SIMT Strategic Focus

The SIMT is structured to take advantage of all expertise at TfNSW's disposal. Although individual members may involve themselves in some tactical issues and activities the SIMT Leader must ensure that strategic issues are the Team's first priority.

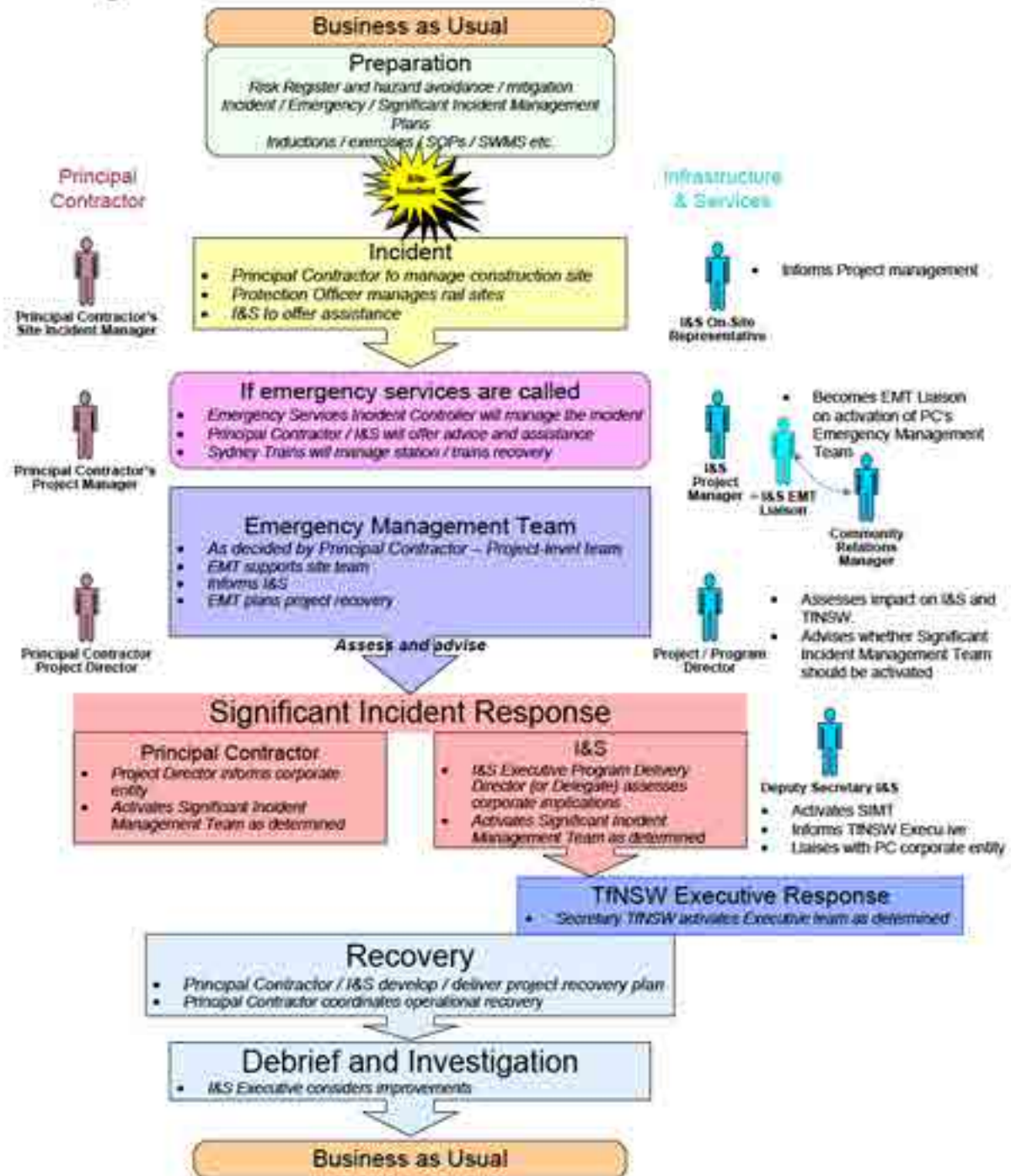
The Significant Incident Management Team is activated primarily to protect the business and relationships with key stakeholders. It must establish the strategies for dealing with the corporate impacts of an incident, primarily with regard to issues such as:

- protecting the corporate image and reputation of TfNSW
- maintaining public confidence in the design and deliver process
- maintain service provider confidence in I&S abilities
- impact to other projects and key stakeholders
- communicating with regulators, Government, and the public

6.3. Response and Reporting Summary Flowchart

The following flowchart summarises the line reporting flows for I&S and for Principal Contractors. It also demonstrates horizontally the relationships between responders at each management level.

Significant Incident Response Flowchart



7. SIMT Member Role Checklists

7.1.1. Deputy Secretary I&S

Nominee:	Deputy Secretary (or Delegate)
Alternates:	Executive Director, as nominated by the Deputy Secretary

This Role:

Decides if the incident has strategic implications for I&S. If so, authorises activation of the Significant Incident Management Team. Provides an overview assessment of strategic direction. Reports to the TfNSW Executive.

On Notification:

- **determine** if the Significant Incident Management Team is to be activated, and if so:
- **identify** the SIMT Leader, contact him/her and brief as necessary
- **confer** with the SIMT Leader on persons who will make up the Team
- **inform** the Secretary TfNSW and other Deputy Secretaries
- **refer** to the TfNSW [Executive Major Incident Management Procedure 30-PR-459](#)
- **inform** TfNSW Director Security and Revenue Protection to prepare for escalation

On Activation:

- **open** the SIMT, brief members on strategic issues to be considered and advise on TfNSW policy
- **nominate** any specific areas to be addressed or activity(ies)
- **authorise** arrangements relating to:
 - financial issues
 - internal communications
 - external communications and media statements
 - nominate or act as media spokesperson, as directed by the Secretary TfNSW, and
- **act** as the primary communication link to and from the SIMT for:
 - the Secretary TfNSW
 - the other Deputy Secretaries
 - the Minister for Transport (as directed)
 - the TfNSW Executive Major Incident Team (if convened)
 - Principal Contractor's Chief Executive / Corporate Significant Incident Team
- **Regularly** 'step-back' from the SIMT activities and consider the effectiveness of overall response in the case of a State Disaster, as directed, **represent** TfNSW in the State Significant Incident Centre and contribute to its deliberations.

Stand Down:

- **stand down** Significant Incident Management Team
- **advise** Secretary TfNSW) and involved key stakeholders (especially Principal Contractor)
- **review** business continuity plans and consider future management

Follow Up:

- **ensure** I&S procedures are reviewed and updated as appropriate

7.1.2. Executive Director

Nominee:	Affected Executive Director
Alternates:	Other Project / Program Director (as nominated by the Deputy Secretary)

Preparation

- **familiarise** yourself with this procedure – and the role of the Deputy Secretary. NB: In the absence of the Deputy Secretary, or by delegation, the Executive Director will assume the responsibilities of the Deputy Secretary, TfNSW [Executive Major Incident Management Procedure 30-PR-459](#)

Prior to Activation:

- **receive** Project/Program Director's report of the incident
- **assess** its corporate implications for I&S and for TfNSW
- **consider** recommending activation of a Significant Incident Coordination Team
- **brief** and advise the Deputy Secretary I&S and act as directed
- **suggest**, as a prudent measure, that SIMT nominees be informed, and stood down as necessary

On Activation:

- **act** as directed by the Deputy Secretary I&S
- **assist** SIMT Leader as required
- **If nominated as SIMT Leader**, follow checklist 6.1.3
- **liaise** with Principal Contractor's corporate entity

If the emergency is declared a whole-of-portfolio incident or a State Disaster, Secretary TfNSW may activate the [Executive Major Incident Management Procedure 30-PR-459](#). The Executive Director will assume a liaison role under the State DISPLAN (s5.1)

Stand Down:

- **assign** responsibility for coordination of matters arising, e.g. post-incident debrief or investigation
- **review** and provide follow up resources required by the Deputy Secretary and Project/Program Manager

Follow Up:

- Ensure all improvement recommendations / requirements are considered by I&S Executive management and implemented as agreed

7.1.3. Significant Incident Management Team Leader

Nominee:	Affected Project / Program Director
Alternates:	Other Project / Program Director (as nominated by the Deputy Secretary)
Delegation	<p>Unless otherwise directed by the Deputy Secretary, the Significant Incident Management Team Leader has the absolute authority to manage the incident, and in particular to:</p> <ul style="list-style-type: none"> • commit finances, appropriate I&S personnel, and other resources • give direction to contractors in relation to the response • instruct and direct Significant Incident Management Team members

This Role:

Leads the strategic response to an incident so serious that it impacts I&S (TFNSW's) corporate wellbeing and reputation.

On Activation:

- **contact** and mobilise the SIMT Administrator, and arrange for activation of the Significant Incident Coordination Centre facilities and to alert other SIMT nominees
- **brief** the SIMT Members on the incident, general strategy requirements, and specific requirements, including administrative, technical and non-technical support
- **direct** the SIMT to ensure:
 - staff welfare
 - the effective functioning of all specialist advisory roles
 - adequate coverage of roles and additional resources required
- **develop** with other SIMT Members the appropriate response and recovery strategies
- **implement** the response and recovery strategies, including:
 - direction of I&S resources to implement the strategy
 - direction of Contractors to implement the strategy
 - monitoring the effectiveness of the strategy, particularly Contractors' actions
 - activating, as necessary, a **Business Continuity Team** and Business Continuity Plans.
- **consider** and **implement** appropriate contingency measures
- **review** developments periodically as a team and monitor the response and its effectiveness
- **communicate** with other Corporate Significant Incident Team Leaders, if activated (e.g. Sydney Trains, the Principal Contractor or affected infrastructure owners)
- **update** the Deputy Secretary I&S

Stand Down:

- **advise** Deputy Secretary on whether to stand down the Significant Incident Management Team
- **issue** stand down instructions to the SIMT and account for all support functions.
- **allocate** log / records / data collation responsibilities
- **ensure** full recovery and continuity measures are implemented

Follow Up:

- **commission** any required internal investigations, debriefs and procedure checks
- **assess** Principal Contractor's findings and debriefs for appropriateness to TfNSW.

7.1.4. Executive Officer

Nominee:	Business Manager or Principal Manager as nominated by the Significant Incident Management Team Leader
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This Role:

Supports the SIMT Leader by shouldering the administrative and organisational workload of the coordination between significant incident, emergency and site response teams.

On Activation:

- **provide** immediate assistance to the SIMT Leader and the Operations Coordinator in the initial response effort
- **oversee** the room, ICT and log keeper set-up
- **participate** in SIMT meetings
- **liaise** and mentor additional resources: administrative, technical, and non-technical support
- as appropriate after start-up, **direct** and **oversee** concise, technically correct and up-to-date log keeping in accordance with the [Incident Reporting, Recording & Investigation Standard 90-ST-001](#).
- **divert** issues from SIMT Leader to other SIMT coordinators, to other TfNSW advisors or elsewhere
- With the Planning Coordinator, **activate** finance, legal, insurance and ICT recovery resources as necessary
- **assist** the SIMT Leader to ensure:
 - the effective functioning of all SIMT and liaison roles
 - adequate coverage of roles and additional resources are sourced and made available
 - the welfare of all I&S responders in protracted operations, including meals and rotation of personnel
- **assist** in developing, in consultation with other SIMT Members, the appropriate I&S response and recovery strategy
- **implement** the TfNSW response and recovery strategy, including:
 - direction of I&S resources to implement the strategy
 - direction of Contractors to implement the strategy
 - monitoring effectiveness of the strategy, particularly with regard to Contractors' actions
- **ensure** with the SIMT Leader and the SIMT Administrator, a timely review of the likely duration of the significant incident and make arrangements to identify and roster staff replacements.

Stand Down:

- **ensure** full recovery and continuity measures are implemented
- **issue** stand down instructions to the Significant Incident Management Team and all support functions.

Follow Up:

- **collate** all logs, minutes and records relevant to future debriefing or inquiries
- **participate** in any required internal investigations, debriefs and procedure checks
- **assess** any findings of Principal Contractor's investigations and debriefs for appropriateness and impact to TfNSW.

7.1.5. Operations Coordinator

Nominee:	Director or Principal Manager (as nominated by the SIMT Leader) or Senior Project Manager to the affected project
Alternates:	Other I&S Manager (as nominated by the SIMT Leader)

This Role:

Collates and confirms the actions of the site and project emergency management teams. Also reviews the current facts to assess whether there are operational implications for any other projects or programs.

On Activation:

- **ensure** I&S representation at the Principal Contractor's Emergency Management Team (EMT Liaison)
- **encourage** the presence of a I&S person as Site Representative
- **establish** effective communications via the I&S EMT Liaison with the Principal Contractor's Emergency Management Team and:
 - establish if the incident is controlled and the site made safe
 - account for all I&S staff and report on any other casualties
 - provide information on all aspects of the incident (e.g. environmental, operational, rail service, infrastructure disruption and public safety issues)
- **attend** and participate in the activated SIMT, giving regular Sitreps and technical assessments
- **organise** and lead an Operations Team to:
 - manage the effective deployment of I&S resources in the incident response
 - review priorities and strategies for operational response
 - **liaise** at operational level with affected infrastructure owners
 - ensure appropriate notification to regulatory authorities
 - assess immediate implications for other I&S projects
- **monitor** and ensure effectiveness of response actions being undertaken by contractor(s)
- **review** the effectiveness of the EMT and Site Representatives and dispatch assistance or replace, as appropriate
- **assess** the operational implications of the incident for I&S and develop strategies for:
 - engineering and technical matters; environmental and heritage matters; safety and compliance matters; probable impact to ongoing projects; directions to contractors as required
- **regularly check** on the welfare of I&S Site and project staff and ensure appropriate personnel action
- **confirm** required drug and alcohol testing is conducted in a timely manner.
- **assess** the I&S resources required for partial and full recovery of the project

Stand Down:

- **ensure** own recovery and continuity action items are implemented
- **ensure** site team has completed its responsibilities and arrange to debrief its members
- **collate** operational logs, records and data.

Follow Up:

- **participate** in any required internal investigations, debriefs, and procedure checks

- **assess** for any impact to I&S, any findings of Contractor's investigations and debriefs.

7.1.6. Communications Coordinator

Nominee:	Director of Community Engagement
Alternates:	Principal Manager Community Engagement, Transport Projects (or as nominated by the Significant Incident Management Team Leader)

This Role:

Leads the I&S community engagement team and liaises with the TfNSW Customer Experience communications team. Helps deliver an external, inter-Governmental and internal communications strategy

On Activation:

- **support** the Program Director at activation of the Significant Incident Management Team (SIMT)
- **inform** the Principal Manager Communications, TfNSW Customer Experience Division and confer
- **establish** direct links with the Project's Community Engagement Manager and advise them of requirements
- **delegate** community relations staff to defined tasks (e.g. media/social media monitoring)
- **source** this Significant Incident Management Manual and the Transport Cluster Crisis Communications Plan and ensure staff are refreshed in its contents
- **attend** the Significant Incident Management Team (SIMT) and provide situation reports (Sitreps) on communication matters
- **report** the Significant Incident Management Team (SIMT) deliberations and decisions to the Principal Manager Communications, TfNSW Customer Experience Division and assist the assessment of communications implications from the incident
- **determine** the role of the Project's Community Engagement Manager in the handling of the incident and maintain regular contact
- **consider**, develop and deliver an internal (I&S) communications plan for the SIMP
- **identify** Project priority stakeholders to be contacted directly and maintain communications

NB: Be mindful the SIMT Administrator has an initial task of notifying the switchboard. An ongoing role of this position is **updating** the switchboard operator of response protocols and contact numbers. Liaise with SIMT Planning Coordinator re this activity

monitor and assess media reactions to the incident and suggest adjustments to TfNSW's response

Stand Down:

- **Inform** any active Community Engagement staff and instruct them on preservation of personal logs
- **ensure** ongoing action items are implemented
- **collate** communications team logs, records and data
- **establish** ongoing post-incident debrief process with the Principal Manager Communications, TfNSW Customer Experience Division.

Follow Up:

- **contribute** to any post-incident review, including providing advice on operational improvements
- **assess** the community engagement response for appropriateness and incorporate lessons learned into future significant incident response.

7.1.7. Planning Coordinator

Nominee:	Director, Project Management Office
Alternates:	Other Manager (as nominated by the Significant Incident Management Team Leader)

This Role:

In the initial stages, manages all human resource implications of the incident for I&S. In later stages the role will, on instruction from the SIMT Leader, activate and manage business continuity and disaster recovery plans.

On activation:

- **attend** and participate in the activated Significant Incident Management Team
- **ensure** that all I&S personnel are accounted for and monitor their status and welfare
- **coordinate** and deliver all human support activities with the SIMT Operations Coordinator using established shared services, strategies and priorities, including:
 - activating relatives' response actions, where required
 - arranging trauma counselling, where required
- *NB: Be mindful the SIMT Administrator has an initial task of notifying the switchboard. This process will require updating the switchboard operator of response protocols and contact numbers. Liaise with Communications Coordinator re this activity.*
- **develop** strategies to mitigate the corporate impact to TfNSW; confirm these strategies with the Significant Incident Management Team and action as required
 - financial and insurance matters
 - legal matters, including legal privilege for the Site Team, if required
 - ICT and communications matters
 - records and administration matters
- **assess** the need for a business continuity response and advise the SIMT Leader on the necessity to activate a Business Continuity Team
- as directed, **convene** a Business Continuity Team, using the SIMT Administrator to establish a location and resources. Report activities to the SIMT Leader

Stand Down:

- **continue** Business Continuity Team as required
- **ensure** own recovery and continuity action items are implemented
- **collate** Planning Team logs, records, data

Follow Up:

- **participate** in any required internal investigations, debriefs, and procedure checks
- **assess** any findings of Contractor's investigations and debriefs for appropriateness and impact to TfNSW.

7.1.8. Significant Incident Management Team Administrator

Nominee:	Office Manager
Alternates:	Executive Assistant (as nominated by the Significant Incident Management Team Leader)

This Role:

Ensures the smooth establishment and administration of the Significant Incident Management Team and reports to the Executive Officer

On Activation:

- **clear** White Room (or other SIMT facilities) of all occupants and put on notice to vacate any occupants of Stephenson and Taylor rooms
- **notify** Duty ICT contractor to set up the appropriate Significant Incident Coordination Centre facilities and make operational (SIMT activation procedure and set up is **Appendix 3 and in the Battle Box**)
- **assist** the SIMT Leader by notifying nominated coordinators
- **notify** switchboard of the activation of the Significant Incident Coordination Centre and inform the Significant Incident Communications Coordinator of this action
- **notify** building security to restrict access to the 6th floor
- **appoint** and instruct initial Log Keeper, then consult with Executive Officer and ensure log keeping technical standards as required in accordance with TfNSW's SMS [Incident Reporting, Recording & Investigation Standard 90-ST-001](#).

*NB: The DeskSite number for the electronic log spreadsheet is 691352_1. See **Appendix 8** for pro-forma logs.*

- **establish** document control/filing systems and ensure regular independent backups
- **maintain** a file of all key documents for potential future
- **liaise** with the SIMT Executive Officer to ensure the SIMT's welfare
- **ensure**, with the SIMT Executive Officer, a timely review is conducted of the likely duration of the significant incident and make arrangements to identify and roster staff replacements
- **ensure**, in the event of an extended significant incident, that replacement staff in all positions are properly inducted and that this Procedure and other relevant documents are available
- as necessary, liaise with the Planning Coordinator to establish facilities and resources for a Business Continuity Team

Stand Down and Follow Up:

- **stand down** all SIMT support and transfer any ongoing issues for action/monitoring as appropriate
- **ensure** all records, logs, and relevant communiqués (including personal activity reports and records) are collated and stored securely, being mindful of probable requirements for future investigations, legal challenges or defence, confidentiality and/or freedom of information
- **arrange** for clean-up and restoration of the Significant Incident Coordination Centre facilities and ICT resources to 'ready' status (see Battle Box checklist)
- **assist** in any necessary investigations, debriefs and procedure checks.

7.1.9. Significant Incident Management Team Log Keeper

Nominee:	An officer from the affected Project / Program
Alternate	An Executive Assistant who has been trained by the Office Manager (as nominated by the SIMT Leader)

This Role:

Ensures that a contemporaneous record of events, interactions with and decisions of the Significant Incident Management Team is captured and retained.

On Activation:

- **attend** the Significant Incident Management Team and report to the SIMT Administrator for an initial briefing
- **access** the Desksite number 691352_1 for the electronic spreadsheets (NB: A USB drive is contained in the Log Keeper and Administrator's Battle Boxes with a Microsoft Excel version)
- at the direction of the SIMT Executive Officer, **establish and maintain** a Master Log, recording all key decisions, actions, and communications by SIMT Members in accordance with the [Incident Reporting, Recording & Investigation Standard 90-ST-001](#). A pro-forma matrix for an Incident log appears in the Battle Box).
- **establish and maintain** a Status Log consistent with the Significant Incident Communications Team log and showing the status of:
 - all affected TfNSW personnel, sites, and/or resources
 - current media position, including time/date/message of last release, immediate media needs and plans
 - current status of government and other key stakeholders
- **access** the email address crisis.management@projects.transport.nsw.gov.au (internal Raillink\SIMT. Password: Welcome1) and **ensure** all emails are sent or copied to this address
- **submit** records of all key documents to SIMT Administrator for potential future use for internal investigations or public enquiries
- **collate** all Activity Reports and personal logs from the SIMT Coordinators and report to SIMT Administrator
- in extended events, **ensure** that the alternate Log Keeper is fully inducted into the task.

Stand Down and Follow Up:

- **ensure** all records are stored securely, being mindful of security and confidentiality requirements
- **assist** in any necessary investigations, debriefs and procedure checks Templates for Logs are included **in the Battle Boxes**.

7.2. Significant Incident Management Team Support Functions

7.2.1. Human Resources and Relatives' Response

If a person has been seriously injured on a I&S site, TfNSW will have a moral responsibility not only to ensure he/she is given appropriate treatment and welfare, but also that next of kin are notified, and that enquiries from friends and relatives are sensitively handled.

The Human Resources business partner should be informed immediately by the SIMT Planning Coordinator.

As necessary, and in consultation with the emergency services, the Human Resources business partner will activate contracted occupational assistance services and professional trauma counselling companies should an incident involving death or serious injury occur to a TfNSW staff member.

The key tasks Human Resources will undertake involve:

- **providing** support when dealing with staff, relatives, next-of-kin
- **arranging** specialist support as appropriate, such as trauma counselling
- **ensuring** that all pertinent information concerning individuals affected by the incident/ emergency is accurate and continually updated
- **handling** all direct inquiries from staff/next-of-kin and assisting in any communications
- **planning** for rehabilitation

The Human Resources team will be part of the SIMT's Planning team and will liaise closely with the Significant Incident Communications Team – in particular in relation to informing staff and briefing the switchboard.

All activities should be coordinated with both site management and the Emergency Services regarding who, when and how a notification should occur.

7.2.2. Legal Support Functions

Legal counsel should be retained to advise the Significant Incident Management Team whenever there is a significant likelihood the organisation may be subject to prosecution as a result of an incident.

On activation:

- **Advise** the Deputy Secretary and SIMT Leader whether it will be necessary for the SIMT to operate under legal privilege. In some extreme circumstances, the Deputy Secretary may consider such measures.
- **Consider** legal protection for an individual employee giving evidence to a Regulator.
- **Advise** the Planning Coordinator on Legal professional privilege

Stand down:

- Advise I&S executive on document disclosure matters

7.2.3. Other Specialist Support Functions

The SIMT Leader may activate any I&S resources to support the team's requirements or to implement its strategic actions. Generally, these additional resources may include, but are not limited to:

- Safety Support Functions
- Technical and Engineering Support Functions

- Environment Support Functions
- Reliability Support Functions
- Human Resource Support Functions
- ICT/Communications Support Functions
- Finance and Insurance Support Functions
- Compliance Support Functions

On Activation:

- **participate** in delivering services or activities as directed by the SIMT Leader or relevant Coordinator
- **advise** the SIMT as requested within area of expertise.

Stand Down and Follow-Up:

- **participate** in post-incident internal investigations, debriefs, and procedure checks

8. Significant Incident Communications Team

8.1. Transport Cluster Crisis Communications Plan

The ***Transport Cluster Crisis Communications Plan*** is intended to be used by the TfNSW Customer Experience Division, Public Affairs branch to provide leadership and management – and when required, integrated public and internal information responses to:

- Business disruptions that affect immediate continuity of service or operations capability (e.g. public transport disruptions or major road issues of closures)
- Significant incidents that have the potential to threaten life, property, the environment or may adversely affect TfNSW's reputation, and
- Crises (significant incidents) that are uncontrolled

Its operating principles are that as an incident escalated in severity, setting of strategic communication priorities, resourcing, communications activities and support are augmented within Public Affairs branch within TfNSW and across the Transport Cluster as required.

For plan activation, the key contact is the General Manager, Public Affairs CED

- The Transport Management Centre will provide frontline public information on operational impacts
- The Rail Management Centre will update customers via the rail Twitter

The Incident Management Communications Procedure (included in the Battle Box) provides the CED Public Affairs team with guidelines to assist agencies coordinate ***communications in a significant incident***

8.2. Role of the Community Relations Team

The role of the Communications Coordinator in a significant incident is to attend the SIMT, report activities to the CED Public Affairs team and receive information from the Project's Community Relations Manager.

The Project Community Relations Manager will maintain close liaison with the I&S EMT Liaison in order to follow the activities of the Project Emergency Management Team and comprehend the stabilisation of the site. He/she will report on local stakeholder reaction and events such as media attendance.

The I&S Community Relations team will work to the guidance of the SIMT Communications Coordinator and perform support activities as directed, such as:

- media and social media monitoring
- writing briefs for SIMT approval
- delivering internal communications (including switchboard updates)

9. Facilities

9.1. Significant Incident Coordination Centre

The primary Significant Incident Coordination Centre for I&S delivered infrastructure and fleet projects is located in the meeting rooms on the 6th floor, **Zenith Tower A, Chatswood**. *It is recognised alternate locations may be utilised, in which case these requirements shall form a guideline to the layout and type of facilities required, including establishing video conferencing with other TfNSW business partners.*

The **White Room** (shown in yellow) will be the **Significant Incident Coordination Centre**. The **Stephenson Room** (shown in green) and the **Taylor Room** (shown in blue) can be used as breakout rooms for coordination teams as necessary.



9.2. Activation

The Office Manager becomes **SIMT Administrator** and will immediately contact the Duty ICT Field Services Manager to set up the Significant Incident Coordination Centre.

The ICT provider will set up the Centre and remain in the vicinity until the SIMT Administrator is satisfied all systems are operating.

9.2.1. Operation

On activating the room, the **SIMT Operations Coordinator** and the **SIMT Executive Officer** should immediately be allocated the two existing telephones. They should immediately inform the **EMT Liaison** of the extension numbers. Other members of the Significant Incident Management Team will use their mobiles until the landlines are established.

9.2.2. Alternative facilities

Should the facilities in Zenith Centre, Tower A building become unavailable the **SIMT Executive Officer** should coordinate immediate accommodation needs and communications.

10. References and Related Documents

TfNSW [Executive Major Incident Management Procedure 30-PR-459](#)

Transport Cluster Crisis Communications Plan

Incident Management Communications Procedure

[Incident Reporting, Recording & Investigation Standard 90-ST-001](#)

For each project, the Contract Management Plan (as specified in Schedule 18 of the Deed). Specifically, these should include the Principal Contractor's current:

- Significant Incident Management Plan
- Contact details for Contractor's key management and staff
- Rail Safety, Environmental, OH&S, and Risk Management Plans and
- Community Liaison Plan.
- **Contact details** for current suppliers and contractors.

NSW State Disaster Plan (Displan) and sub-plans

AS/NZS 31000:2009 Risk Management

AS/NZS 5050:2010 Business Continuity

ISO 22301 Business Continuity

11. Maintenance and Testing

The processes and procedures documented by this Significant Incident Management Procedure should be reviewed following any incident where the Significant Incident Management Team is activated, and at least every two years.

A regular program of exercises is undertaken to ensure preparedness through both the significant incident management and business continuity processes. These exercises are of three distinct types and are conducted several times a year as noted. The types of exercises conducted include:

Walkthrough

sequential check of the documented arrangements and systems/facilities for each stage of the response. These events should be conducted for the key systems related issues in individual plans, to test speed and accuracy of recovery processes (e.g. activation of the Significant Incident Coordination Centre). **Frequency:** 1–2 events per annum, lasting around two hours each, and involving recovery teams from the selected area

Scenario desktop

workshop based planning or discussion of the actions for key response process elements, in the context of a given scenario. Such sessions are generally for members of the **program/project-level** teams and key recovery groups and should include the **Principal Contractor** or support functions. They are conducted to confirm how major tasks, roles, and arrangements work in practice (e.g. discussion of notification, activation, and communication processes, live planning of continuity and recovery tasks in any of the selected CMP/Business Continuity Plan areas, or facilitated debate of command structure and role allocation in a combined response/continuity situation). **Frequency:** 1 events per annum per program/project team involving Project Teams and alternative SIMT members. Each session will last around three hours each, and involve various or all members of the command structure

Role-play

live, real-time response involving communications with role-played stakeholders. Such major exercises involve a combination of response and continuity procedures from initial notification to response, recovery, and stand down. Participants include members of the **Significant Incident Management Team** and site based emergency response/liaison personnel as appropriate to the exercise objectives and scenario (e.g. integrated significant incident management exercise involving corporate as well as site response to a major incident, with concurrent requirement to activate a related continuity plan such as office relocation). **Frequency:** 1 event per annum.

This program is managed and coordinated by the Director Safety.

Appendix 1 – Notification and Assessment Report

The following aide memoire should be used by the Program/Project manager who took the first alert call to report to the Project/Program Director and Deputy Secretary.

INCIDENT:

LOCATION:

PROJECT:

DATE: _____ TIME: _____ (use 24-hour clock)

NOTIFICATION FROM:

Name: _____

Position: _____

Contact details: Phone: _____ Mobile: _____

Obtain any answers to as many of the following questions as you can:

What has happened?

.....
.....
.....
.....

What time did the incident occur?

.....

Where? (Suburb)

.....

Nearest cross street/rail stanchion number

.....

Have the Emergency Services been called?.....(Yes / No).....

Who is responding to the incident?..(Tick for) Fire & Rescue..... HAZMAT....Police.....
Ambulance.....

Injuries/Fatalities? Yes / No

Injured.....Fatalities.....

Any people missing? Yes/no

How many?.....

Infrastructure damage? (Describe)

.....

Rail disruption? Yes/No

Which line(s)?.....

Infrastructure disruption

.....

Has Sydney Trains or other Rail Operators been informed? Yes/No

Other details?

.....

Appendix 2 – Severity Assessment Form

By using this table to calculate the severity and impact that each incident is likely to have on I&S. A manager can quickly assess whether to recommend that the Significant Incident Management Team should be activated

Severity Assessment Form		Consequence (low, medium high)											Response Level (incident, emergency, significant incident)	
Emergency Category	Incident Description	Financial	Commercial	Liability	Legal	Regulatory	Assets	Service Delivery	Human Impact	OHS	Political	Public Relations		Reputation
Example: Criminal Action	e.g. vandalism	L	L				M	L			L	M		e.g. incident

Appendix 3 – Activation Kit Contents

The Office Manager assumes the role of SIMT Administrator and manages the activation of the Significant Incident Coordination Centre in the White Room on Level 6 Zenith Tower A.

The Office Manager will require immediate assistance from the ICT group.

TfNSW's ICT Group maintains a presence in Chatswood.

The Group is responsible for making immediately available and maintaining a mobile Kit-Box containing all equipment and requirements to activate the Significant Incident Coordination Centre.

On the instruction of the SIMT Leader, the SIMT Administrator will, contact the ICT Operations Manager/ alternate to authorise and assist the room's set up.

The mobile Kit-Box should contain:

- The telephone handsets and any other dedicated equipment for both the Significant Incident Coordination Centre and the Communications Team Room (e.g., two fax machines)
- Instructions for their operation
- Hard copies of the relevant manuals (Significant Incident Plan, Business Continuity Plans, Communications etc.) plus associated forms (logs, incident reports, role checklists, contact lists etc.)
- Instructions for (ICT) setting up the room. **A diagram showing the room setup appears as Section 8.2.1 of this Procedure**
- Wall charts of key processes e.g. team structure and position holders, start-up checklist, log board details etc.
- Contact lists
- Reference material (maps, plans, charts etc.)
- General stationery

Note: TV/DVD recording facilities for the Communications Team Room is permanently installed in the Communications Team area

Appendix 4 – Site rep Proforma

The following aide memoire should be used by I&S personnel to report to their direct manager.

What has happened since my last report?

INCIDENT: _____

What is My Location: _____

DATE: _____ TIME: _____ (use 24-hour clock)

NOTIFICATION FROM:

Name: _____

My Role: _____

Contact details: Phone: _____ Mobile: _____

Obtain any answers to as many of the following questions as you can:

What has happened since my last report?

(Summarise using one or two lines.

The following list is indicative. Use only those applicable to you)

People status (injuries etc)
.....

Emergency services status (which services are present)
.....

Damage status (update known damage)
.....

Customer impact status (disruptions)
.....

Infrastructure damage (gas, water, power, telecoms)
.....

Environmental impact
.....

Media presence
.....

Regulators / Investigators present
.....

Appendix 5 – Start-Up Actions

The following table summarises what should be done by the first team members to arrive at the control room after activation, pending the full formal team start up. Key tasks will include:

Assembly	<ul style="list-style-type: none"> • The Office Manager assumes the role of the SIMT Administrator. • If the Significant Incident Coordination Centre rooms are to be activated, the Office Manager will clear the room of occupants and set it up. • SIMT members convene as directed • Advise own staff of your whereabouts. Delegate normal duties
Activation of the Significant Incident Coordination Centre	<ul style="list-style-type: none"> • SIMT Administrator and support open the storage facility and collect necessary equipment and material. • Plug in, allocate and test telephone lines, and advise all interested groups (including switchboard) of the numbers being used. • Set up the laptops, and projector. Test printing, internet and email access. • Set up electronic log and brief log keeper on requirements. • Issue role checklists, any reference material, general stationery, etc. • ICT to establish log feed to Communications Team Room and test • Set up incident log whiteboards • Arrange security and limit access control.
Organisation	<ul style="list-style-type: none"> • Check attendance of all mobilised resources. Confirm key appointments, i.e. I&S EMT Liaison and SIMT Co-ordinators. • Consider immediate need for specialist and support resources, and facilities. • Provide full briefing for mobilised staff, and specify the intended course of action, authorisation levels, and priority tasks/areas of responsibility
Communication	<ul style="list-style-type: none"> • Establish communications with the I&S EMT Liaison or (if I&S controlled) the incident site and obtain latest situation report. • Check activation of the Incident Management Communication Procedure
Response	<ul style="list-style-type: none"> • Develop initial response strategies (operations, communications, stakeholder liaison and human factors), and consider immediate next steps • Consider the key issues and implications, and arrange for provision of any immediate site support needs • Set and prioritise tasks for each group. • Log and assess the known facts (keep personal logs • Commence team operations and set schedule for next review session.

Appendix 6 – Start-up meeting Agenda

This meeting is to:

- Confirm roles and responsibilities and authorisation levels (including the I&S EMT Liaison),
- Ensure contact is established with the site and with key stakeholders
- Establish known facts
- Establish the welfare of TfNSW personnel
- Determine the intended course of action
- Assign and prioritise tasks/areas of responsibility

Significant Incident Management Team Leader to Chair.

Attendees: Deputy Secretary, SIMT Coordinators (Operations, Communications, Planning), Executive Officer, Administrator.

Minutes to be kept by Log Keeper nominated by the Significant Incident Administrator

SIMT Leader calls meeting to order.

Agenda Item	Who
Introduces Deputy Secretary – outline of reasons to call a significant incident. Outlines relevant TfNSW policy	Deputy Secretary or SIMT leader (2 minutes)
Outline roles of SIMT members	SIMT leader (2 minutes)
Re-read your checklist and keep checking to ensure all your responsibilities are covered	
Review all known information to date (including feedback from TfNSW)	SIMT Leader to lead / All
Review all known actions to date	Ops Coordinator/Exec Offr
Outline I&S staffing arrangements for the Project (EMT Liaison) – and set contact protocol	Ops Coordinator
Consider immediate support actions/strategy. Set immediate tasks / timeframe	SIMT Leader to lead/All
Allocate which Team Members inform stakeholders (e.g. Regulators/Contractor Corporate etc.)	SIMT Leader to lead/Comms Coord
Any questions/comments	
Time of next report –back meeting	SIMT Leader
NB: This meeting should take no more than 15 minutes before action commences	

Appendix 7 – Update Meeting Agenda

This, and subsequent, meetings is to:

- Update the facts and information from all sources
- Review actions of all parties and assess implications for I&S
- Review the opinions and actions of key stakeholders
- Review the strategies and reset as necessary the intended course of action
- Assign and prioritise tasks/areas of responsibility

Significant Incident Management Team Leader to Chair.

Attendees: Deputy Secretary, SIMT Coordinators (Operations, Communications, Planning), Executive Officer, Administrator. Relevant specialist advisors invited.

Minutes to be kept by Log Keeper nominated by the Significant Incident Administrator

Agenda Item	Who
Purpose of meeting – Situation Update and Review report to the Deputy Secretary	SIMT Leader
Review all known information / task status to date NB: Ideal is dot point format. (2- 3 mins each)	Operations Coordinator Comms Coordinator Planning Coordinator Exec Officer
Specialist advice	As requested
Report on TfNSW staff human impacts on site and at EMT	Ops Coordinator Planning Coordinator
Consider Business Continuity	SIMT Leader to lead Planning Coordinator
Review stakeholders' information program (e.g. Regulators/Contractor's Corporate etc.)	Comms Coord
Review ongoing strategy set tasks	All
Any questions/comments	
Time of next report –back meeting	SIMT leader
NB: This meeting should take no more than 20 minutes before action recommences	

HINT: It would be prudent to time SIMT meetings so that they occurred following the Principal Contractor EMT meetings so that the SIMT can consider the most up-to-date information.

Appendix 8 – Rules of Conduct

1. Remember: You are managing the strategy. The Principal Contractor is managing the response
2. Trust the information you are getting from the I&S Site Representative and I&S EMT Liaison
3. If you receive a call about an untoward event, it is your responsibility to inform your line manager.
4. Do not instruct the Site Representative or EMT Liaison to make external calls. They are busy – you are the one with all the resources! They will need to concentrate on their own activities, so assist them!
5. Do not authorise or permit any of your staff to attend the scene or project office without the agreement of the SIMT Leader or Operations Coordinator. If any personnel are on their way to the scene, assess their value to the emergency, and divert or stop them if necessary.
6. Before sending personnel to the scene, ensure they are properly briefed (e.g. who to meet, what they are to do, who they report to etc.). Take the time to consider that they also take useful supplies with them (e.g. protective clothing, water, food, mobile phone batteries/chargers).
7. In SIMT update meetings: put all mobile calls on hold and don't have separate conversations if the conference phone is in use
8. All incoming calls and inquiries should be diverted to the Executive Officer, who will judge who to refer the call to, and log details on the relevant form.
9. All calls if referred to you must be returned. The timing of returning calls is at your discretion. Make sure all calls relating logged on the call record.
10. If leaving your agreed location, tell the SIMT Leader and colleagues, where you are going and when you will be back. If you will be away for a significant time, nominate and brief the alternate who will be representing you.
11. Think of yourself in the shoes of other people on the outside - do your best to provide them with accurate information as soon as possible.
12. Keep your own staff or colleagues informed about what's going on. The Communications Coordinator will manage overall internal and external messages

Appendix 9 – External advice and initial stakeholder notifications

It is important that individuals having a legitimate interest in an emergency be provided with all relevant facts with maximum speed and minimum confusion.

The following table indicates who may have responsibility for contact with stakeholders:

Person/Organisation	Responsible SIMT Coordinator	Alternate SIMT Coordinator	May delegate to:
Responsible organisation			
Site Representative	Operations via I&S EMT Liaison		Executive Officer
Emergency Management Team	Operations via I&S EMT Liaison		Executive Officer
Emergency Services	Operations (Site Rep via EMT-L)		Executive Officer
TfNSW			
Minister	Deputy Secretary	Communications	
Minister's staff (CoS / Press Sec)	Deputy Secretary	Communications	
Secretary TfNSW	Deputy Secretary	Executive Officer	Executive Director
Deputy Secretary Customer Services	Deputy Secretary	Communications	
Regulators / Investigators			
ITSR/OTSI	Operations		Director Safety
WorkCover	Operations		Director Safety
EPA	Operations		Director Planning & Environment Services
NSW Health	Operations		Director Safety
Trains			
Sydney Trains (CEO)	Deputy Secretary	Executive Officer	
Sydney Trains (Operational)	Operations	Executive Officer	Director Safety
Principal Contractor (at Corporate Level)	Deputy Secretary	SIMT Leader	Director Commercial
Principal Contractor (at Project level)	Operations	Operations	Snr Project Mgr or Project Manager
Internal			
Switchboard Operator	Communications	Administrator (initial notification)	Comms Information group (ongoing updates)

Appendix 10 – Mobilisation of staff

Each SIMT Coordinator is responsible for the staff in roles applicable to his/her significant incident management.

No staff should be authorised to attend the site without discussion with the SIMT Leader, the SIMT Operations Coordinator, the EMT Liaison and the Site Representative.

Any staff who take the initiative to attend a site or Contractor's Emergency Management Team without authorisation from the SIMT (including a Senior Project Manager or Project Manager) should be stopped and redirected unless they meet the above criteria.

Criteria for sending staff to Site include:

- Request from the Site Representative
- Request from the Principal Contractor's Emergency Management Team
- Specialist skills or knowledge (e.g. knowledge of Sydney Trains or other Rail Operators site procedures)
- To provide assistance nearby (e.g. Communications)
- To provide essential tools or supplies (e.g. food, drink, mobile phone charger/batteries etc.)
- They are relieving site/project staff,

When making a decision to send staff to an EMT or incident site, the SIMT should take into account:

- Danger to the staff member
- Ability to access the site or Project Office (Police and Emergency Services will secure the area)
- The travel time (especially during peak periods)
- There may be significant traffic disruption caused by the incident itself

NB: If a decision is confirmed to send a staff member to site, it is the responsible SIMT Coordinator's responsibility to give advance notice, coordinate and facilitate access to a site (i.e. don't leave it up to the Site Team to delegate resources when the person arrives)

Appendix 11 – Log Keeping

Log keeping is vital to keep track of events, status (injuries, asset damage, impacts etc.), decisions, task allocation and progress; costs and use of assets, and personal actions. They form an important part of the not-to-blame investigative and continuous improvement process.

Selecting a Log Keeper

The affected Project or Program will be expected to provide the log keeper for the Significant Incident Management Team. This is because personnel will have the required project/program-specific technical, geographical and logistical knowledge to ensure that the log in a fast moving event is accurately recorded.

Some Executive Assistants within I&S have been trained in log keeping to be a skilled alternative

Types of Log

In the Significant Incident Management Procedure log proformas are:

Event log

This records actions / activities / reports to and from the SIMT in a chronological order. This is electronically based.

EVENT LOG				
Reference	Time	Development	Action	File location
e.g. site	(24 hr clock)	Summarise information (e.g. SITREP received)	Any action required (e.g. task assigned)	Hyperlink to or insert full report

Status Log

Because the Event Log can be hard to decipher quickly, a **Status Log** should be established (Normally a wall chart) a Status Log is designed to show a “snapshot” of what events have taken place so far – and what is to happen. This is particularly handy for newcomers and for the Team leader to gather a swift understanding of the events so far.

STATUS LOG						
Time	Injuries / Fatalities		Impact		Media statements	Critical issues
	Staff	Others	Assets	Public / Customers	Headline + time issued	
24 hr clock	TfNSW staff	Contractors /public	Project assets / infrastructure	e.g. affected train services		Identified by SIMT

Task log

Tracks who is allocated an action and its status (e.g. when the action was completed). This is usually a wall display to assist the Team Leader.

TASK LOG			
Time	Task	Assigned to	Status
24 hr clock	e.g. Inform Regulator	I&S manager's title	e.g. completed + time

Electronic Logs

The Excel electronic log spreadsheet is formatted for Incident Status Summary and Event Log as above. The DeskSite number for the electronic log spreadsheet is 691352_1.

An email mailbox has been established; crisis.management@projects.transport.nsw.gov.au

Internally the mailbox can be accessed at [Raillink\Crisis](#) Password is: [Welcome1](#)

Ensure all correspondence is sent to or copied to this address.

Collate all emails into one folder. Mark that folder consistent with the name of the emergency

Save and preserve that folder consistent with TfNSW's standard procedures

During the event:

Educate correspondents re clarity of subject matter (e.g. include SITREP + time and number in the "Subject" line)

Try to ensure that any incoming/outgoing emails have a distinctive tagline in the "subject" line

On termination

The **Executive Officer** (with the help of the SIMT Administrator and Log Keeper) is responsible for collating log records and for debriefing administrative personnel involved.

The Director Safety is responsible for collating the overall termination records and for compiling a report to the Executive in order that lessons may be learned for the future.

Appendix 12 – Personal Log

Significant Incident Management Team	Personal Telephone Call Log
---	------------------------------------

Event:

Time (use 24 hourclock): _____

Call inbound from: _____

Call outbound to: _____

Contact Details:

Who from: _____

Title/Relationship: _____

Organisation/Department: _____

Information delivered / received

.....

.....

.....

.....

.....

Action Required

.....

.....

.....

.....

.....

Referred to:

SIMT Leader	Operations Co-ord	Comms Co-ord	Planning Co-ord	Exec Off	SIMT Admin	Principal Contractor
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix 13 – Legal Professional Privilege

Generally, communications between a client and a lawyer which are made for the dominant purpose of giving or obtaining legal advice attract "legal professional privilege" - so long as the communications are confidential and the lawyer is acting in his/her capacity as a lawyer. Marking a document as "privileged and confidential" is not sufficient. The document must also be treated as confidential if privilege is to be maintained.

Guidelines for ensuring "legal professional privilege" is maintained in communication with TfNSW:

- All requests for legal advice must be made in writing'.
- All communications to TfNSW's lawyers should be marked "confidential" and communications from the lawyers will be marked "privileged and confidential".
- Communications containing or relating to legal advice should be copied or forwarded only to persons within TfNSW who are directly concerned with the issue or the subject of the legal advice.
- Communications containing or relating to legal advice should never be copied or forwarded to anyone outside of TfNSW without first seeking the consent of the lawyer.
- Any legal advice that is copied or forwarded to third parties should be sent "as is" and not with any comments about or summary of the legal advice.
- All communications with external solicitors must go through the Legal Counsel
- The conclusions or essence of legal advice obtained from lawyers (internal or external) should not be referred to or commented on in separate communications with third parties.

Appendix 14 – Contact List

SIMT UP-TO-DATE CONTACT LIST IS KEPT WITH RECEPTION ON ZENITH TOWER A, LEVEL 5

TO SIMPLIFY CONTACT LISTS SO THAT THEY REMAIN USEFUL IN TIMES OF STRESS, EACH PROJECT OR PROGRAM SHOULD COMPILE THEIR OWN CONTACT LIST AND INCLUDE:

- Principal Contractor personnel
- Personnel (in the order of line management reporting)
- Specialist officers (e.g. Safety, Engineering, Environment, Human Resources)
- Local emergency contacts (e.g. Sydney Trains, Traffic Management Centre, infrastructure owners)

Strategic Objective	Goal	Action	Measure	Resources	Timescale	Complete	Reference Documents



Vegetation Offset Guide

9TP-SD-087/1.0

Supporting document – Applicable to Infrastructure and Services

Quality Management System

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1. Introduction

1.1. Offsetting as a TfNSW policy objective

Infrastructure and Services (I&S) Division of TfNSW is committed to promoting resource conservation, reducing emissions, minimising the generation and disposal of waste, and preventing pollution in all its activities in line with the I&S [Statement of Commitment Environment – 1TP-PO-002](#). TfNSW has an ongoing commitment to biodiversity conservation and enhancement with the Sustainable Design Guidelines requiring all projects with non-significant vegetation impacts to offset in line with this Guide. This Guide seeks to maintain a standard that meets the TfNSW [Statement of Commitment Environment – 1TP-PO-002](#), the TfNSW [Environment and Sustainability Policy](#) and [NSW Sustainable Design Guidelines for Rail – 7TP-ST-114](#) requirements.

1.2. Purpose of the Vegetation Offset Guide

The purpose of the *Vegetation Offset Guide* (the Guide) is to ensure appropriate levels of native vegetation and tree offsets are achieved on TfNSW projects and to allow TfNSW to meet the objectives of the [Statement of Commitment Environment – 1TP-PO-002](#) described above. The Guide provides a framework for a consistent approach to offset vegetation impacts on applicable projects. The Guide will:

- assist in delivering ‘maintained or improved’ ecological outcomes in relation to the potential impacts associated with a project;
- assist in choosing an offset site or option; and
- provide a robust framework for calculating native vegetation and tree offsetting requirements early in the environmental assessment of the project.

Definitions of key terms used through this Guide are provided in Table 1.

1.3. Offsetting in NSW

There are a number of Guidelines and Policies applicable to works in NSW as created and supported by NSW Office of Environment and Heritage (OEH). These include:

- BioBanking Assessment Methodology 2014 (BBAM 2014);
- Framework for Biodiversity Assessment (FBA), which is applied to major projects; and
- Biodiversity Certification (BioCert).

These guidelines and methodologies are based on the principle of ‘improve or maintain’. On any one project, there may also be a requirement to offset under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), which is also based on the principle of ‘improve or maintain’ or under the *Threatened Species Conservation Act 1995* (TSC Act). ‘Improve or maintain’ refers to the gains in biodiversity values associated with the in-perpetuity management, conservation and funding of offset sites, against the losses incurred at an associated development site. This includes management of ‘threatened biodiversity’ as listed on the TSC Act and/or EPBC Act. In NSW, the BBAM and the offsetting principles are assumed to result in ‘improved or maintained’

outcomes. Under the Commonwealth EPBC Act, 'improve or maintain' is assumed through use of the EPBC Offsets Guide.

The offsetting strategy adopted by TfNSW in this Guide aims to align with the approaches and objectives of these State and Commonwealth Guidelines and Policies, with the approach based on the same principle of 'improve or maintain'.

1.4. When to use this Guide?

All developers and government agencies, including TfNSW, are subject to the statutory frameworks described above. TfNSW aims to achieve an offset relevant to the impact resulting from its projects. This Guide can be applied where statutory offsets do not apply, in order to achieve an 'improved or maintained' outcome through the provision of offsets for native vegetation and individual trees. The concept of offsetting should only be applied to a project after all impacts to native vegetation have been avoided and mitigated. The residual impacts that cannot be mitigated can then be offset.

This Guide ***should only be applied*** where:

- a) the proposed clearing of native vegetation is deemed unlikely to have a significant effect on threatened biodiversity for the purposes of section 111 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act);
- b) the proposed clearing of native vegetation has an impact on non-threatened vegetation (i.e. plant communities that are not listed as threatened ecological communities on the TSC and/or EPBC Acts); and
- c) a single tree or trees, other than those considered to be within a patch of native vegetation, are to be removed.

This Guide ***does not apply***:

- a) if there is ***likely*** to be a significant effect on threatened biodiversity as listed under the TSC Act and/or the EPBC Act. Such an outcome would trigger formal offsetting under NSW and/or Commonwealth statutory requirements;
- b) to small landscaping projects if it forms development site 'mitigation' (ie. landscaping/rehabilitation does not constitute an offset if mitigating for temporary development site impacts);
- c) to a significant effect on native vegetation that represents part of a wetland of international importance, or natural heritage values of a World Heritage property, or natural heritage values of a National Heritage place; and
- d) where the Commonwealth Minister for the Environment has determined the project is a 'controlled action'.

It is anticipated that users of this Guide will include:

- TfNSW Planning and Environment staff
- TfNSW Project Management staff
- external consultants (e.g. ecologists)
- design and construction contractors

Refer to Appendix 1 for an outline of the Guide.

1.5. Accountabilities

The Director, Planning and Environment, is accountable for this Guide including authorising the document, monitoring its effectiveness and performing a formal document review.

Planning, Environment and Sustainability team members are responsible for ensuring the requirements of this document are implemented within projects as applicable. The offset requirement will be determined in the project Environmental Impact Assessment (EIA) in accordance with this Guide. The EIA will stipulate specific offset requirements to be implemented during project construction through Mitigation Measures and/or Conditions of Approval. Through the provision of the EIA within the contract, the Construction Contractor will be responsible for implementing the offset requirements and the Environment and Planning Manager for the construction of the Project will oversee the compliance with the requirements as outlined by the EIA. Additional vegetation identified for removal following planning approval would be added to the overall vegetation offset calculations and offsetting will be undertaken in line with the revised requirement.

The Project Director and Project Manager are accountable for ensuring the implementation of the relevant offset requirement as outlined in the Planning Approval. This responsibility may be passed onto the construction contractor through the relevant contractual documentation.

1.6. Limitations of the Guide

This Guide does not provide offset options for impacts to threatened fauna habitat, however there are likely to be some inherent benefits resulting from appropriate plantings as a secondary offset or through primary offsets. As such, biodiversity offsetting may be required for specific fauna habitats where habitats are likely to be significantly affected by the development. In this case advice from an ecologist should be sought. In the event that the impact is considered to be likely to have a significant effect on threatened fauna habitat, statutory offsetting requirements would be triggered.

2. Abbreviations and definitions

All terminology in this Guide is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

Term	Definition
BBAM	Biobanking assessment Methodology
Biobanking	BioBanking is where 'biodiversity credits' (which include ecosystem credits and species credits) can be generated by landowners and developers who commit to enhance and protect biodiversity values on their land through a biobanking agreement. These credits can then be sold, generating funds for the management of the site. Credits can be used to counterbalance (or offset) the impacts on biodiversity values that are likely to occur as a result of development.
DBH DBH(DBH)	Diameter at breast height. Diameter of a tree measured at 140cm from the base of the tree.

Term	Definition
DoE	Commonwealth Department of Environment
Credits (ecosystem credits and species credits)	Credits are created by the landowner, who establishes a biobank site and commits to enhancing and protecting biodiversity values. The credits represent an improvement in the condition of biodiversity values such as an improvement in the habitat or an increase in the habitat or population of a threatened species. Available credits are listed in the BioBanking scheme public register.
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
Exotic vegetation	Vegetation that does not meet the definition of native vegetation provided below.
FBA	Framework for Biodiversity Assessment NSW Biodiversity Offsets Policy for major projects
FM Act	<i>Fisheries Management Act 1994</i>
Local provenance	Refers to the installation of native plants grown from locally sourced genetic stock, either from seed or vegetative material (i.e. cuttings, division, etc).
Native vegetation	Includes indigenous trees (including any sapling or shrub, or any scrub), understorey plants, groundcover (being any type of herbaceous vegetation) and plants occurring in a wetland (Section 6 of NSW <i>Native Vegetation Act 2003</i> , (NV Act)). Under the NV Act, vegetation is "indigenous" if it is a species or type of vegetation that existed in the State before European settlement. Marine vegetation types (e.g. mangrove and seagrass communities, etc.) are defined as indigenous under the <i>NSW Fisheries Management Act 1994</i> (FM Act).
OEH	NSW Office of Environment and Heritage
Vegetation Offset calculator	The TfNSW Vegetation Offset Calculator is a spreadsheet used to analyse ecological data to determine an appropriate offset. It can be found on the Infrastructure & Services Intranet Page.
Patch	A patch of native vegetation is vegetation which meets the definition above and is a contiguous area, uninterrupted by hostile barriers such as main roads, railways, other hard surfaces or areas of largely exotic vegetation.
Primary offset (direct offset)	A primary offset is an offset that reserves land that is currently not reserved for conservation, and protects the land under covenant or by transferring the land to a local, State or Commonwealth reserve system.
Proposed Activity (the Project)	The Proposed Activity (the Project) refers to the Project whereby an impact is likely to occur resulting in the need to offset. It is those activities identified in the Planning Approval.
Reasonable or feasible	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Reasonable relates to the application of judgement

Term	Definition
	In arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided. Feasible relates consideration of what is practical.
Resilience	The capacity for a patch of native vegetation to regenerate.
Review of Environmental Factors (REF)	A Review of Environmental Factors is prepared to examine to the fullest extent possible all matters likely to affect the environment as a result of an activity. It is prepared to satisfy the requirements of section 111 of the EP&A Act.
Secondary offset	A secondary offset includes planting, rehabilitation, weeding, civil works, research and education. Sometimes also referred to as supplementary or indirect offsets.
Significant effect (Likely /unlikely)	An assessment of significance of impact is expressed in terms of whether the proposed action is likely or unlikely to constitute a significant effect on threatened biodiversity or other matters of National Environmental Significance (NES) as listed on the EPBC Act. An assessment of significance in NSW requires consideration of the seven factors in Section 5A of the EP&A Act (the Seven Part Test) and consideration of the relevant significant impact criteria for matters of NES under the EPBC Act.
TSC Act	NSW Threatened Species Conservation Act 1995
TEC	Threatened Ecological Community
Threatened biodiversity	Threatened and migratory species, populations, ecological communities and their habitats as listed on the TSC Act and/or EPBC Acts
Tree	A woody plant greater than two metres tall with a single stem or branches well above the base (Sivertsen 2009).

3. What is Offsetting?

3.1. Impact assessment hierarchy

Where an impact is identified during the concept design or environmental impact assessment stage of the project, TfNSW has committed to using the hierarchy shown in Figure 1.



Figure 1 Impact Assessment Hierarchy

3.2. Principles of offsetting

There are three principles of offsetting relevant to this Guide:

- Offset 100 per cent of any native vegetation cleared;
- Achieve an 'improved or maintained' ecological outcome when offsetting impacts on native vegetation; and
- Offset the heritage, public amenity and/or visual landscape value of any trees removed where they may not have ecological value.

This will be achieved through the use of primary and secondary offsets to achieve a positive ecological outcome or to mitigate the impact of individual tree removal.

3.3. Determining the type of offset for impacts to native vegetation

Three offsetting pathways exist in relation to native vegetation; statutory offsetting, primary offsetting and secondary offsetting. The link between these mechanisms is illustrated in the flow diagram in Figure 2.

Statutory Offset

For projects where works would have an impact on native vegetation an ecologist is engaged to assess the significance of that impact. If such an assessment (e.g. an REF) concludes that a **significant effect on threatened biodiversity is likely**, a

Statutory offset would be triggered. The offset provided would be calculated using the BBAM 2014, the FBA, BioCertification and/or EPBC Guide and subject to approval by OEH (NSW) and DoE (Commonwealth). The project manager should seek advice from senior staff in TfNSW and a suitably qualified ecologist (e.g. an accredited BioBanking assessor also with experience in EPBC offsetting).

Vegetation Offset Guide for Native Vegetation

For projects where the conclusion of an REF in relation to impacts on native vegetation is that a significant effect on threatened biodiversity is unlikely, the TfNSW Guide (this document) applies. The offset is calculated using the TfNSW offset calculator, may result in the provision of primary or secondary offsets or both, and be subject to negotiation between TfNSW and other third parties such as the local council. Section 3.2 describes the application and calculation of TfNSW primary offsets and Section 3.3 describes the application and calculation of TfNSW secondary offsets where they may be required. Secondary offsetting of native vegetation is required where primary offsetting cannot be satisfied, or is only partially satisfied.

Vegetation Offset Guide for Trees

Tree offsets are required where individual trees or small groups of trees that are not protected by statutory controls, will be removed by a proposed development and where they **do not comprise native vegetation** as defined in this Guide. The application and calculation of TfNSW tree offsetting is described in Section 4.

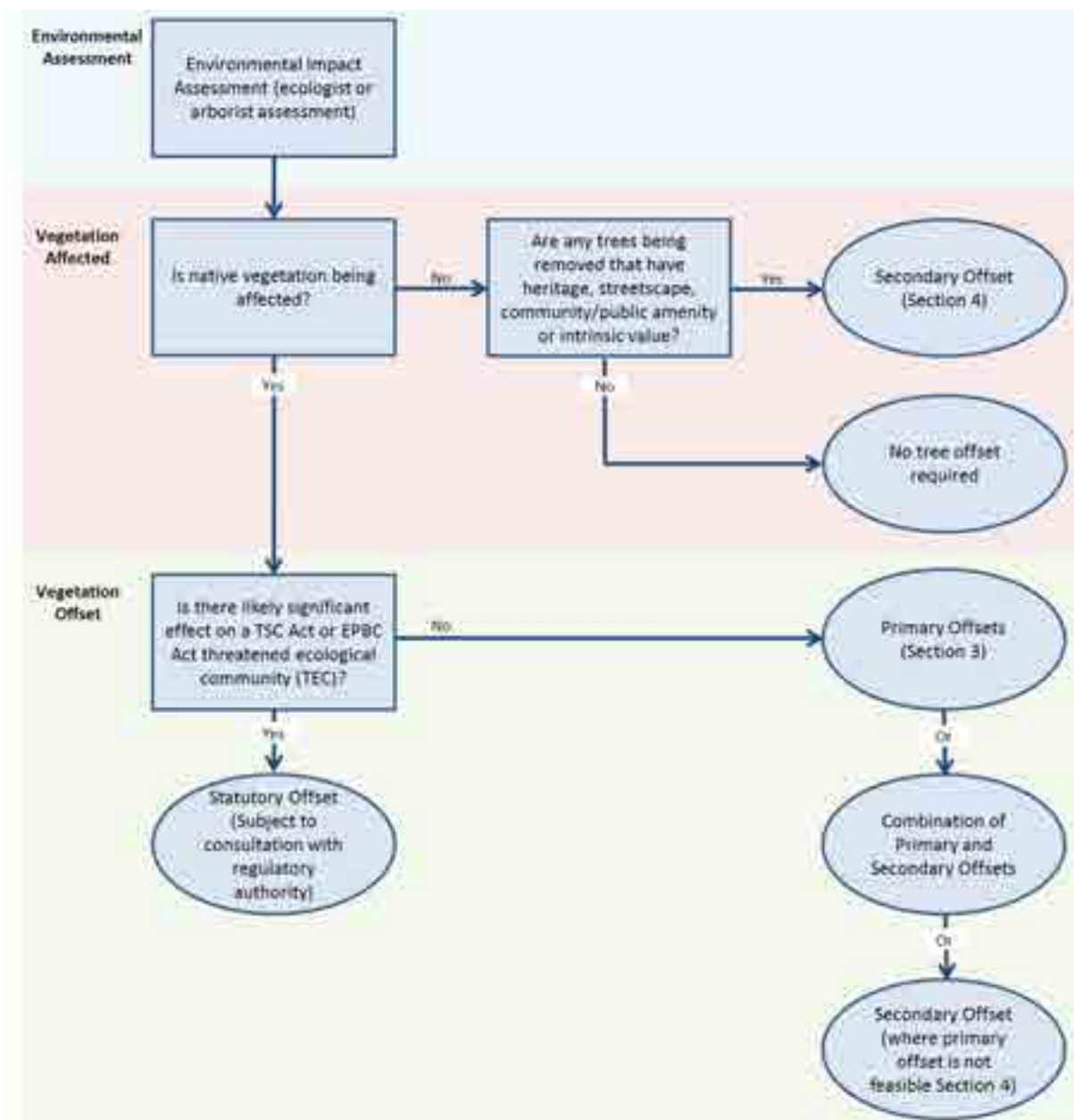


Figure 2 Application of TfNSW Vegetation Offset Guide

3.3.1. TfNSW primary offsets

Reservation of land

A TfNSW primary offset, is a direct offset that reserves land for conservation by placing a covenant on the land or transferring the land to a local, state or commonwealth reserve system. The reserved land cannot already be reserved for conservation purposes.

In NSW the type of mechanisms available to conserve land can include:

- conservation covenants;
- voluntary conservation agreements;

- wildlife refuge declaration;
- land for Wildlife property registration scheme; and
- BioBanking (retirement of ecosystem credits).

A primary offset does not necessarily mean the purchase of land but may involve the acquisition of land or creation of a restriction on use or other control. Refer to Section 4.

BioBanking (buying and retiring credits)

BioBanking is a market-based scheme, introduced by the NSW Government that provides a rigorous and credible offsetting scheme as well as an opportunity for rural landowners to generate income by managing land for conservation.

The following is a description of BioBanking and its objectives from BioBanking Scheme Overview (Department of Environment and Climate Change, 2007):

BioBanking establishes an ‘improve or maintain’ test for biodiversity values. Improving or maintaining biodiversity values means avoiding important areas for conservation of biodiversity values, and offsetting impacts on other areas. The offsets are measured in terms of credits, using the BioBanking Assessment Methodology. The scheme requires participating developers to meet this improve or maintain test based on the impact of their proposed development.

Credits are created by the landowner, who establishes a biobank site and commits to enhancing and protecting biodiversity values. The credits represent an improvement in the condition of biodiversity values such as an improvement in the habitat or an increase in the habitat or population of a threatened species. The scheme creates a market for the credits. Landowners can sell the credits to provide income and fund the future management of the site. Developers can buy the credits to offset impacts from their development and to meet the improve or maintain test.

BioBanking is considered a primary offset for native vegetation. Credit retirement would typically be a requirement of a statutory offset. It may also be used as a type of primary offset for TfNSW projects.

In the event that BioBanking is to be explored, an accredited BioBanking Assessor would identify the desired conservation outcomes. A search of the public register would be undertaken to identify availability of credits to support these outcomes. The credits would be purchased directly from the landholder and then, in order to finalise the offset, retired so that they can be removed from the public register and secure protection and management of the site that they cover. Refer Section 4.4.

The suitability of utilising BioBanking on a TfNSW project would depend on the availability of credits and the cost of those credits. This may present a streamlined and more affordable option for some projects. Further information on this option is provided in Section 3.4.

Where credits are not affordable or available other methods of direct offsetting, such as planting and improving an area of the impacted ecosystem or planting out a new area, should be investigated and calculated using the [TfNSW Vegetation Offset Calculator](#).

3.3.2. TfNSW secondary offsets

A secondary offset is employed under three circumstances;

- when the vegetation being removed has little ecological value, but has heritage or visual amenity, community or intrinsic value regardless of whether the vegetation is native (offsetting individual trees or groups of trees). Refer to Section 5.
- when the primary offset site only partly fulfills the calculated area required, a secondary offset can also be adopted to supplement the primary offset. Refer to Section 4.3.
- when native vegetation is being removed and there is no 'reasonable or feasible' primary offset site available or the primary offset does not meet the area required (as determined by the [calculator](#)) to offset the vegetation removed. Refer to Section 4.2.

A secondary offset would predominantly include planting/rehabilitation/landscaping on site or in an area nearby, but may also include, weeding, civil works, research and education. While secondary offsets do not necessarily meet the principle of 'improve or maintain', they are considered to provide positive ecological outcomes and are consistent with the concepts of supplementary, indirect or advanced offsets prescribed under the FBA and the EPBC Offsets Policy.

4. Offsetting a patch of native vegetation

This section applies to offsetting native vegetation for a project which does not have a likely impact on threatened biodiversity (i.e. Primary Offset). These principles can be applied when there is a likely impact on threatened biodiversity and therefore implementing a Statutory Offset, however this will be subject to consultation with the approval/regulatory authority.

Offsetting requirements for the removal of individual trees which may have some community, heritage, visual or intrinsic value, is covered in Section 5.

4.1. Outline of key steps

The flowchart in Figure 3 below outlines the key steps in determining the vegetation offset requirements. The TfNSW Vegetation Offset Calculator can be found on the Infrastructure & Services Intranet Page and can be provided to Arborists, Ecologists and Construction Contractors by the relevant Contract Manager.

4.1.1. Step 1 – Assessment of the site of the proposed activity

An assessment of the ecological value of the site where construction is to occur as part of the proposal area to be cleared is undertaken by a qualified ecologist as part of the Environmental Impact Assessment. Following determination of the proposal (the Project), in the event of a design change, this assessment may need to be revisited during preparation of the Environmental Review, Consistency Assessment or Modification Request.

The following information should be included in the ecological assessment to allow determination of the offset ratio for the primary offset:

- overall percentage of native flora species to be removed;
- occurrence of medium-large (>30cm Diameter at Breast Height (DBH)) trees to be removed;
- occurrence of native flora species in the canopy;

- occurrence of native flora species in the mid-canopy;
- occurrence of native flora species in the understorey;
- connection to other native vegetation;
- removal of any Endangered Ecological Communities;
- average number of hollow-bearing trees to be removed (per 1000m²);
- average length of fallen timber (>10cm diameter) to be removed (per 1000m²); and
- average leaf litter and detritus cover to be removed (as %)

This Guide and the TfNSW Standard Brief at Appendix 3 should be provided to a suitably qualified ecologist to ensure that appropriate information is collected when undertaking field work and calculating the required offset ratio. Information collected in the field must be in the form that is entered into the calculator in order to accurately calculate the offset ratios.

The information from this ecological assessment is then fed into the TfNSW offset calculator to determine the requirements to fulfill the offset. The [Vegetation Offset Calculator – 9TP-SD-067](#) can be found in the Infrastructure & Services Quality Management System.

Note: When first opening the calculator in MS Excel please ensure you “enable macros” and that the macro security is set to ‘low’. The calculator has been developed for use in MS Excel 2003 and beyond. For further information in this regard, please contact IT Help Desk.

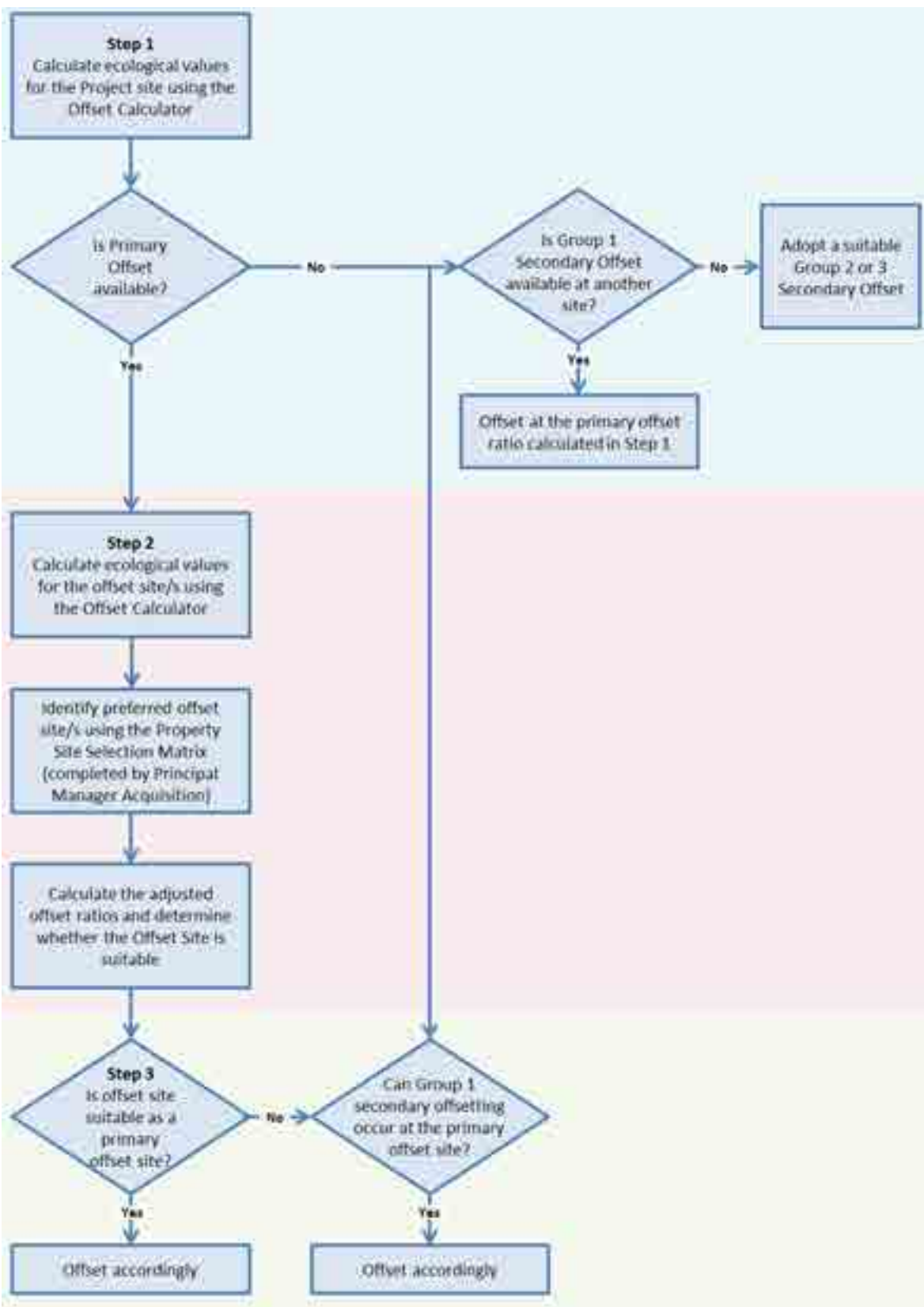


Figure 3 Steps in Determining the Offset Option when impact is to a patch of native vegetation

4.1.2. Step 2 - The primary offset site

A potential offset site will need to be identified and the ecologist confirms its suitability. In some cases a small number of potential sites may need to be identified.

An Ecologist should provide advice on areas which are likely to reflect the biodiversity characteristics which are being sought in the offset site. Together with the Principal Manager Property, areas can be narrowed down to identify potential offset sites. A number of considerations should influence the selection of the primary offset site and include:

- The offset site should be the same vegetation type as the impact site and preferably located as close as possible (e.g. within the same local government area) to the site being impacted upon.
- Preference should be given to sites that are not isolated and provide some connectivity to other areas of native vegetation.
- Sites with a large edge-to-area ratio can be difficult to manage and as such should be given lower preference if another site is more suitable in this respect.
- Site selection should include evaluation of the feasibility of the site using the Site Selection Matrix (Appendix 5) and in consultation with Principal Manager Property and agreement with the entity that will have ultimate responsibility for the site.
- The site has the ability to achieve a positive ecological outcome (enhance biodiversity at a range of scales). For example, the site may enhance fauna resources in an area and may provide habitat for threatened species and endangered ecological communities.
- The site should be viable in the long term (i.e. the site cannot be cleared at a later date and is not isolated from other areas of vegetation to the extent that the site is not viable as a biodiversity offset).

An ecologist should conduct an ecological assessment of the proposed offset site and collect the data as listed in the calculator. The calculator will determine whether the primary offset site is suitable on its own to offset the impact or whether a secondary offset at the site will also be required.

The primary offset ratio score is used for calculating both primary (i.e. reserve land) and secondary revegetation offset areas (Group 1 secondary offsets). A secondary offset is only to be used in certain situations as detailed in Section 3.3. The calculator will assist with calculating the ratio using the same parameters to assess the offset site as those used in assessing the development site previously undertaken in Step 1. Group 1, 2 and 3 secondary offsets are explained further in Section 3.3.

The offset ratio is adjusted depending on the quality, health and ecological value of the offset site when compared to the development site. Offsets are calculated based on all the attributes input into the calculator. Where an offset site has a higher ecological value than the impact site, the offset ratio will be reduced. A minimum offset ratio value of 0.5:1 has been implemented in accordance with state and territory offset systems.

4.1.3. Step 3 - Suitability of the offset site

If there is insufficient available area for the primary offset to meet the requirements of the ratio determined from the offset calculator, a combination of primary offsetting and secondary offsetting can be explored. This could include a commitment to ongoing weed management at the primary offset site for a given number of years or planting and

rehabilitation of the site (i.e. Group 1 secondary offsets). It could also include Group 2 or 3 secondary offsets such as erosion management or control of uncontrolled walking paths through to the establishment of formalised tracks within the offset site.

Where no primary offset site exists, or the offset site does not fulfil the requirements for primary offsets or it is not reasonable or feasible (refer to Section 3.3 for further information) to use a primary offset, the hierarchy of secondary offsets is applied. The offset ratio calculated in Step 1 is applied to Group 1 secondary offsets. If a Group 1 secondary offset option is not reasonable, feasible or available then a Group 2 offset is adopted. If that is not available, a Group 3 offset is adopted (refer to Figure 4).

As identified in Section 3.1 the primary offset site must be able to achieve a maintained or improved long-term ecological outcome and also be economically feasible. Consideration of the balance of the factors outlined in Section 5.1 will determine if the primary offset site is suitable.

Moving from a primary to a secondary offset

The justification for moving from a primary to secondary offset should be through internal consultation with the Project Manager, Project Director, Principal Manager Property and Director Environment and Planning.

4.2. Primary offsets versus secondary offsets

As discussed above, there may be a need to include a secondary offset to support the primary offset. In determining the relationship between the two the focus should be the achievement of a maintained or improved long-term ecological outcome and **not be based solely on cost**.

The decision to move from a primary offset to a secondary offset (or use both) is only made when:

- The primary offset site does not meet the area required (as determined by the calculator) to offset the vegetation removed
- The primary offset site is economically prohibitive (reasonable and feasible test). Including factors associated with acquisition of the primary offset site (Refer to Appendix 5).
- The area is too small to achieve positive and sustained ecological outcomes.

The justification for moving from a primary to secondary offset would be the result of internal consultation with the Project Manager, Project Director, Principal Manager Property and Director Environment and Planning.

4.3. Secondary offsets supporting a primary offset

A secondary offset is only employed where there is no reasonable or feasible primary offset site available, or the primary offset does not meet the area required (as determined by the calculator) to offset the vegetation removed. A secondary offset can include planting, rehabilitation, weeding, civil works, research and education. While some of these options are not an 'offset' in the common understanding of the term, they are still considered to provide a positive ecological outcome.

Secondary offsets have been grouped and ranked with Group 1 being the first preference down to Group 3 being the last preference.

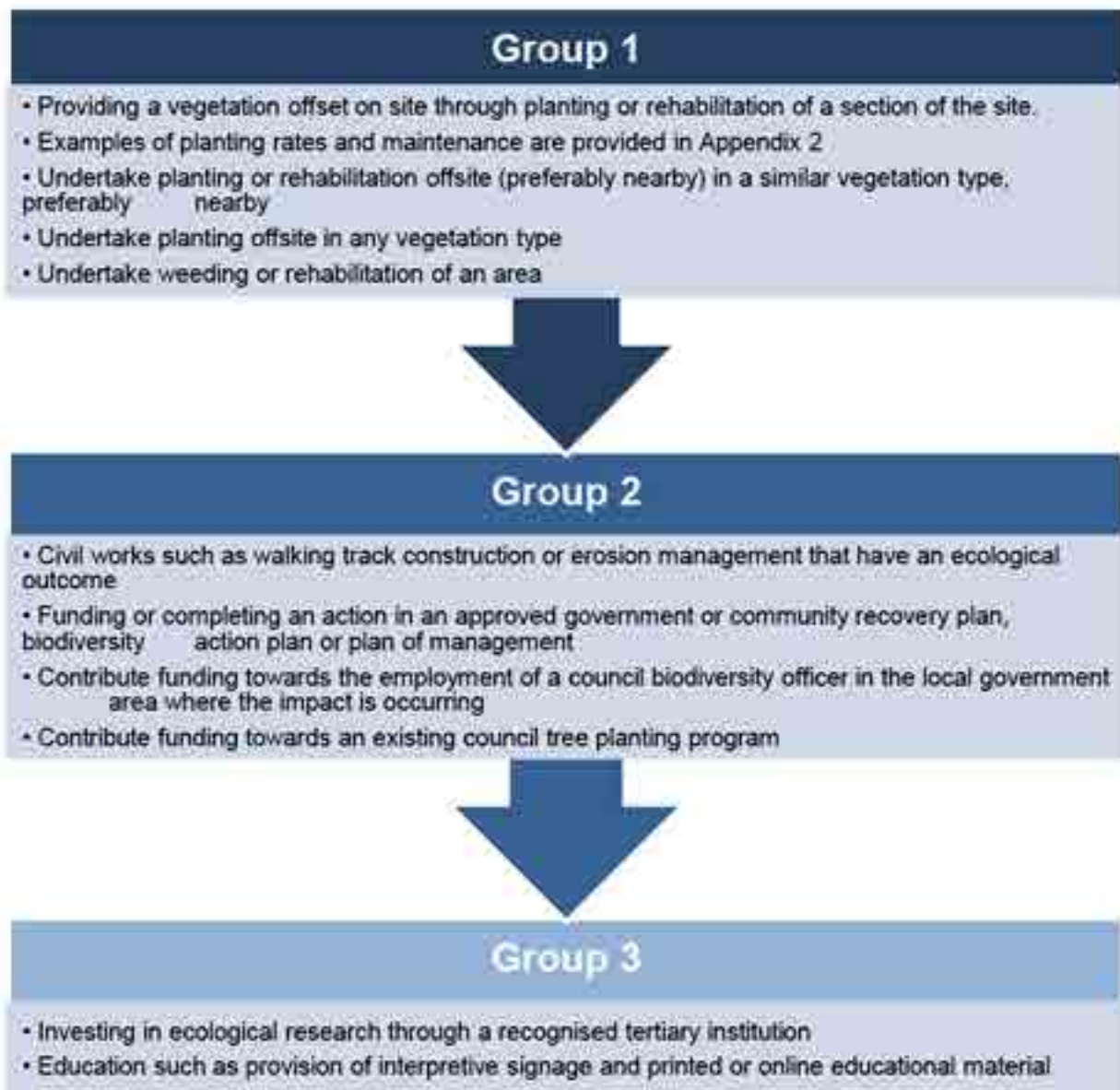


Figure 4 Secondary Offset Options

4.3.1. Planting densities for secondary offsets supporting a primary offset

The overarching principle for offsets, including planting as a secondary offset, is to 'maintain or improve' compared to the area that is impacted. This should be considered when determining planting densities.

Target plant densities will typically be between 500 and 2500 plants per hectare (ha) depending on the vegetation type. A large number of factors affect the required planting density and as such it is impossible to provide generic planting regimes. Bush regeneration specialists will be best equipped to prepare revegetation planting schemes and provide advice on planting densities.

Factors that will influence the planting densities include:

- Climatic conditions at the time of planting will affect mortality rates and therefore

- planting densities;
- Vegetation type - information on benchmarks for NSW vegetation types are provided at <http://www.environment.nsw.gov.au/projects/BiometricTool.htm>. This data includes target benchmarks for percentage cover in each strata in addition to benchmarks for species richness. Planting densities and types should consider this data when planning revegetation works;
- Soil type;
- Slope;
- Aspect;
- The successional nature of the species planted. Different species occur at different regeneration stages of a vegetation community;
- Natural thinning processes; and
- External influences such as adjoining land uses and recreational use. As a general rule the target number of canopy (trees) plants per hectare is:
 - 10- 50 trees/ha for woodlands (2m-10m spacing)
 - 50-100 trees /ha for dry forests (1m -2m spacing)
 - 100- 150 trees /ha for riverina/lowland/foothill forests (0.75m -1m spacing)
 - 150- 200 trees /ha for damp/wet forests (0.5m -0.75m spacing).

4.4. Biobanking (Buying and Retiring Credits)

This option may only be suitable to offset projects with larger scale impacts or that may be constructed over a long period. Feasibility of this option should be well investigated before being explored with regulatory authorities such as OEH or the Department of Planning and Environment (DPE).

Prior to using BioBanking as an offsetting mechanism, it is advised an accredited BioBanking Assessor with sufficient ecological and BioBanking experience be consulted to discuss the suitability of the offsetting mechanism in relation to the development. A list of accredited assessors are available on the OEH website (www.environment.nsw.gov.au/biobanking/Assessorlist.htm).

A preliminary BioBank Assessment may be undertaken for the development. The preliminary assessment may provide the following:

- The likely ecosystem credits and species credits required for the development.
- An indication of the likely costs associated with buying and retiring the required credits.
- Any 'Red Flags' as defined in the BioBanking Assessment Methodology that may need to be addressed, and the likely outcome.
- The availability of the required credits on the Public Register (<http://www.environment.nsw.gov.au/publicregister/>).
- The availability of the required credits on landholdings that may be used as an offset site.

The preliminary BioBanking Assessment would likely involve field validation in the absence of sufficient data.

Should the results of the preliminary assessment indicate that BioBanking be worth pursuing further, it is recommended that the approach be discussed with OEH and DPE where they are a regulatory authority for the Project in question.

A full assessment to the level of detail specified in the OEH (2014) BioBanking Assessment Methodology 2014 or OEH (2014a) Framework for Biodiversity Assessment NSW Biodiversity Offsets Policy for Major Projects, would need to be completed at the development site.

Should matching ecosystem credits or species credits not be available on the Public Register to retire for the development, then a BioBank site would need to be established.

The process for establishing a BioBank site may involve the following:

1. Preliminary BioBank assessment of existing owned landholdings that may be suitable as a BioBank site under the BioBanking Scheme. Should no existing landholdings be suitable then private landholding may need to be used.
2. Desktop mapping assessment to determine private properties that may contain the required credits and be suitable to establish as a BioBank site under the BioBanking Scheme.
3. Prioritise the properties and contact landholders
4. Site visit – brief inspection and indicative calculations and estimate of Total Fund Deposit
5. Go/No-go on the site based on results of the initial inspection
6. Full survey and BioBank Assessment
7. Purchase property/or credits from landholder
8. Lodge BioBank Assessment to retire credits.

5. Offsetting individual trees or groups of trees

This section applies to offsetting individual trees or small groups of trees where:

- they are not protected by statutory controls; and
- where vegetation does not comprise native vegetation (as defined in Table 1).

The primary and/or secondary offsetting of native vegetation for TfNSW is described in Section 3.

The flow diagram in Figure 5 demonstrates the decision-making necessary when it comes to calculating a tree offset.

5.1. Application of Tree Offsets Guideline

This Section applies to single-stemmed plants greater than two metres high (as per the definition of 'tree' in Table 1).

An offset is required when clearing one tree or a group of trees that do not form part of a patch of native vegetation but may have heritage, public amenity or visual landscape value or simply the intrinsic value of the tree itself. Therefore, this offset requirement applies to:

1. isolated, stand-alone and local remnant and, regrowth trees in locations such as railway crossings, bridges or school yards, remnant (native) trees which may have some minor biodiversity value or have provided some amenity or value due to its location and surrounding urban environment;
2. planted native species (local and non-local);
3. naturalised non-local species;
4. planted ornamental exotics; and

5. weeds which are planted as landscape species or have provided some amenity or value due to their location and surrounding urban environment (invasive exotics such as camphor laurel *Cinnamomum camphora* and privets *Ligustrum spp*).

The Environmental Impact Assessment (Checklist, REF or EIS) should identify whether the trees to be removed have any heritage, visual, community, natural or intrinsic value and therefore whether it aligns with the points above. Where there is some heritage value associated with the trees to be removed, consultation with the asset manager or relevant authority (e.g. NSW Heritage Office or Council) should be undertaken to determine the most appropriate offset strategy.

5.2. Calculating offsets for individual trees

In NSW, the BBAM 2014 or BioMetric system does not provide for the offsetting for individual trees.

In Victoria, the principle of Net Gain (DSE 2006) was used to develop offset criteria for individual trees or a small number of trees. Secondary offsets for native vegetation may also require the planting of trees and would be calculated with the [TfNSW Vegetation Offset Calculator](#).

The categories of removed trees are:

- Large mature tree – has a diameter at breast height (DBH) of greater than 60 centimetres
- Medium tree – Has a DBH between 15 and 60 centimetres
- Small young tree – has DBH less than 15 centimetres

The table below provides guidance for the number of trees to be planted as an offset for individual tree removal in line with the [TfNSW Vegetation Offset Calculator](#).

Table 1 Offsetting for Individual Tree Removal

Tree type	Offset
Large tree (DBH greater than 60 cm)	Plant minimum 8 trees
Medium tree (DBH greater than 15 cm, but less than 60 cm)	Plant minimum 4 trees
Small young tree (DBH less than 15 cm)	Plant minimum 2 trees

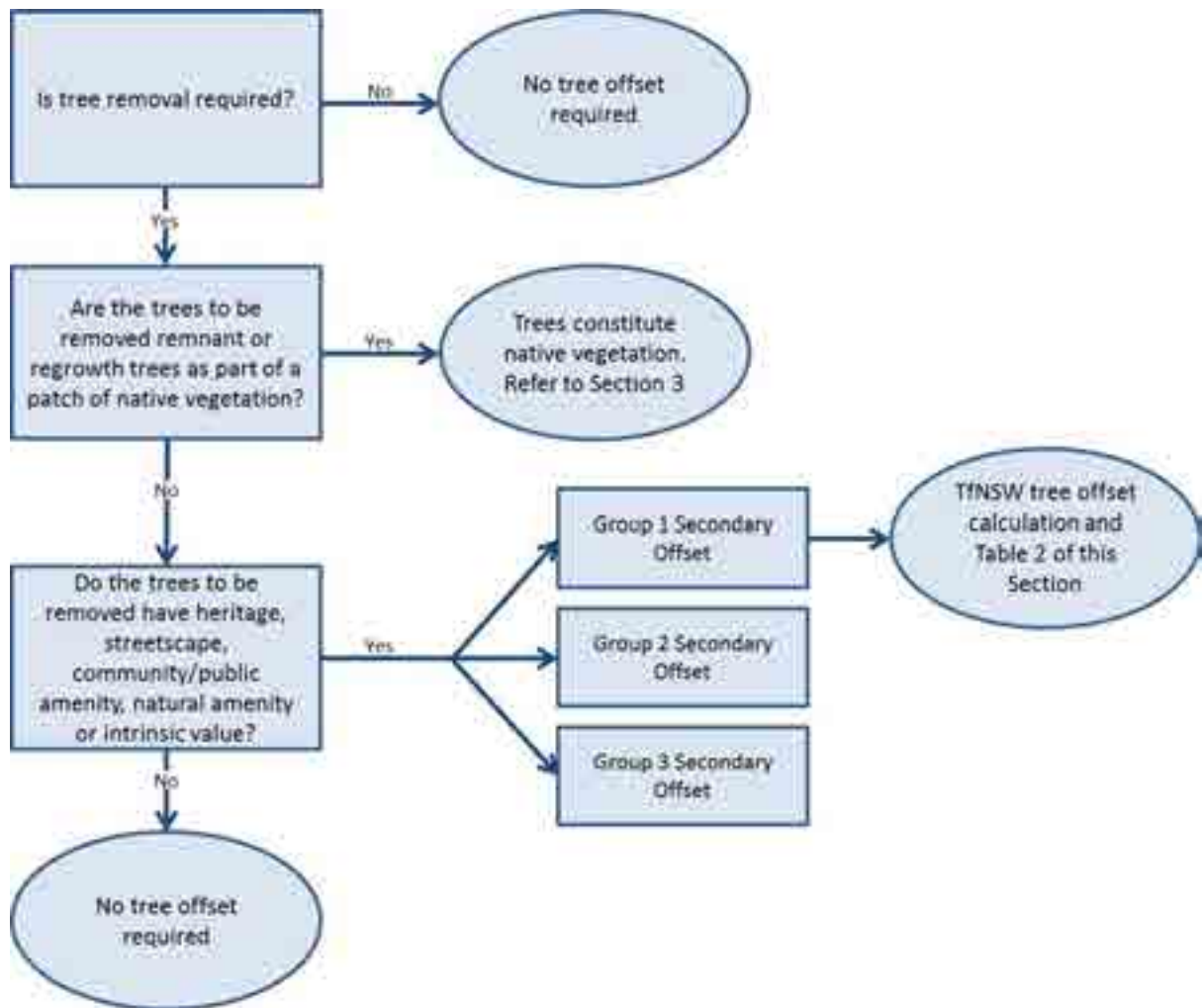


Figure 5 TfNSW Tree Offsetting Process

5.3. Tree planting guiding principles

In the first instance, planted secondary offsets would be implemented through on site landscaping. Where planting or landscaping on site is not possible, the following alternatives would be investigated and implemented:

1. Considering the amenity value of the trees (heritage or visual), plant the offset number in an area where the respective heritage or visual amenity can be planted 'like for like' or improved.
2. Planting in a public space within close proximity of the site.
3. Planting in a public space within the same local government area as the site.
4. Coordinate with Council to implement a program of rehabilitation to a natural environment within the local government area. This should be targeted at a site which is in a more natural state such as a forested reserve or a waterway. For example, landscaping of a sports field would not be considered rehabilitation.

In order to facilitate improved outcomes in the strategic selection and use of appropriate tree species as offsets, the following guiding principles should be adhered to:

- Planting should occur on or near the impacted site or, where this is not possible, at alternative locations identified and agreed with the relevant Council and/or stakeholders;
- The preference, wherever possible, is to utilise locally native species;
- Under no circumstances should noxious weeds (as listed in Council schedules under the *NSW Noxious Weeds Act 1993*) or environmental weed species be planted (e.g. camphor laurel, privet species, willow species *Salix* spp., box elder *Acer negundo*, coral trees *Erythrina* spp., honey locust tree *Gleditsia triacanthos* and African olive *Olea europaea* subsp. *cuspidata*);
- Tree species that pose potential health risks should be avoided (e.g. plane tree *Platanus occidentalis* and rhus tree *Toxicodendron succedaneum*); and
- In instances where the landscape is characterised by exotic tree planting, (e.g. in the curtilage of listed heritage items), offsetting with exotic trees may be considered appropriate. In such circumstances only non-invasive exotic tree species may be used (e.g. African wild plum and Norfolk Island pine).

This Guide does not apply in a situation where a tree or a number of trees are temporarily removed and relocated/ replanted. This would constitute a mitigation as illustrated in Figure 1 and is considered to be a temporary net loss, not a residual loss.

5.4. Secondary offsets options other than planting

Where planting of trees in accordance with the offset ratio outlined in Section 4.2 above is not considered feasible, alternative measures may be implemented. These may include planting, rehabilitation, weeding, civil works, research and education. While some of these options are not an 'offset' in the common understanding of the term, they are still considered to provide a positive ecological outcome.

Secondary offsets have been grouped and ranked with Group 1 being the first preference down to Group 3 being the last preference. Refer to Figure 4 above.

The environmental value of the trees being impacted as outlined in the Environmental Impact Assessment (e.g. heritage or visual amenity) should be considered when identifying and designing the proposed offset. The offset should aim to mitigate that impact. Where there is some heritage value associated with the trees to be removed, consultation with the asset manager or relevant authority (e.g. NSW Heritage Office or Council) should be undertaken to determine the most appropriate offset strategy.

6. Commercial Negotiations

Once the offset requirement (either primary or secondary) has been calculated and an offset site identified as suitable, it may be necessary to enter into some form of commercial negotiation with relevant stakeholders (e.g. Councils, private land owners) to formalise the offset. In order to secure the offset site appropriately, acquisition of property or lease agreements or other legal documentation may be required. As such, an assessment will be required in regards to potential property related impacts. The Property Site Selection Matrix (Appendix 5) should be completed by the Principal Manager Property, to identify suitability of selected offset sites in relation to legal and financial implications.

Internal consultation with the Project Manager, Project Director, Principal Manager Property, and Director, Planning and Environment may be required at this point, prior to securing the offset site.

Areas to be assessed and then clarified with the stakeholder should include:

- Land tenure;
- Existing and proposed conservation status (if any);
- Planting location – selection of an appropriate planting location in consultation with the stakeholder. The location should consider design of the site to ensure that it does not impact upon access and general use of the site;
- Size of offset trees – size of trees to be planted as an offset may depend upon the landscape plan, in general trees should range from saplings to 200 litre trees for well-established plantings. This should be decided in consultation with the TfNSW Environment and Planning Manager; and
- Tree establishment (or maintenance) period – the period commences from the date of practical completion and the end date will need to be agreed with the stakeholder. In many cases this may be specified in the Construction Contract. This period will include:
 - rectification of defects;
 - provision of materials;
 - watering;
 - fertilising;
 - pest and disease control;
 - control of weed growth;
 - adjustment, removal or replacement of tree guards or grates; and
 - replacement of dead, damaged or stolen plants.

Refer to Appendix 2 for discussion on maintenance requirements.

6.1. Maintenance of the offset site or landscaped areas

The Project Manager is responsible for ensuring that the requirement to maintain the offset site or landscaped areas is considered as part of the construction contract for the Project. The timeframe for maintenance may exist as part of the defects period of construction of the project, or could be handed over to the asset owner upon completion.

Maintenance requirements, such as the period and frequency of key maintenance activities, will vary according to the nature of the offset. Refer to Appendix 2 for some guidance on the factors that should be considered,

A maintenance regime for a primary offset site or a large landscaped area should be developed in consultation with an ecologist and/or landscape architect to ensure that the ecological targets for this offset continue to be met. A maintenance regime for a landscaped area should be developed in consultation with the landscape architect and may form part of the Urban Design and Landscape Plan. The Landscape Architect should

aim to ensure that the environmental values which the offset targets (e.g. heritage, amenity, visual) are maintained through this regime.

Consultation with the Environment and Planning Manager, Project Director, Principal Manager Property and asset owner, such as Sydney Trains or Council, may be required prior to finalising the maintenance regime.

7. Related documents and references

Related documents and references

[Environmental Policy – 1TP-PO-002](#)

[Environmental Management System Manual – 1TP-ST-052](#)

[NSW Sustainable Design Guidelines for Rail – 7TP-ST-114](#)

[Vegetation Offset Calculator – 9TP-SD-067](#)

[Application for Removal or Trimming Vegetation \(not identified in the Environmental Approval\) – 9TP-FT-078](#)

Bradley, J (1988) *Bringing back the Bush. The Bradley Method of Bush Regeneration*. Reed New Holland.

Brodie, L, Roxburgh, J and Whiley, L. (1999) *The National Trust Bush Regenerators Handbook*. The National Trust of Australia (NSW).

Buchanan, R. (2009) *Restoring Natural Areas in Australia* TOCAL (NSW)

TBU Federal Department of Environment and Water Resources (2007) *Draft Policy Statement Use of environmental offsets under the Environment Protection and Biodiversity Conservation Act 1999*

Gibbons, P., Ayers, D., Seddon, J., Doyle, S. and Briggs, S. (July 2008) *BioMetric 2.0 A Terrestrial Biodiversity Assessment Tool for the NSW Native Vegetation Assessment Tool Operational Manual*. Prepared for DECC and CSIRO.

Hawkesbury-Nepean Catchment Management Authority *Fact Sheet – Using plants of local provenance in the Hawkesbury-Nepean Catchment*.

Hornsby Shire Council (2010) *Green Offsets Code*

TBU NSW Department of Environment and Climate Change (July 2008) *BioBanking Assessment Methodology*

NSW Department of Primary Industry Primefact 982 (October 2009) *Planting trees for biodiversity*
Queensland Government's Environmental Protection Agency (2008) *Queensland Government's Environmental Offsets Policy*:

Sivertsen, D 2009 *Native Vegetation Interim Type Standard*, Department of Environment, Climate Change and Water NSW, Sydney.

South Australia Department for Transport, Energy and Infrastructure (2007) *Significant Environmental Benefit Guidelines*

Sutherland Shire Development Control Plan 2006 Chapter 4, Section 4 - *Natural Resources Management, Tree and Bushland Vegetation*

The Hills Shire Council (2009) *Tree management guidelines for trees on private land*

Victorian Department of Natural Resources and Environment (undated) *Victoria's Native Vegetation Management a Framework for Action*

Victorian Department of Sustainability and Environment (2006) *Native Vegetation Revegetation planting standards – Guidelines for establishing native vegetation for net gain accounting*.

Victorian Department of Sustainability and Environment (2009) *BushBroker: A native vegetation credit trading and offsets scheme established by the Victorian Government*.

Western Australia Environmental Protection Authority (2006) *Environmental Offsets Position Statement No. 9*

Appendix 1 – The Vegetation Offset Guide Step-by-step

This Appendix is a brief map of the TfNSW Vegetation Offset Guide (the Guide) and outlines the steps to take to identify the appropriate offset for the Project.

Step 1 Determine need for offsetting

If ...	Then...
if there is likely to be a significant effect on threatened biodiversity as listed under the TSC Act and/or the EPBC Act.	Such an outcome would trigger formal offsetting under NSW and/or Commonwealth statutory requirements. The Regulatory Authority such as DPE or OEH should be consulted on the preferred offset mechanism. Refer to Section 3.4 of the Guide.
The proposed clearing of native vegetation is deemed unlikely to have a significant effect on threatened biodiversity for the purposes of section 111 of the NSW EP&A Act, as determined by an Ecological Impact Assessment.	A Primary Offset would be required according to the ecological value of the land. Continue with Step 2 and refer to Section 3 of the Guide.
The Project will impact on vegetation that is not considered native vegetation, but may have some heritage or visual amenity, community or intrinsic value regardless of whether the vegetation is native	A Secondary Offset or individual tree offset would be required. Go to Step 8 and refer to Section 4 of the Guide.

Step 2 Conduct an assessment of the ecological value of the Project site

The Planning and Environment Manager or the Planning Approvals Consultant would have an assessment of the ecological value of the development site and area to be cleared undertaken as part of the Environmental Impact Assessment (EIA). This assessment must be undertaken by a qualified ecologist.

The following information should be included in the ecological assessment to allow determination of the offset ratio for the primary offset:

- overall percentage of native flora species to be removed
- occurrence of medium-large (>30cm Diameter at Breast Height (DBH)) trees to be removed
- occurrence of native flora species in the canopy
- occurrence of native flora species in the mid-canopy

- occurrence of native flora species in the understorey
- connection to other native vegetation
- removal of any Endangered Ecological Communities
- average number of hollow-bearing trees to be removed (per 1000m²)
- average length of fallen timber (>10cm diameter) to be removed (per 1000m²)
- average leaf litter and detritus cover to be removed (as %)

NOTE: This Guide and the TfNSW Standard Brief at Appendix 3 should be provided to a suitably qualified ecologist to ensure that appropriate information is collected when undertaking field work and calculating the required offset ratio. Information collected in the field must be in the form that is entered into the calculator in order to accurately calculate the offset ratios.

The Ecologist would also feed this information into the TfNSW offset calculator to determine the requirements to fulfil the offset.

The [Vegetation Offset Calculator – 9TP-SD-067](#) can be found in the Infrastructure & Services Quality Management System.

Note: When first opening the calculator in MS Excel please ensure you “enable macros” and that the macro security is set to ‘low’. The calculator has been developed for use in MS Excel 2003 and beyond. For further information in this regard, please contact IT Help Desk.

The Mitigation Measures and/or Conditions of Approval of the EIA must detail the requirements of the offset. This obligation will mostly be handed to the Contractor through the Construction Contract, however significant input from the Environment and Planning Manager will likely be required.

Step 3

Identify the preferred Primary Offset type

If ...	Then...
The Project has a relatively large impact or would be constructed over a period >2 years	Consult with the Director, Planning & Environment Services and Principal Manager, Acquisition regarding the suitability of BioBanking for this Project.
All other Projects	Consider Reservation of land as a Primary Offset Site. Continue to Step 4.

Step 4 **Select an offset site**

The preferred offset site/s will need to be identified by the Project Team and suitability and availability assessed using the Property Site Selection Matrix (see Appendix 5) completed by Principal Manager, Acquisition.

The ecological values of that site also need to be determined (via the calculator). Similar to the assessment applied to the Project site (step 2 above), this will need to be undertaken by an Ecologist.

A number of considerations should influence the selection of the primary offset site and include:

- The offset site should be the same vegetation type as the impact site and preferably located as close as possible to the site being impacted upon.
- Preference should be given to sites that are not isolated and provide some connectivity to other areas of native vegetation.
- Sites with a large edge to area ratio can be difficult to manage and as such should be given lower preference if another site is more suitable in this respect.
- Site selection should include evaluation of the feasibility of the site using the Property Site Selection Matrix (Appendix 5) and in consultation with Principal Manager
Property and agreement with the entity that will have ultimate responsibility for the site.
- The site has the ability to achieve a good ecological outcome (enhance biodiversity at a range of scales). For example, the site may enhance fauna resources in an area and may provide habitat for threatened species and endangered ecological communities.
- The site should be viable in the long term (i.e. the site cannot be cleared at a later date and is not isolated from other areas of vegetation to the extent that the site is not viable as a biodiversity offset).

Once the site is assessed, move onto Step 5

Step 5 **Does the Ecological Assessment and Site Selection Matrix determine the site as suitable for the offset requirement?**

If ...	Then...
Yes	Consult with the Principal Manager, Property regarding the need to acquire the land and it be managed as an offset site.
Partly	If there is insufficient available area for the primary offset to meet the requirements of the ratio determined from the offset calculator then a combination of primary offsetting and secondary offsetting can be explored. Go to Step 6
No	Consider a secondary offset instead of a primary offset. Go to Step 8.

Step 6 Including a combination of a primary and a secondary offset

A secondary offset can include planting, rehabilitation, weeding, civil works, research and education.

Refer to Figure 4 of the Guide. Secondary offsets have been grouped and ranked with Group 1 being the first preference down to Group 3 being the last preference.

The Environment and Planning Manager will determine the suitability of the proposed Secondary Offset to fill the gap of the Primary Offset to meet the offset requirements of the Project.

Step 7 Implementing a secondary offset instead of a primary offset

The justification for moving from a primary to secondary offset should be through consultation with the Environment & Planning Manager.

The decision to move from a primary offset to a secondary offset (or use both) is only made when the primary offset site is economically prohibitive (reasonable and feasible test). This may include factors associated with acquisition of the primary offset site.

Refer to Step 8 to determine how the Secondary Offset will be implemented.

Step 8 Implementing a Secondary Offset

A secondary offset can include planting, rehabilitation, weeding, civil works, research and education.

Secondary offsets have been grouped and ranked with Group 1 being the first preference down to Group 3 being the last preference. Refer to Figure 4 of the Guide.

If the Project has impact on vegetation that is not considered *native vegetation*, but may have some heritage or visual amenity, community or intrinsic value regardless of whether the vegetation is native, the Planning and Environment Manager or the Planning Approvals Consultant would assess the relative value of the area to be cleared as part of the Environmental Impact Assessment (EIA).

The Mitigation Measures and/or Conditions of Approval of the EIA must detail the requirements of the offset and how the Secondary Offset will need to mitigate the impact upon heritage or visual amenity or other values.

This obligation will mostly be handed to the Contractor through the Construction Contract, however significant input from the Environment and Planning Manager will likely be required.

In the event that planting onsite is selected as the secondary offset to be implemented, follow Step 9.

Step 9 Calculate the number of trees required to fulfil the secondary offset

The number of trees required to implement a Secondary offset can be calculated using the TfNSW Vegetation Offset Calculator or following Section 4.2 of the Guide.

The location of plantings and species type and therefore maintenance arrangements are dependent on the impact being mitigated against. A heritage specialist or landscape architect may need to be consulted. An Urban Design and Landscape Plan should be prepared to outline the proposed planting design. This will need to be reviewed and approved by the Environment & Planning Manager.

If ...	Then...
The vegetation being removed has some heritage value	Refer to Step 10
The vegetation being removed has some visual amenity or community or intrinsic value	Refer to Step 11

Step 10 **Implementing a Secondary Offset for impacted vegetation with Heritage Value**

Where the offset is as a result of vegetation removal with some heritage value, the heritage consultant preparing a Statement of Heritage Impact may have some recommendations on how a Secondary Offset can mitigate the heritage impact.

Consultation should also be undertaken with the asset manager or relevant authority (e.g. NSW Heritage Office or Council) to determine the most appropriate offset strategy.

Step 11 **Implementing a Secondary Offset for impacted vegetation with visual amenity or community or intrinsic value**

Where the offset is a result of vegetation removal with some visual amenity, community or intrinsic value as outlined in the EIA, the Urban Design and Landscape Plan being prepared for the Secondary Offset should be designed to mitigate the impact.

Consultation should also be undertaken with the asset manager or relevant authority (e.g. Council) to determine the most appropriate offset strategy.

Appendix 2 – Maintenance of secondary offsets and tree planting

The aim in rehabilitation and bush regeneration is to improve the vegetation so as to produce a system that can cope with local conditions and not require intensive watering, weeding or other maintenance.

The following factors will vary from site to site but are essential to the success of the planting:

- **Initial watering** – if the soil is dry at the time of planting then a good watering of up to 20L per plant will give each plant a good drenching.
- **Fertilising** – If you select plants that are suited to site conditions there should be little need to fertilise, however on poor sites that do not have the original soils use a slow release fertiliser with an appropriate ratio of nitrogen, phosphorus and potassium suitable for native plant species.
- **Mulching** – initial mulching and re-topping mulching will reduce maintenance requirements such as weeding enormously. Mulches also assist in water and topsoil loss in addition to enhancing soil conditions. The type and thickness of mulch appropriate for your site will depend on the site conditions.
- **Weed control** – ongoing weed control is essential for the success of any rehabilitation project. The duration of weed control will depend on the initial conditions at the site, however as a minimum there should be a commitment for weed control in the first one to two year period.
- **Time of year** – depending on the species being planted and the location of the planting, the time of year or season can affect the success of the planting. For all locations planting in summer should be avoided unless adequate water can be supplied to the site. The best time to plant for most species is early spring or early autumn.
- **Asset handover** – advice on maintenance for the asset owner or manager beyond the life of the project and defects period. This should be considered when closing out the Conditions of Approval at the point of vesting a Project.

Appendix 3 – Standard Briefs

Note: The following briefs have been developed to provide a consistent approach across applicable TfNSW projects. These briefs set out a clear scope of works and provide the contractor with the necessary information required to assess the project's impact on biodiversity in a coherent way.

Standard ecologist brief – impact assessment and offset requirements

1. Introduction

1.1 Project overview

The Transport for NSW (TfNSW) proposes to

Briefly describe the project including:

- *Location*
- *Area to be impacted*
- *Any studies that have already been undertaken at the proposal site that may be relevant*

2. Purpose

TfNSW requires a qualified consultant with extensive experience in ecology to prepare an ecological assessment. This specialist input is required for the completion of the environmental assessment for this proposed activity and to enable TfNSW to satisfy the provisions of Section 111 of the Environmental Planning and Assessment Act 1979.

In addition to assessing the impact the proposal has on biodiversity at the site TfNSW requires the successful consultant to determine the vegetation offset requirements as a result of the proposal (if any) (refer to the TfNSW Vegetation Offset Guide).

3. Background to offsetting

Infrastructure and Services (I&S) Division of TfNSW is committed to promoting resource conservation, reducing emissions, minimising the generation and disposal of waste, and preventing pollution in all its activities in line with the I&S [Statement of Commitment Environment \(1TP-PO-002\)](#). TfNSW has an ongoing commitment to biodiversity conservation and enhancement with the Sustainable Design Guidelines requiring all projects with non-significant vegetation impacts to offset in line with this Guide. This Guide seeks to maintain a standard that meets the TfNSW [Statement of Commitment Environment \(1TP-PO-002\)](#), the TfNSW [Environment and Sustainability Policy](#) and [Sustainable Design Guidelines](#) requirements.

In response to this target TfNSW has prepared a guideline to assist in determining the offset requirements. A copy of the guideline is attached for your information.

4. Scope of services

The successful contractor will be required to:

1. Assess the ecological characteristics of the study area including:
 - identifying and describing the flora and fauna species, habitat, populations and ecological communities within the study area or considered likely to occur in the study area; identifying and describing the flora and fauna species, habitat, populations and ecological communities in the study area listed under the provisions of the Threatened Species Conservation Act 1995 (TSC Act), Fisheries Management Act 1994 (FM Act), Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), National Parks and Wildlife Act 1974 (NPW Act) occurring or considered likely to occur within the study area.
2. Assess the direct and indirect impacts of the proposed activity (including its nature, extent, frequency, duration and timing) on terrestrial and aquatic flora and fauna species, populations, critical habitats, ecological communities and their habitats.
3. Identify and describe mitigation measures using the principles of "avoid, minimise, mitigate and offset".
4. Undertake any assessments of significance required to determine the level of impact as required under Section 5a of the Environmental Planning and Assessment Act 1979 and the Environment Protection and Biodiversity Conservation Act 1999.
5. Determine the vegetation offset requirements in accordance with the TfNSW Vegetation Offset Guideline and using the offset calculator. In order to do this the following features must be recorded when undertaking survey work. Please refer to the TfNSW Vegetation Offset Guidelines for further detail on the requirements when recording these parameters.
 - The proportion of native species versus the number of weed species present at the site (as a percentage).
 - The presence of mature trees on the site. Mature trees have been defined as having a Diameter at Breast Height (DBH) of 30cm or more.
 - The number of layers of native vegetation at the site (ground, mid storey, canopy).
 - Is the site connected to other areas of native vegetation?
 - Presence of any endangered ecological communities on site.
 - Presence and details on hollow bearing trees in accordance with the categories in the table below.

Hollow Bearing Trees
0 per 1000m ²
1 per 1000m ²
>1 per 1000m ²

- Presence of fallen timber in accordance with the categories in the table below.

Total Length of Fallen Timber per 1000m ²
0-5m

5-50m
>50m

- Presence of leaf litter in two categories; less than 10% or greater than 10%
6. Prepare a report that clearly describe the methods used, results of the field work, assessment of impacts, mitigation measures and vegetation offset requirements.

Standard ecologist brief – assessing the offset site

1. Introduction

1.1 Project overview and background to offsetting

The Transport for NSW (TfNSW) is undertaking a project at xxxxx.

Briefly describe the project including:

- *Area to be impacted*
- *Any studies that have already been undertaken at the proposal site that may be relevant*

As a result of this project, impacts to vegetation were identified in the Review of Environmental Factors *date, title* attached.

Infrastructure and Services (I&S) Division of TfNSW is committed to promoting resource conservation, reducing emissions, minimising the generation and disposal of waste, and preventing pollution in all its activities in line with the I&S [Statement of Commitment Environment \(1TP-PO-002\)](#). TfNSW has an ongoing commitment to biodiversity conservation and enhancement with the Sustainable Design Guidelines requiring all projects with non-significant vegetation impacts to offset in line with this Guide. This Guide seeks to maintain a standard that meets the TfNSW [Statement of Commitment Environment \(1TP-PO-002\)](#), the TfNSW [Environment and Sustainability Policy](#) and [Sustainable Design Guidelines](#) requirements.

In response to this target TfNSW has prepared a guideline to assist in determining the offset requirements. A copy of the guideline is attached for your information.

2. Purpose

TfNSW requires a qualified consultant with extensive experience in ecology to assess a site that has been identified as being a potential offset site for the abovementioned project.

The assessment of the offset site will be guided by the TfNSW Vegetation Offset Guideline.

3. Scope of services

The successful contractor will be required to:

1. Assess the ecological characteristics of the offset site including:
 - The proportion of native species versus the number of weed species present at the site.

- Identification of all weed species on site and mapping of particularly weedy areas. Provide a list of all weeds species. Identify which are the dominant woody weeds, annual weeds and vines.
- Identify areas with no vegetation that will require revegetation. Provide suitable species lists for revegetation works.
- The presence of mature trees on the site. Mature trees have been defined as having a Diameter at Breast Height of 30cm or more.
- The number of layers of native vegetation at the site (ground, mid storey, canopy).
- Is the site connected to other areas of native vegetation?
- Presence of any endangered ecological communities on site.
- Presence and details on hollow bearing trees in accordance with the categories in the table below.

Hollow Bearing Trees
0 per 1000m ²
1 per 1000m ²
>1 per 1000m ²

- Presence of fallen timber in accordance with the categories in the table below.

Total Length of Fallen Timber per 1000m ²
0-5m
5-50m
>50m

- Presence of leaf litter in two categories; less than 10% or greater than 10%
2. Prepare a report that clearly describes the methods used and if the site is suitable as an offset.

Standard bush regeneration brief – initial works and maintenance

1. Introduction

1.1 Project overview and background

Infrastructure and Services (I&S) Division of TfNSW is committed to promoting resource conservation, reducing emissions, minimising the generation and disposal of waste, and preventing pollution in all its activities in line with the I&S Statement of Commitment Environment (1TP-PO-002). TfNSW has an ongoing commitment to biodiversity conservation and enhancement with the Sustainable Design Guidelines requiring all projects with non-significant vegetation impacts to offset in line with this Guide. This Guide seeks to maintain a standard that meets the TfNSW Statement of Commitment Environment (1TP-PO-002), the TfNSW Environment and Sustainability Policy and Sustainable Design Guidelines requirements.

An offset site located at XXXXX and XXX hectares in size has been acquired by TfNSW.

2. Purpose

TfNSW requires a qualified bush regenerator to undertake initial works and maintenance at the site as described in Section 3 below.

The objectives are to:

- Reinststate and maintain a native vegetation community by using current bushland regeneration, rehabilitation and maintenance techniques
- Reduce the prevalence of noxious weed species and their ability to spread
- Stabilise the site using suitable techniques

3. Scope of services

The successful contractor will be required to carry out the following during the initial works:

- Prepare a simple plan that prioritises weed control on the site and identifies ongoing maintenance requirements.
- Undertake weed removal and control (noxious weeds and environmental weeds).
- Undertake revegetation with native plants and in accordance with the species list provided in this brief.
- Mulch areas for weed suppression and soil stabilisation as required.
- Soil stabilisation using sediment fencing, log terracing, and or other appropriate methods where required.
- Rubbish and vegetation waste removal from site
- Undertake weed removal and control (noxious weeds and environmental weeds) once every month for the first six months to break the seeding cycle and then every three months for a period of eighteen months and then every six months for a period of three years. All herbicide use would be in accordance with relevant state and federal legislation. Any training required by the contractor is to be at their own cost.

- Replace dead or dying vegetation planted as part of the rehabilitation and revegetation program
- Mulch areas for weed suppression and soil stabilisation as required.
- Rubbish and vegetation waste removal from site.
- Prepare and submit reports to TfNSW on a 6 monthly basis detailing works done in the preceding 6 months including the timing and nature of the works; the number of replanted replacement vegetation including the species name and age of the replaced plants, the species name and age of the replacement plant; and any previously unidentified weed infestations, be it new species or new areas of weed infestation.

4. Objectives

Performance objectives for the site are as follows:

- Removal of all woody weeds over 50cm in height
- Removal of all mature vines from canopy and control on the ground
- Removal of highly invasive species including:
- List the dominant weeds identified in the ecological assessment undertaken for the offset site (refer to Standard ecologist brief – assessing the offset site)
- Annual weeds and perennial grasses are prevented from seeding
- Plantings are maintained
- All vegetation waste is removed from site
- Site kept litter free.

5. Costs

Prepare a costing to undertake the works in accordance with the following pay items

- Preparation of bush regeneration plan
- Materials (pesticides, erosion control, mulch, tree guards (note this may be able to be donated by council))
- Tube stock, pot stock and seeds
- Labour costs
- Maintenance costs – one monthly visits, three monthly visits and six monthly visits.

Appendix 4 – Case Studies

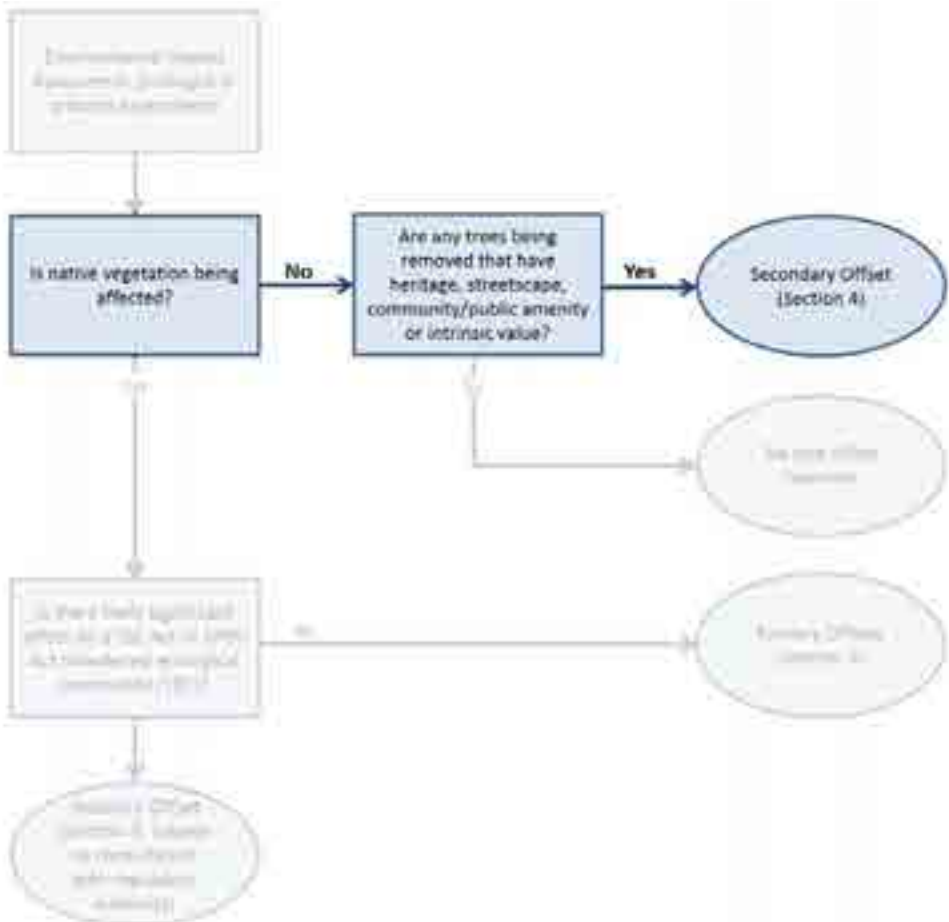
1. Kogarah Garden Forecourt

The Kogarah Garden Forecourt project (the Project) comprised the upgrading of the railway station forecourt and the transport interchange facilities on surrounding roads, including bus stops, kiss and ride facilities, taxi ranks, pedestrian crossings and bicycle parking facilities.

Six trees required removal following mitigation measures and consideration of design options. An arborist was engaged to undertake an assessment of the trees requiring removal. These six trees could not be avoided and included:

- Two River Sheoaks (12-15 metres in height)
- Two Scribbly Gum (5 metres in height)
- One Tallowwood (15 metres in height)
- One Black Locust

Vegetation for removal was therefore deemed to comprise individual trees rather than native vegetation as defined in the Vegetation Offset Guide.



Kogarah Garden Forecourt example of applying secondary vegetation offset.

The flow chart directs the user to Secondary Offsets contained in Section 4 of the Guide. This Section applies to single-stemmed plants greater than two metres high and therefore is applicable to all six trees requiring removal.

Offsets Provided

In accordance with Table 1 of the Guide, it was determined that at least 24 trees were required to be planted to offset the six that were removed. The value of the trees was associated with visual amenity representing street trees and trees in an urban space.

As part of the Project, it was identified that the former Kogarah City Council (now St George Council) had an existing street tree removal and replanting program underway and were open to an agreement to plant trees for Transport for NSW. A Tied Grant was set up between Transport for NSW and the former Kogarah City Council and they were paid \$10,000 to plant a minimum of 24 trees and maintain them. With the Grant, 65 Tuckeroos were planted along both sides of a street near the railway station. The Tied Grant required a written report to be provided to Transport for NSW on the health of each tree in the program every six months during the term of this agreement.

Lessons Learnt from this Project

- Maintenance reports are to be provided for longer durations (the duration of this agreement was six months) to ensure trees are properly established.
- Council tree planting programs are not the best use resources as trees planted through these programs would have been planted regardless of Transport for NSW funding.
- Council should be asked to provide a quote to plant the required number of trees rather being offered a lump sum.

2. ETTT Biodiversity Offset

The Epping to Thornleigh third track project (ETTT Project) is one of a number of infrastructure improvements that forms part of the Northern Sydney freight corridor (NSFC) program along the main north line between Sydney (Strathfield) and Hexham (west of Newcastle). The construction of the ETTT Project would allow for the separation of the slow moving northbound freight trains from the faster moving passenger services.

The Biodiversity Assessment (Parsons Brinckerhoff & GHD 2012) identified the ETTT Project contains relatively limited native biodiversity, is largely disturbed and generally characteristic of remnant vegetation patches within highly fragmented and urban environments, however will require the removal of approximately 4.3 ha of native vegetation. This includes up to approximately 2.3 ha of Blue Gum High Forest (BGHF) and 0.8 ha of Sydney Turpentine Ironbark Forest as listed under the TSC Act.

As the vegetation identified for removal was deemed to comprise native vegetation rather than individual trees and there were impacts proposed to two threatened communities, the ecologist undertook an assessment of significance (also referred to as a seven part test). This assessment identified that the impacts were likely to be significant to the BGHF but not to STIF. As such a statutory offset was required. The process for a Primary Offset was followed to identify the potential offset and the option of BioBanking was explored. The proposed offset was then negotiated with the Office of Environment and Heritage. The Conditions of Approval for the Project then required the project team to work with local Councils and DP&I to investigate BioBanking credits close to the impact site. The following outlines the offset that was implemented as part of the ETTT Project.

Table 1. Direct impact on native vegetation offset requirements

Vegetation Community	Threatened ecological community	Area to be impacted in BOS (ha)	Estimated offset required (ha)	Offset ratio (ha)
Sydney Turpentine Ironbark Forest	Yes (TSC Act)	0.8	3.7	4.6:1
Blue Gum High Forest	Yes (TSC Act)	2.3	10.0	4.4:1
Sydney Hinterland Transition Woodland	No	1.2	3.2	2.7:1
Total		4.3	16.9	3.9:1

Vegetation Mitigation and Offsetting

In addition to implementing an offset, mitigation consisted of design changes to the noise walls and stormwater drainage to help reduce impacts on BGHF.

The offset approach adopted for the ETTT Project, was to identify and fund the establishment of two BioBank sites within the Hills and Hornsby Shire Council LGA, specifically targeting the high priority conservation and vegetation types impacted by the ETTT Project. These sites were identified in consultation with OEH, DP&I and local government authorities.

The two BioBank sites are:

- the 'Hornsby Shire site' at Cherrybrook, Dural and Pennant Hills – Contains large areas of mesic and sclerophyll vegetation that are required to be offset, the BGHF ecological community. The BioBank site will provide for the protection of 9.2 ha of BGHF, of which the ETTT Project will be committing to conservation and retiring 51 BGHF credits or approximately 6.17 ha
- the 'Hills Shire site' at Baulkham Hills – Contains large areas of riparian vegetation communities or similar communities that are required to be offset, including the threatened Sydney Turpentine Ironbark Forest ecological community. This BioBank site contains approximately 24 ha of native vegetation, including 22.1 ha of Sydney Turpentine Ironbark Forest, of which the ETTT Project will be committed to retiring a minimum of 76 ecosystem credits (approximately 7.6 ha).

In addition to the credits retired from these two sites, TfNSW is committed to retiring 29 Sydney Hinterland Transition Woodland credits (approximately 2.9 ha) from the currently available credits at the existing Hills Shire Cadwells Road BioBank. These credits will meet a 'tier 2' trade for the Projects impacts on Sydney Hinterland Transition Forest.

Agreements

BioBanking was achieved by working with Hornsby Council and The Hills Shire Council.

- Hornsby Council – TfNSW paid for a consultant to work with Council to develop both the biobanking credit report, vegetation management plan and the agreement with the Minister.
- The Hills Shire – TfNSW paid for consultant to develop the biobanking credit report only which was given to Council to develop the VMP and agreement with the Minister.

Maintenance requirements are documented in the Vegetation Management Plan that is in perpetuity.

3. Cronulla Line Upgrading and Duplication Project

Approximately 1800m² of Sydney Turpentine Ironbark Forest was removed as a result of the Cronulla Line Upgrading and Duplication Project. The offset requirements at this site were at a ratio of 5.6:1. Revegetation works were required at this site and in order to manage the works a Vegetation Management Plan was prepared. Two sites were used to offset the vegetation clearing. Both sites are being maintained for a period of five years. The sizes of the sites were:

- Site A 5900m²
- Site B 2515m².

Activity	Cost
Development of Vegetation Management Plan	\$10,000
Seed collection for revegetation works	\$5000
Site A Seed collection, revegetation and weeding for a two year maintenance period	\$130,000
Site A Council maintenance for a further 3 years	\$53,000
Site B Planting and respreading topsoil with a five year maintenance period	\$135,000

4. Bush Regeneration as a Secondary Offset

The frequency of maintenance visits required at a site is highly variable and is determined by the health and location of the site as well as the management objectives for the site.

In order to break the weed seeding cycle at a site it is generally accepted that maintenance is required once every month at least for the initial six month maintenance period, then once every three months to maintain the site.

This frequency of maintenance and the length of the initial weeding period is highly dependent on the location of the site and the influence of external factors such as the presence of a watercourse (water ways transport weeds to the site), the edge to area ratio of the site (land with a high edge to area ratio is difficult to manage especially if the area surround the site is weedy) and the amount and type of recreational traffic the site receives.

Some indicative costs for labour only are provided below:

Activity	Cost
Weeding and planting to break the seeding cycle at a 5000m ² site.	\$2240 per month
Three monthly maintenance visits at a 5000m ² site	\$1400 per visit

The costs provided above are for labour only and do not include any costs for materials such as mulch, plants, seed collection or herbicides. Based on the costs provided above

maintenance of a 0.5 ha site for a period of five years would be \$38 640 ex GST. Some indicative costs for materials are provided below.

Material Costs

Item	Cost
Mulch	\$28 -\$70 per cubic metre
Top soils	From around \$65 per cubic metre
Tube stock	\$2.50 - \$4.00 depending on type and quantities
Plants (50mm pots)	\$10.00 depending on type and quantities
Tree guard sleeves (pack of 50)	\$25.00

Appendix 5 – Property Site Selection Matrix

Proposed Primary Offset Sites		Ranking Components											75	75	70	70	70	70	100			
Project	Location / Address	Ownership	Status	Size (m ²)	Shape (m ²)	Ranking 1 (0-100)	Ranking 2 (0-100)	Ranking 3 (0-100)	Ranking 4 (0-100)	Ranking 5 (0-100)	Ranking 6 (0-100)	Ranking 7 (0-100)	Existing Use	Current Tenure	Value \$	Acquisition Constraints	Schedule Constraints	Lifecycle Maintenance Costs	TOTAL	Comments		

LEGEND
Status - refers to status of land in control of local government i.e. community or operational
Size and Shape - Details in relation to size, shape, edge to area ratio, connectivity
Ranking - Each Primary offset site identified is ranked in relation to the property related considerations. The higher the ranking the more suitable the site



Transport
for NSW

WCAG 2.0

Quick reference guide

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Introduction

[Web Content Accessibility Guidelines \(WCAG\) 2.0](#) has been developed by the [World Wide Web Consortium \(W3C\)](#), an international community that develops web standards. It provides recommendations for making web content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech disabilities, photosensitivity, and combinations of these.

Web accessibility also benefits others, including people with changing abilities due to ageing or a temporary disability, as well as improving the usability of web content for all users in general.

Transport has adopted WCAG 2.0 requirements for websites which are mandated under Commonwealth and NSW government policy, legislation, and through whole-of-government commitments, and is committed to meeting WCAG 2.0 Level AA compliance.

Conformance is required for all internet, intranet and extranet sites, even when the audience is known, as people who have a disability are not legally bound to disclose it and many do not.

This document includes:

- [WCAG 2.0 checklist](#)
- [WCAG 2.0 guidelines](#)

WCAG 2.0 checklist

1. Keyboard

All content on page is accessible using a keyboard

([WCAG guideline 2.1.1 Keyboard](#); [WCAG guideline 2.1.2 No keyboard trap](#))

- Nothing on page requires exclusive use of a mouse
- User can tab through content on page without being “trapped” (may occur with some embedded content such as Flash).

2. Colour and sensory

Conveying information

Colour is *not* used as the *only* visual means of conveying information, indicating an action, prompting a response, a distinguishing a visual element. Example: When an error is indicated to the user (say, for invalid form input), an error message needs to be displayed, not just the colour red.

([WCAG guideline 1.4.1 Use of Colour](#))

Colour contrast

When a foreground colour is specified, so is a background colour (and vice versa). Minimum contrast between foreground element and background is at least 4.5:1 for text less than 18pt (14pt if bold), or 3:1 for text greater or equal 18pt (14pt if bold). Background images, if used, provide sufficient contrast with foreground text (or images of text). ([WCAG guideline 1.4.3 Contrast \(Minimum\)](#))

Sensory characteristics

Understanding content on the page *does not* rely solely on the sensory characteristics of components such as shape, size, visual location, orientation, or sound. Example: A green arrow in a multi-page survey to move to the next page needs to have “Next” or some other explanatory text (not just the arrow by itself). ([WCAG guideline 1.3.3 Sensory Characteristics](#))

Seizure prevention

Nothing on the page flashes more than 3 times per second.

([WCAG guideline 2.3.1 Three flashes or below threshold](#))

3. Images

ALT Text

All images use appropriate alternative text. ([WCAG guideline 1.1.1 Non-text content](#))

- Alternative text provides a short but descriptive identification of the image content
- CSS is not used to include images that convey important information
- Images that should be ignored by assistive technology, such as decorative images, spacer images and list bullets, should have a null alt property (alt=””).
- Set alt attributes for images used as form elements, such as submit buttons

Images of text

Text is used to convey information rather than images except in the following three cases:

1. Image of text is visually customisable by user
 2. Particular presentation of text is essential to information being conveyed and requires use of an image to do so
 3. Image of text is part of a logo or brand name
- CSS is used to control visual presentation of text (font, size, colour, etc.).
 - If CSS is used to replace text with images of text, user interface controls are provided to switch

([WCAG guideline 1.4.5 Images of text](#))

4. Links

The purpose of a link can be determined by the link text alone.

([WCAG guideline 2.4.4 Link Purpose](#))

5. Sufficient Time

Users have enough time to read the page. ([WCAG guideline 2.2.1 Timing adjustable](#))

Page does not redirect or refresh after a certain time limit or a time-out unless the user is provided a way by which to disable the time limit; or, a way by which they may extend the time limit after being given a warning that the limit is about to expire

6. Document structure

Use proper semantic markup for all elements. ([WCAG guideline 1.3.1 Info and Relationships](#))

- H1...H6 are used to identify all headings without skipping a level (i.e., no H3 headings used directly immediately below a H1 heading; must be H1 -> H2 -> H3)
- All lists or groups of links use either or or <dl>

7. Sequence

Content is presented in a meaningful sequence. ([WCAG guideline 1.3.2 Meaningful Sequence](#))

- White space characters are not used to control spacing within a word
- HTML <table> elements are not used to control placement of elements on page

8. Text Resize

Text can be resized up to 200% without loss of content or functionality (e.g. using Ctrl+ in browser). Doesn't apply to captions and images of text. ([WCAG guideline 1.4.4 Resize Text](#))

9. Language of Parts

Sections of content in language different from the primary language of the page have the "lang" (HTML) or "xml:lang" (XHTML 1.0) attributes to the appropriate language code in their surrounding tags. ([WCAG guideline 3.1.2 Language of Parts](#))

10. Audio and Video

- **Label and alternative text (audio and video):** A label describes the purpose of the audio-only or video-only content and a descriptive name of the non-text content is provided in the alternative text. ([WCAG guideline 1.1.1 Non-text content](#))
- **Pre-recorded audio:** A text transcript is provided that presents equivalent information. ([WCAG guideline 1.2.1 Audio-only and Video-only \(Prerecorded\)](#))
- **Audio control:** If audio on a web page plays for more than 3 seconds a mechanism is provided to either: pause or stop the audio; and/or, control audio volume independently from the user's overall system volume level. ([WCAG guideline 1.4.2 Audio Control](#))
- **Captions:** Either open (always visible) or closed captions are provided for live and pre-recorded audio content in synchronised media (e.g., a video with a synchronised audio track, or a webcast). ([1.2.2 Captions \(Prerecorded\)](#); [WCAG guideline 1.2.4 Captions \(Live\)](#))
- **Pre-recorded video:** An audio description is provided for prerecorded video content by including either: a second user-selected audio track containing descriptions; or, providing the audio descriptions within the video itself. ([WCAG guideline 1.2.1 Audio-only and Video-only \(Prerecorded\)](#); [WCAG guideline 1.2.3 Audio Description or Media Alternative \(Prerecorded\)](#); [WCAG guideline 1.2.5 Audio Description \(Prerecorded\)](#))

11. Forms

- **Form labels:** Label elements are used to associate text labels with form controls which require input. Labels have same id attribute as their respective form controls. <fieldset> (with <legend>) is used to group associated form controls together. ([WCAG guideline 1.3.1 Info and Relationships](#))
- **Resize:** Form controls and input fields can be resized up to 200% ([WCAG guideline 1.4.4 Resize Text](#))
- **Focus:** The context does not change when a form element when selected by the user (e.g., automatically submitting the form, redirecting to a new page, or opening a pop-up window). ([WCAG guideline 3.2.1 On Focus](#))
- **Input:** The context does not change when a the user enters text or selection options from a form element (e.g., automatically submitting the form, redirecting to a new page, or opening a pop-up window). ([WCAG guideline 3.2.2 On Input](#))
- **Errors:** If an input error is automatically detected, that error is identified and described to the user in text. ([WCAG guideline 3.3.1 Error Identification](#))

WCAG 2.0 guidelines

1. Perceivable

1.1 Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language

1.2 Provide alternatives for time-based media

1.3 Create content that can be presented in different ways (for example simpler layout) without losing information or structure

1.4 Make it easier for users to see and hear content including separating foreground from background

2. Operable

2.1 Make all functionality available from a keyboard

2.2 Provide users enough time to read and use content

2.3 Do not design content in a way that is known to cause seizures

2.4 Provide ways to help users navigate, find content, and determine where they are

3. Understandable

3.1 Make text content readable and understandable

3.2 Make Web pages appear and operate in predictable ways

3.3 Help users avoid and correct mistakes

4. Robust

4.1 Maximize compatibility with current and future user agents, including assistive technologies

Work Activity Advice

Work Activity Advice Register ID:	Revision no:	Date:
Project name:	WAA title:	
Rail corridor/ region where work will take place:	Design package:	CCR:
	Date approved by rail corridor manager:	
Project work notification (PWN) registration no: <input type="checkbox"/> Required <input type="checkbox"/> NA	PWN date approved:	

Contractor details

Contractor:	Contractor's representative:	
Representative's contact numbers:		
Phone:	Mobile:	Fax:

Review and endorsement by principal contractor

Name:	Position:
Signature:	Date:
Comments:	

Review by TfNSW project manager

Name:	Position:
Signature:	Date:
Comments:	

Review by TfNSW Safety & Quality Directorate NA Reviewed and comments

Name: Signature:	Principal Manager Operations Safety (or nominee)
	Date:
Comments:	
Name: Signature:	Principal Manager OHS (or nominee)
	Date:
Comments:	

Issued to rail corridor manager for information and distribution

Name:	Position:
	Date:

Work activities

Activity scope and description:	Location:
Planned start date:	
Planned finish date:	
Duration in days:	
Possession scope of works	
Non-possession scope of works	
Potential scope of works requiring 0268 Working Around Electrical Equipment approval	

Safe Work Method Statements (SWMS)

Scope number	SWMS name	Reference number	Revision number	Review comment

Have all relevant work activity SWMS been submitted? Yes
 Have SWMS been reviewed and endorsed by the principal contractor? Yes

Safety hazard identification and risk management

Details of the process undertaken to identify safety hazards, assess risks and develop treatment measures (e.g. risk matrix, Safe Work Method Statements, persons involved)

- Has a Permit to Excavate been approved for excavation work? Yes No
- Has consultation with service owners (Rail Corridor Manager Region, Communication and Control Systems, Buildings and Sidings and external authorities) to confirm service locations been documented in project safety interface coordination meetings? Yes No
- Have safety hazards associated with asset identification in PWN been included? Yes No
- Is a WHS risk register of safety hazards and risk treatment measures maintained and reviewed regularly? Yes No
- Have safety hazards been included in SWMS with corresponding risk treatment? Yes No

Safety hazard checklist	No	Yes	Comments
Are any of the Hazardous Rail Corridor Locations applicable?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work being conducted within Danger Zone?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there potential for work to impact on Danger Zone?	<input type="checkbox"/>	<input type="checkbox"/>	
Will Hi-Rail equipment or Rolling Stock be placed on track?	<input type="checkbox"/>	<input type="checkbox"/>	

Safety hazard checklist	No	Yes	Comments
Is there a potential for Hi-Rail equipment or Rolling Stock to be placed on track?	<input type="checkbox"/>	<input type="checkbox"/>	
If there is Hi-Rail equipment or Rolling Stock being placed on track who is the nominated Accredited Rolling Stock Operator?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work being conducted within electrical safeworking clearances (e.g. plant within 3m of 1500V DC)?	<input type="checkbox"/>	<input type="checkbox"/>	
Is a Safe Electrical Approach for Cranes & Plant competency (formerly known as 5099 Exemption) for approach to electrical equipment required (e.g. within normal safety clearances)?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur in close proximity to fibre optic or other communication cables?	<input type="checkbox"/>	<input type="checkbox"/>	
Are metal ladders or scaffolding being used?	<input type="checkbox"/>	<input type="checkbox"/>	
Is equipment isolation required?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur near electrical infrastructure?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work affect earthing or bonding of electrical assets (e.g. traction return induction potentials etc.)?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur near signalling equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
Is access required to signalling systems?	<input type="checkbox"/>	<input type="checkbox"/>	
Is excavation, boring or grading involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Is working at heights involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Is the public exposed to danger, inconvenience or other adverse impact?	<input type="checkbox"/>	<input type="checkbox"/>	
Are any employees exposed to danger, inconvenience or other adverse impact?	<input type="checkbox"/>	<input type="checkbox"/>	
Is hot work involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work in confined spaces involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work in a room protected by a gaseous deluge fire fighting system involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there potential environmental hazards?	<input type="checkbox"/>	<input type="checkbox"/>	
Does work overlap or interfere with other planned work/working groups?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work be affected by waste / rubbish removal?	<input type="checkbox"/>	<input type="checkbox"/>	
Are routine inspections undertaken by Rail Corridor Manager within or adjacent to the proposed worksite?	<input type="checkbox"/>	<input type="checkbox"/>	
Do critical safety systems need to be isolated (e.g. fire alarms)?	<input type="checkbox"/>	<input type="checkbox"/>	
Will corridor access and/or track/site access points be subject to restrictions?	<input type="checkbox"/>	<input type="checkbox"/>	
Is isolated work involved (e.g. working alone)?	<input type="checkbox"/>	<input type="checkbox"/>	

Safety hazard checklist	No	Yes	Comments
Will road traffic be impacted?	<input type="checkbox"/>	<input type="checkbox"/>	
Are there uneven surfaces (e.g. slip/trip/fall hazards)?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there an impact from working in hot/cold/wet weather?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur adjacent to operating plant/equipment?	<input type="checkbox"/>	<input type="checkbox"/>	
Will there be any site security impacts?	<input type="checkbox"/>	<input type="checkbox"/>	
Is manual handling involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Will night work be involved?	<input type="checkbox"/>	<input type="checkbox"/>	
Will there be any work over water?	<input type="checkbox"/>	<input type="checkbox"/>	
Will the work result in potential poor air quality (i.e. dust)?	<input type="checkbox"/>	<input type="checkbox"/>	
Is work conducted near or adjacent to asbestos?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there likely to be excessive noise?	<input type="checkbox"/>	<input type="checkbox"/>	
Is there a risk of contamination/spills?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur on platforms?	<input type="checkbox"/>	<input type="checkbox"/>	
Will work occur within stabling facilities or sidings?	<input type="checkbox"/>	<input type="checkbox"/>	
Will any services belonging to other authorities (e.g. sewer, water, gas) be impacted?	<input type="checkbox"/>	<input type="checkbox"/>	
Other (Please provide details, e.g. Impact of late completion; Time available for defect correction etc.)	<input type="checkbox"/>	<input type="checkbox"/>	

Safeworking for possession works

Planned method of worksite protection:

TLPA LPA

Work outside and not affecting the Danger Zone? Yes NA

Will worksite protection plan(s) be completed on day of work? Yes NA

Safeworking for non-possession works

Planned method of worksite protection:

TOA TWA ASB Lookout Working (NWT 310) NA

Work outside and not affecting the Danger Zone? Yes NA

Will worksite protection plan(s) be completed on day of work? Yes NA

Possession plan

Specific possession planning information (may be revised and upgraded as supplementary information to original WAA, minimum 4 week lead time)

Possession details

Date & time of possession e.g. 12/06/06, 08:00–16:30	Tracks e.g. Up Main:
Configuration:	Section(s) e.g. Sydenham–Tempe:
Possession program: 1. 2. 3. 4. 5. 6. 7. (add additional numbers, if required)	

Possession worksite manager

Name:	Contact details:
-------	------------------

Possession supervisory roster

Name:	Date:	Start Time (24 hr)	Finish Time (24 hr)	Contact no.

Changes and review of work activity advice

Describe and attach details of changes to work scope, location, program, periodic safety review, risk assessments, additional /revised SWMS, etc.

Document no. / revision	Description



Working near Utilities

4TP-PR-159/6.0

Procedure – Applicable to Infrastructure and Services

Integrated Management System

Status:	Approved
Version:	6.0
Section:	Safety Engineering Systems
Business unit:	Engineering
Date of issue:	04 April 2017
Audience:	Organisational Wide
Asset classes:	<input type="checkbox"/> Heavy Rail; <input type="checkbox"/> Light Rail; <input type="checkbox"/> Multi Sites; <input type="checkbox"/> Systems; <input type="checkbox"/> Fleets
Project delivery model:	Rail Project/Alliance/Novo Rail/Not Applicable
Project type:	Low/Minor/Medium/Major/For all project types/Not Applicable
Project lifecycle:	<input type="checkbox"/> Feasibility; <input type="checkbox"/> Scoping; <input checked="" type="checkbox"/> Definition; <input checked="" type="checkbox"/> Concept Design; <input checked="" type="checkbox"/> Detailed Design; <input checked="" type="checkbox"/> Construction; <input checked="" type="checkbox"/> Commissioning
Process owner:	Director Safety & Engineering Systems

Document History

Version	Date of approval	Doc. Control No.	Notes
1.0	13 May 10	728566_2	First Release.
2.0	1 Jul 10	812361_2	Reformatting for TCA transition and revised governance structure.
3.0	21 Apr 11	812361_8	Approved Document for Release.
4.0	1 Apr 12	812361_11	Updated to reflect TPD Transition.
5.0	15 Jul 2013	812361_18	Updated to reflect the changes resulting from TfNSW reform
6.0	04 Apr 2017	807906_20	General rewording changes to reflect clearer Contractor responsibility for management of Utilities

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1. Purpose and Scope

The purpose of this standard is to prescribe the management activities, for working near utilities, which shall be implemented for TfNSW projects. Similar requirements may be adopted for other types of projects where deemed appropriate and relevant. The management activities apply during the engineering phases of the projects:

- project definition
- concept design
- detailed design
- construction
- commissioning

During the construction phase this Standard provides the basic framework for the Contractors to develop the Contractors Utilities and High Risk Utilities Management Plans for the project.

This standard must be read in conjunction, where relevant, with all references listed in Section 9 of this document.

This standard applies to all works associated with working near utilities in order to avoid unintentional contact with Utilities:

2. Definitions

Position titles referred to in this document refer to positions within the TfNSW Infrastructure and Services Division. Where this document is used by another Division (or Dedicated Program Office) of TfNSW, that Division's Deputy Secretary (or Dedicated Program Office's Program Director) must identify equivalent competent persons within that organisation to assume each of the roles noted in this document. The proposed arrangements must be presented to the Director Safety & Engineering Systems (Infrastructure & Services) for endorsement.

All terminology in this document is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

ABSD	As Built Survey Drawings
ALT	Alliance Leadership Team
CUD	Combined Utilities Drawings
DBYD	Dial Before You Dig
Delivery partners	Organisations contracted to TfNSW for the joint delivery of services/projects
DSS	Detailed Services Search
Excavation	Ground disturbance as part of the movement or penetration of earth or rock for the purposes of completing a project scope of works.
Ground Disturbance	Includes both Excavation and Non-Destructive Potholing as defined.
HRU	A "High Risk Utility" any utility that if damaged or unintentionally contacted could lead to a potential catastrophic outcome <i>e.g. Ethane Gas Pipeline, High Voltage lines etc</i>

ISS	Internal Services Search
ITP	Inspection and Test Plan
Non-Destructive digging	Carefully exposing a subsurface utility by pothole excavation using hand digging or sensitive vacuum/water blasting techniques so that the utility service or its protective covering are not destroyed. See also 'Pot-holing'. Note: <i>it must be recognised that in some circumstances there are utilities that may have been buried without protection i.e. in a conduit, concrete encased etc. In these cases the use of hand tools may not be appropriate due to the risk of direct contact with a utility.</i>
Penetration	Penetration works (drilling, cutting, etc.) into or through any wall or building surface behind which any service, ducting, pipework or other utility may be present
Pot-holing	Excavation technique to locally expose a subsurface utility at a point. See also 'Non-destructive digging'.
Permit to Disturb (PTD) and/or Penetrate (PTP)	A permit process including the use of hold points to ensure controlled approval and management of the process
SWMS	Safe Work Method Statement
TfNSW	Transport for NSW
Utilities	A publicly, privately or jointly owned and operated entity, located on either public or private property, the purpose of which is to transport for either the public or a private party a service or commodity such as electricity, communications, gas, light, oil, power, television, water and waste by means of cables, conduits, ducts, fibre optics, pipes and wires and includes related objects, such as access chambers, pits, valves and other appurtenances.

3. Accountabilities

The Director Safety & Engineering Systems is accountable for the development and communication of this Standard. Accountability includes evaluating its effectiveness and performing a formal document review.

Direct reports to the I&S Deputy Secretary are accountable for ensuring the requirements of this document are implemented within their area of responsibility, including any associated delivery partners.

4. Organisation Requirements

The consideration of work near utilities and the associated risk profile starts at the Project Definition phase of the project.

During the Concept Design phase the TfNSW Program Director shall determine if a dedicated Utilities Manager is required for the project. The Utilities Manager shall be a direct employee of either TfNSW or the delivery partner and shall not be sub-contracted out to a 3rd party without prior written approval from the TfNSW Program Director.

The decisions on whether a dedicated Utilities Manager is required and the sizing of any supporting resources (utilities team), will take into consideration the following criteria:

- location of the project;
- physical size of the project;
- estimated cost of the project;
- working areas within the project;
- any high risk utilities (HRU);
- number of utilities within the project;
- exposure to the utilities during works;
- number of diversions required and/or;
- duration of the project.

If it is determined that the allocation of a dedicated Utilities Manager is not required, the responsibilities for utilities management shall be allocated to other managers and shown on the TfNSW and Contractors project organisation charts. There is to be one point of contact within both the TfNSW and Contractors teams during the course of the project for communication and co-ordination of utilities.

The TfNSW project organisation chart shall identify the utilities team (regardless of size) independent of the TfNSW Construction and Contractor teams. This allows the utilities team to carry out an assurance role e.g. site inspections and review of compliance with processes, procedures, and SWMS. The TfNSW Utilities team will work with the TfNSW Construction and delivery partner teams to ensure effective and safe outcomes for the project.

The following organisation chart is indicative only and highlights the independence of the TfNSW construction, utilities, and design teams. The actual positions required in each team will vary from project to project.

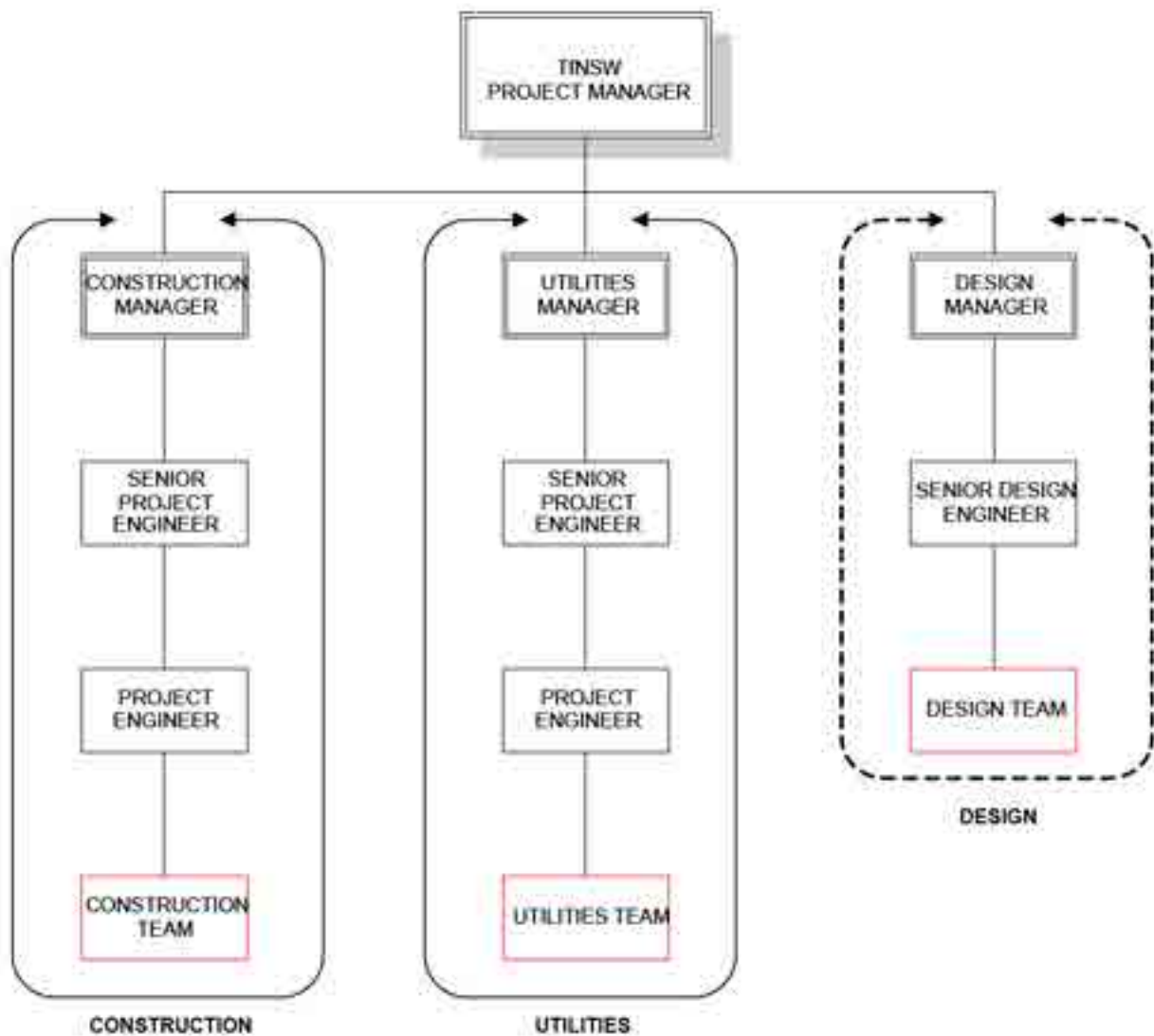


Figure 1. Indicative project team highlighting independence of functions

5. Development of Management Plans

During the Concept Design phase the TfNSW Program Director, in consultation with stakeholders and the TfNSW Director Safety & Engineering Systems, will determine the need for a TfNSW Utilities Management Plan, based on the project scope and the presence of utilities on the site. The TfNSW Program Director must include this Standard in any tender documentation prepared. The TfNSW Program Director will also arrange for the production of the Detailed Services Search (DSS) for the project.

A TfNSW Utility Management Plan may be required as part of a tender submission. If there is a high risk utility (HRU) on the project then a separate 'High Risk Utility' Management Plan may be required e.g. Ethane Gas Pipeline Management Plan. This requirement will be determined by the TfNSW Program Director, in consultation with the TfNSW Director Safety & Engineering Systems, and based on the potential for construction to impact the identified HRU.

5.1. Utilities Management Plans

The TfNSW Utilities Management Plan sets out how the project will work near all utilities within the work area. It will take into consideration, but will not be limited to:

- location of the project;
- project scope;
- utilities locations and potential for unknown underground utilities;
- potential for underground utilities to be in locations other than where identified in associated/relevant drawings and maps;
- working areas within the project;
- complexity of the utilities;
- any high risk utilities, (a utility which could cause an extreme risk under TfNSW's risk matrix) making reference to the separate management plan e.g. an ethane gas pipeline easement within or adjacent to project boundaries, see high risk utility management plan below;
- how the project will manage the interaction (including communications) with the utilities through the various phases of the project:
 - Concept Design
 - Detailed Design
 - Construction
 - Commissioning
- proposed organisation chart for the utilities team; and
- identity of the owners and operators of the known utilities.

5.1.1. Purpose and Scope

The purpose of the plan is to encompass the activities that will be undertaken by the project in order to:

- Ensure that the work is carried out safely in respect of utilities;
- ensure that all the work is carried out in compliance to any deed of terms of easement, held between the existing or proposed owner/operator and the utilities stakeholders;
- ensure any work in the vicinity of utilities has the necessary controls and procedures in place to eliminate risk to the utilities;
- document the actions to be implemented during the project phases in order to control the works around the utilities;
- ensure a comprehensive project wide awareness of the utilities and the associated dangers in working around the utilities;
- achieve “zero unplanned impacts” on the utilities within the working area; and
- adopt a risk based approach on managing the utilities.

5.1.2. Accountabilities

The TfNSW Utilities Management Plan shall define the highest level of management accountable for all the tasks regarding the utilities. The TfNSW management team includes:

- Alliance Leadership Team (ALT) - if the project is an alliance then a utilities champion shall be appointed from within the ALT;
- Project Manager;
- Construction Manager;
- Utilities design leader who will oversee all aspects of the design with regards to the utilities; and
- Utilities Manager who will approve and monitor all the work in the vicinity of the utilities.

5.1.3. Roles and Responsibilities

The TfNSW Utilities Management Plan shall define the role and responsibilities of key personnel throughout the project. The responsibilities of the Construction Manager, Utilities Manager and Utilities Design Manager may be delegated to individual team members depending on the scope of the project.

The below table is indicative of the roles and responsibilities that should be associated within each Management plan.

Role	Responsibility
Utility Stakeholder (e.g. Telstra, Sydney Water, Sydney Trains, NSW Trains, etc) will	<ul style="list-style-type: none"> • Act in accordance with any TfNSW/Utility lease agreement, and may: <ul style="list-style-type: none"> – Provide design or as-built data for their utility; – Give guidance to any work or procedures required; – Provide field operatives, when required, to oversee any work within a specified proximity of the utility; and – Review and approve designs with respect to working proximities. <p>(Note: that each utility stakeholder may have their own procedures for working near their utility).</p>
ALT Champion (if an Alliance) will ensure:	<ul style="list-style-type: none"> • Commitment to the managing of the utilities. • Provision of support and guidance to the Project Manager.
Project Manager will ensure that:	<ul style="list-style-type: none"> • Competent people are nominated for utility management, through training and an assessment process. • All aspects of work are carried out in accordance with the applicable standards. • All aspects of work are carried out in accordance with the Utilities Management Plan. • They approve the Utilities Management Plan and any further revisions.

Role	Responsibility
Construction Manager will ensure that:	<ul style="list-style-type: none"> • All the Investigation works, including the desk study and on site investigation work are carried out in accordance with the Utilities Management Plan. • All the construction activities meet the requirements of the Utilities Management Plan. • All Management Plans including processes, controls, and responsibilities are adhered to. • They co-ordinate independent surveillance audits during all phases of work to ensure all the controls in the Utilities Management Plan are being implemented and followed. • The PTD is clearly completed and states the working area in conjunction with known underground utilities. • A separate utilities "as built/surveyed" drawing is attached to the PTD detailing the surveyed location of any known utility potholed and/or surveyed during the life of the project. • The risk of working in the vicinity of overhead utilities has been addressed in the PTD and SWMS. • The PTD is completed in a timely manner for review and approval. • The SWMS and PTD are implemented and followed. • All site personnel involved with ground disturbance are inducted on the PTD, and the SWMS. • All site personnel involved in the work activity in the vicinity of utilities are qualified to carry out the work. • The alignments of the utilities are to be kept demarked where possible and no unplanned work is to be carried out in close proximity to any of the utilities. • All site personnel involved with working near utilities complete and sign on to a Pre-start and Tool Box Talk, which details the risks involved with the planned work for that shift. • Ensure site personnel are adequately supervised and monitored to ensure compliance with safe working procedures.
Utilities Design Manager will:	<ul style="list-style-type: none"> • Co-ordinate and oversee all aspects of the design with regards to the utilities. This may include design of alternate routes, protection standards and other requirements to protect existing utilities.
Utilities Manager will:	<ul style="list-style-type: none"> • Act as the single point of contact for all utilities. • Liaise with the design team to give guidance on the impact of the proposed design on existing utilities. (This may mitigate the risk of an impact on the utility during the construction phase). • Review all High Risk Safe Work Method Statements (SWMS) for all works within the vicinity of a known utility. • Ensure all construction staff are made aware of the requirements for working in the vicinity of a known utility. • Ensure that regular co-ordination meetings are held with the utility stakeholders. • Periodically review the Utilities Management Plan, amend as necessary and issue for approval. Once the Utilities Management Plan is approved then the Utilities Manager will issue the revised Plan to the wider project team. • Report on progress of the works near the utilities.

Role	Responsibility
	<ul style="list-style-type: none"> Conduct regular site visits to ensure compliance to the controls stated in Utilities management plans. Be notified of any impacts on the utilities and be part of the investigation team.

5.1.4. Contractors Utilities Management Plan

In general, the Contractors Utilities Management plan shall align to the TfNSW plan and all requirements and recommendations contained within this Standard. Where any inconsistencies are identified or highlighted, it will be the responsibility of the TfNSW Principals representative to make a determination as to the resolution and/or new requirement/s.

As a minimum, the Contractors Utilities Management Plan and/or HRU Management Plan shall address the following key elements;

- planning responsibilities;
- roles and responsibilities, including supervision
- training and competency of all personnel involved
- subcontractor management
- stakeholder engagement
- risk management
- risks of working around underground services
- high risk utilities and essential services;
- unidentified underground utilities and services
- Safe Work Method Statements (SWMS) and Procedures;
- underground utilities – Dial Before You Dig (DBYD);
- locate and safely work around underground services;
- Permit to Disturb and Permit to Penetrate process (*for services contained within wall cavities etc.*).
- excavation work;
- on-site inspection for utility presence;
- understanding utility plans;
- determine location, alignment, level and grade of services;
- identification and protection of utilities;
- work safely near overhead power lines and other services;
- no go & exclusion zones;
- signage and delineation
- reporting/notification requirements for utility impacts/incidents.
- emergency planning

- environment and culture heritage.

5.2. High Risk Utility (HRU) Management Plan

If a HRU has an easement running through the project then the TfNSW Project Manager, during the Concept Design phase, will consider: the exposure of the project to the utility; the length of the easement within the project work area; the type of construction taking place; and shall determine:

- If a HRU Manager, independent to the Contractors team, shall be appointed to the project. (The TfNSW HRU Manager and the Utilities Manager can be filled by the same candidate.);
- If a dedicated TfNSW HRU management team needs to be in place prior to the construction stage dealing with every aspect of the HRU; and
- If a separate TfNSW HRU Management Plan must be developed.
- If it has been determined that a TfNSW HRU Management Plan must be developed the TfNSW project team must consult with the relevant asset owners and stakeholders in the development of the plan. The plan must consider all requirements set out in this Standard

6. Development of Combined Utilities Drawings (CUD)

The location of the TfNSW assets are recorded on Detailed Services Search (DSS) plans provided by the Asset Owner and the Operator/Maintainer. “External” utility companies use Dial Before You Dig (DBYD) drawings to pass on information on the location of their assets. Other asset owners may also supply the project with as-built information. In order to bring these separate pieces of information together a set of CUD are to be drawn up.

The colour codes used for each utility shall be aligned with the coding used by the Asset Standards Authority standard T HR CI 12190 ST Service Installations within the Rail Corridor. Use of this coding ensures continuity throughout the project and aids the transfer of information to the Asset Owner and the Operator/Maintainer.

As well as the line code indicating the type of utility it shall also reflect the level of accuracy of the information, e.g. DSS or surveyed information, used to state the position of the utility. The information is to be classed into 4 levels of accuracy, A to D. The line defining the location of the utility has a unique line type and a level of accuracy code as follows:

Level D – Information received from Dial Before You Dig, the Asset Owner and the Operator/Maintainer DSS or ABSD

Level C – Information received from Dial Before You Dig, the Asset Owner and the Operator/Maintainer DSS or ABSD, modified to reflect the apparent surface fittings.

Level B – Information received from electronic surface locating

Level A – Information received from potholing.

As utility locations are confirmed on site the level of accuracy increases and line types are adjusted accordingly. It must be considered, when confirming underground assets on site, the real potential for utilities to be in locations other than those indicated on DBYD and DSS drawings/maps. There have been many instances on TfNSW projects where underground utilities have been struck due to a lack of positively identifying the utility prior to excavation and/or the assumption that a utility is located as per the drawing/map to later find it was not.

CUDs are created during the Concept Design phase and shall be updated at regular intervals throughout the life of the project. The intervals will depend on the quantity of investigations being completed and the stage the project life cycle has reached. This information will be made available to the TfNSW design and construction teams and Contractors team.

7. Permit Systems

7.1. Permit to Disturb/Penetrate

Prior to any ground disturbance or work in the vicinity of overhead utilities a permit process must be implemented as part of the Contractors Utilities Management plan on TfNSW projects.

The Permit process should be a tiered process that requires independent sign off by a utilities team member or responsible person at the following stages:

- Information gathering on service location, i.e. DBYD, DSS, ISS, ABSD
- Non-Destructive digging to identify actual service locations and determine unforeseen service routes prior to excavation.

The Permit processes for Underground/Hidden and Overhead utilities must be developed in accordance with the minimum requirements and guidance documents set out for managing utilities under;

- NSW WHS legislation - SafeWork NSW
- Utility Asset owner/s requirements e.g. Sydney Trains, Energy Authorities, Jemena, Telstra
- SAI - Australian Standards
- Asset Standards Authority – (ASA)

7.2. Finding unidentified underground Sydney Trains utilities

For the purpose of managing the identification of Sydney Trains underground services not detailed on DBYD, ABSD, DSS and ISS a check sheet “Unidentified Service Check sheet” is to be completed by the Contractor and Principal’s representative and submitted to ST prior to any further works being undertaken. The asset owner (Sydney Trains) will be contacted by the Principal’s representative in the first instance.

Included in the check sheet are a series of Hold Points which are in all instances managed and released by the TfNSW Principal’s representative.

Annexure A of this Standard provides the “Unidentified Service Check sheet” with a list of Principal nominated Hold Points. These may only be released by the Principal’s Representative. The Contractor will prepare other Hold and Witness Points during the development of the ITPs based on the requirements of this Standard. The Contractor will nominate which party is to release Hold Points and this may include Contractor designers, site engineers, Project Verifier etc.

The Hold Points shall be released by the appropriate authority nominated on the ITP or as stipulated in this Standard. This will include Contractors personnel, ST or TfNSW. Where Hold Points are to be released by TfNSW, project team personnel with the appropriate skills and expertise which will include Technical Surveillance Officers, will carry out this task.

8. Training and Competency

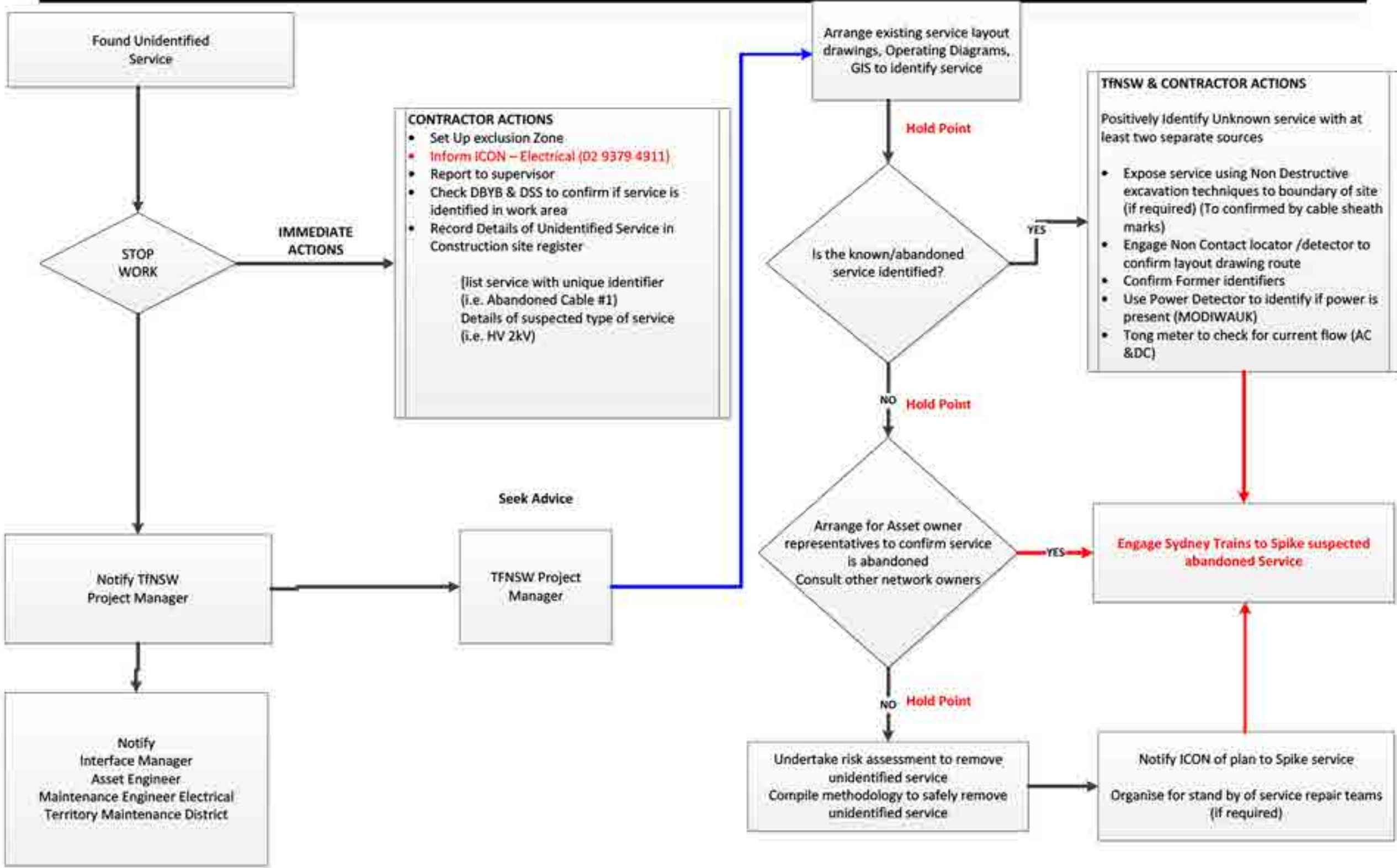
As part of the Contractors site specific induction to the project, any person involved in disturbing the ground, penetrating walls and/or ceilings or working near overhead utilities shall undergo training and deemed competent in Identification, Location and Protection of Service Utilities. Training must be in line with industry standards and guidelines relevant to the particular asset/s.

9. Related Documents and References

Related Documents and References
Sydney Trains Electrical Network Safety Rules RailSafe – SMS-06-GD-0268 Working Around Electrical Equipment Endeavour Energy Electrical Safety Rules Essential Energy Electrical Safety Rules Jemena Operating Rules Relevant Water Authorities Telstra Network Integrity Group Australian Standards AS 5488 Classification of Subsurface Utility Information
Asset Standards Authority
T HR CI 12190 ST Service Installations within the Rail Corridor TMG 1440 Requirements for the Locating of Underground Services in the Rail Corridor SPC 207 Track Monitoring Requirements for Undertrack Excavation
SafeWork NSW Documents
Managing Electrical Risks in the Workplace Construction Work Excavation Work Managing Risks of Plant in the Workplace

TFNSW ABANDONED SERVICE PROCESS

Title
 May 1, 2017



Use of Social Media Policy

Applicable to:

- This Policy applies to staff and contingent workers in the following agencies: Transport for NSW
- Department of Transport
- Roads and Maritime Services
- Sydney Trains
- NSW Trains
- State Transit Authority

The term 'staff' is used in this Policy to cover all ongoing, temporary and casual staff.

The term 'contingent workers' is used in this Policy to cover staff seconded from another organisation, labour hire workers, professional services contractors and consultants.

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GIPA Publication Requirement:	This document is required to be made publicly available by the <i>Government Information (Public Access) Act 2009</i> .
Enquiries to:	HR Advisory – 1800 618 445 or

TfNSWHR@transport.nsw.gov.au

SIGNED BY THE SECRETARY

1 Purpose

The use of social media is an increasing part of everyday online activity. Transport supports appropriate use of social media as a legitimate part of communication and as a means of social interaction. However, comments made on social media are in the public domain, i.e. as if made to the media or in a public forum. Comments on social media on any Transport agency or associated organisation subject matter will be taken to be work-related, irrespective of how they are published, and could have broader impacts, like newspaper, television and radio media interest.

Transport is committed to establishing a culture of openness, trust and integrity for staff that use social media in a non-official capacity. This includes social media accessed either during work time (if the agency's relevant technology usage policies allows such access), or during private time (including out of office hours), and irrespective of whether Transport resources or personal resources are used.

The aim of this policy is to enable appropriate use of social media and at the same time:

- protect the reputation of Transport;
- maintain confidentiality of corporate and personal information;
- provide clear guidance on appropriate online behaviour towards customers and other staff members; and
- promote an online culture between staff members that is free from bullying, harassment and / or discrimination.

As a private citizen, staff members have a right to enter public debates and comment on public policy, political, social or any other issue. However, unless authorised to do so, any comment must be made strictly as a private citizen and be separate from, and avoid any reference to, employment within Transport.

Access to social media at work is covered by each agency's relevant technology usage policies. This policy does not seek to change any of the agency's policies related to access to social media at work.

1.1 Key Definitions

All terminology in this Procedure is taken to mean the generally accepted or dictionary definition with the exception of the following terms which have a specifically defined meaning:

Term	Definition
Social media	<p>Refers to social media sites, tools and platforms that provide users with infrastructure and resources to connect and communicate with each other and share and exchange content or information.</p> <p>They include but are not limited to:</p> <ul style="list-style-type: none"> ○ social networking sites - e.g. Facebook, MySpace, Bebo, Google Plus, Tumblr, LinkedIn ○ video and photo sharing websites - e.g. YouTube, Flickr, Instagram ○ micro-blogging sites - e.g. Twitter ○ forums and discussion boards - e.g. Whirlpool, Yahoo! Groups,

	<p>Google Groups</p> <ul style="list-style-type: none"> ○ blogs, including corporate blogs, personal blogs and blogs hosted by traditional media outlets ○ online encyclopaedias – e.g. Wikipedia ○ instant messaging software/applications e.g. MSN, WhatsApp, iMessage, QQ, WeChat, Skype ○ any other websites that allow individual users or organisations to use simple self publishing tools.
Publish	Includes but is not limited to posting, blogging, tweeting, uploading photographs, commenting, sharing, liking and re-tweeting content on social media.
Supplier	Includes a person or organisation who provides products or services to Transport as part of a contractual agreement.
Transport or associated organisations	Includes Transport for NSW, Department of Transport, State Transit Authority, Roads & Maritime Services, Sydney Trains and NSW Trains, their activities, people, products, services, suppliers or other business-related individuals or organisations.
Business-related individual or organisation	Includes a person or organisation who has a business contractual relationship with Transport. For example, law firms or engineering firms with whom Transport has a business contractual relationship.

2 Mandatory Requirements

2.1 Official use of social media

Official use of social media is covered by the [Transport Social Media Management Policy](#).

Official use of social media is when:

- a staff member is representing an agency in Transport on a Transport social media site, e.g. when the TfNSW Media & Public Affairs Officer posts a comment, using their name and title, on a TfNSW Facebook page; or
- a staff member is representing an agency in Transport on another social media site, e.g. when the TfNSW Media & Public Affairs Officer posts a comment, using their name and title, on the Sydney Morning Herald Facebook page.

In line with the [Transport Social Media Management Policy](#), unless authorised, a staff member must not comment as a representative of an agency in Transport.

The Customer Experience Division in TfNSW administers approvals and procedures for official social media accounts. Written approval must be obtained from the Deputy Secretary Customer Services Division, TfNSW before representing an agency in Transport in social media. Refer to the [Transport Social Media Management Policy](#) for more information.

2.2 Non-Official use of social media

While social media appears to blur private and public spheres, activities on social media websites are considered public activities. Despite the availability of privacy functions on social media websites, the possibility exists for content to be shared beyond intended recipients. Additionally, the terms and conditions of use for most social media sites state that all content becomes the property of the site on which it is posted. This makes the public nature of these websites inescapable. Online content is also essentially permanent – a fact that must also be taken into consideration when posting.

Non-official use of social media is any use of social media where a staff member's comments or profile could identify them directly or indirectly as a staff member of Transport, and/or if they are making reference directly or indirectly to Transport or associated organisations. In such circumstances please refer to section 2.2.1, which provides guidance on appropriate use of social media.

Staff should recognise that inappropriate use of non-official social media may directly or indirectly result in damage to the reputation of Transport or colleagues. Accordingly, staff must comply with this Policy to ensure that risk of such damage is minimised.

Staff are personally responsible for the content they publish in a personal capacity on any social media platform. When in doubt, staff should seek guidance from their manager on how to comply with their obligations under this and other relevant policies.

2.2.1 Directly or indirectly identifying staff and / or comments with Transport or associated organisations

Staff must:

- follow the Terms of Use of the relevant social media platform and abide by [the Code of Conduct](#);
- be polite and respectful to all people with whom they interact;
- only disclose and discuss publicly available information. For clarification about what information is available in the public domain, refer to the following websites:
 - transport.nsw.gov.au
 - sydneytrains.info
 - nswtrainlink.info
 - rms.nsw.gov.au
 - statetransit.info
- only publish content that is accurate; and / or
- if offering a personal perspective on a matter, be clear that their views and their own and be mindful that their commentary and opinion does not cause damage to the reputation of Transport or associated organisations. Staff should recognise that their comments made on social media that are disparaging or critical of the workplace are a matter of public record and are very likely to cause damage to the reputation of the organisation.

Staff must not:

- use their work email address;

- use a Transport agency or NSW Government logo or insignia;
- impersonate another staff member;
- publish content likely to bring Transport into disrepute;
- make disparaging comments about work colleagues;
- post material that is, or might be construed as offensive, obscene, defamatory, hateful, racist, sexist, infringes copyright, constitutes a contempt of court or is otherwise unlawful;
- imply that they are authorised to speak as a representative of a Transport agency or the NSW Government, or give the impression that the views they express are those of Transport or the Government; and / or
- post material that is, or might be construed as, threatening, harassing, bullying or discriminatory towards other staff of Transport.

Transport recommends that staff do not post any work related phone numbers on social media. Publishing a work phone number (even a ported personal mobile number) may identify the staff member as part of Transport.

This section also applies to:

- social media activities undertaken by staff members anonymously;
- staff members who contribute articles to social media as subject matter experts or members of a professional network (e.g. project management or engineering technology) are also subject to the [External Papers, Reports and Presentations Process](#) . In addition, staff must:
 - state that the views expressed are their own and not those of Transport or the NSW Government; and / or
 - not use social media to make any transport related announcements reveal any confidential information or claim credit for work that is not theirs.

2.2.2 Reasonable and unreasonable use of Transport resources

When accessing social media using a Transport agency resource, staff must follow the agency's relevant technology usage policies.

Reasonable use includes but is not limited to:

- re-tweeting content from Transport account/s on the staff member's personal Twitter account;

Unreasonable use includes but is not limited to:

- excessive use of social media during work hours and/or not related to work (where the agency's relevant technology usage policies allows such access);
- posting or viewing material which could reasonably be considered to be inappropriate.

2.2.3 Bullying, Harassment and Discrimination

All staff members are expected to treat their colleagues with respect and dignity and must ensure that their online behaviour does not constitute behaviours of bullying, harassment and / or discrimination. This may include comments staff make online, even on their own private social

media platforms and out of office hours towards other staff. Such grounds may include, but are not limited to:

- sex;
- gender;
- marital status;
- carer's responsibilities;
- ethnicity;
- religion;
- disability or illness;
- age;
- sexual preference (presumed or actual);
- transgender status – actual and presumed;
- political opinion/affiliation;
- Union involvement/non involvement;
- criminal record.

The [Transport Prevention and Management of Bullying and Harassment Policy](#) applies to online social media activity, and in the physical workplace.

Abusive, harassing, threatening or defamatory comments towards other staff may be considered a breach of the [Transport Prevention and Management of Bullying and Harassment Policy](#), and / or [Code of Conduct](#), and may result in disciplinary action up to and including termination.

3 Accountabilities

Staff are personally responsible for the content they publish in a personal capacity on any social media platform. When in doubt, staff should seek guidance from their manager on how to comply with their obligations under this Policy.

When using social media in a personal capacity staff should:

- be polite and respectful;
- uphold organisational values;
- use common sense and professionalism;
- know and follow the relevant agency policies including the [Code of Conduct](#), [technology usage policies](#).

Any use of agency resources to access social media must comply with the respective agencies policies.

Social media is not the forum to report/post suspected wrongdoing e.g. corrupt conduct, maladministration, serious and substantial waste and government information contravention.

Staff should report any suspected wrongdoing within Transport in accordance with their respective agency's Public Interest Disclosures Policy.

Each Transport Agency is accountable for the implementation and monitoring of this Policy within it, for example ensuring systems are in place to:

- distribute this Policy to all persons in the agency impacted by it;
- ensure that any individuals or organisations that must observe this Policy as a result of a contract or other agreement with the agency are advised; and
- monitor implementation.

4 Breaches of This Policy

The Transport [Code of Conduct](#) provides staff with a framework for decisions, actions and appropriate behaviour. It explains the professional standards of conduct and ethical principles staff members are expected to adopt in the employment of their duties while employed by the agency. These professional standards and ethical principles apply to all online activity undertaken by staff.

Transport recognises that staff use social media in their personal lives. This policy does not intend to discourage nor unduly limit a staff member's online activities. The [Code of Conduct](#) allows staff members to act in a private capacity to influence public opinion or promote issues of public interest. However, staff members should ensure that their conduct is consistent with the responsibilities described above.

Transport may commence applicable disciplinary action if a person to whom this Policy applies breaches this Policy (or any of its related procedures) up to and including termination of employment.

5 Document History

Date & Policy No	Approved by	Amendment Notes
18 November 2013 V1.0	Director General – Transport for NSW	Approved
30 June 2014 CP13003.1	Executive Director, People and Corporate Services – Transport for NSW	Amended Human Resources and Business Services to People and Corporate Services. Amended Director General to Secretary.

Date & Policy No	Approved by	Amendment Notes
3 July 2017 CP13003.2	Deputy Secretary, People and Corporate Services	Amended to reflect title changes within People and Corporate Services Amended to reflect GSELA Amended the Transport Cluster to Transport Deleted references to individual Agency Code of Conduct . Now Transport Code of Conduct

Attachments

The table below lists the Transport agencies documentation that supports or, is referred to in this document.

Title	Agency
ICT Service Access and Usage Policy	Sydney Trains
ICT Service Access and Usage Policy	NSW Trains
Information Security Policy	Sydney Trains
Information Security Policy	NSW Trains
Dignity and Respect in the Workplace Policy	Sydney Trains
Dignity and Respect in the Workplace Policy	NSW Trains
Access and Appropriate Use of RMS ICT Systems and/or ICT Infrastructure	RMS
Discrimination, Harassment and Bullying Prevention Procedure	RMS
Information Security: Staff Accessing and Using Information Systems	STA
Information Security Policy (to be developed)	TfNSW
Acceptable Use of Technology Standard	TfNSW
Internet Policy	TfNSW
Transport Code of Conduct	Transport
Transport Prevention and Management of Bullying and Harassment Policy	Transport

October 2017

Infrastructure Project Signage **Style Guide**



Transport
for NSW

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Introduction

Signage installed around major project sites allows Transport for NSW and its cluster agencies (Transport) to communicate the nature of projects they undertake and their benefits to customers. Project signage may be updated as the project progresses.

This Infrastructure Project Signage Style Guide illustrates the structure and design style of a range of signage over a project's lifespan. It aims to:

- create better alignment of signage across Transport through a standard approach
- create a consistent set of visual elements
- improve the quality of Transport's customer-focused communication.

This style guide supports and works in conjunction with two important documents:

- the [Transport for NSW Infrastructure Project Signage Policy](#), (CP14048) which outlines TfNSW's commitment to effective customer-focused communication
- the [Transport for NSW Infrastructure Project Signage Framework](#), (CPSD14053) which outlines the benefits and principles for using project signage as a channel for customer communication.



Project phases

A project can be divided into five distinct phases. Project signage can be adjusted during each phase to communicate different aspects of the project as it progresses.

	Phase 1 Announcement	Phase 2 Project initiation	Phase 3 Early construction	Phase 4 Major construction	Phase 5 Project delivery
High-level project activities	Announcement of project Announcement of funding Development of customer benefits	Detailed planning Environmental Impact Statements Establishment of delivery authority Community engagement and consultation Review of Environmental Factors Planning approval	Land acquisition Site testing	Construction of infrastructure	Project complete. Infrastructure joins existing network.
Role of signage and messaging	Signage not recommended	Educate public of project Gather community feedback Position project Provide contact for more information	Share project benefits with customer Provide contact for more information "How does this impact me?"	Build excitement Inform community of practical changes Maintain project positioning/benefits Provide contact for more information Optional additional messaging (e.g. traffic management)	Highlight benefits for people of NSW Indicate relationship to broader program and/or other projects
Type and/or placement of signs	Signage not recommended	Project introduction sign at beginning and end of proposed project site route Leverage existing infrastructure	Project introduction sign at beginning and end of proposed project site route Hoardings and fence shade cloth Temporary site boundaries Leverage existing infrastructure Repurpose acquired infrastructure Other opportunities	Project introduction sign at beginning and end of proposed project site route Hoardings and fence shade cloth Leverage existing infrastructure Repurpose acquired infrastructure Other opportunities	Roadside signage at beginning and end of proposed project site route Leverage existing infrastructure

What do you need to communicate?

Messages need to be aligned to the five project phases:

1. Announcement
2. Project initiation
3. Early construction
4. Major construction
5. Project delivery

Consider why you are communicating with the customer:

- Introducing the project to the community
- Introducing a phase of a project
- Communicating the benefits of a project

The amount of information will depend on the **project signage category**.

Project signage categories

The amount of information that can be included on project signage depends on a number of factors, including the nature of the project and the opportunity the customer will have to view the information. Three categories have been identified. In all cases, the message should be localised.

	Category 1 Fast-paced traffic flow	Category 2 Medium-paced traffic flow	Category 3 Slow-paced traffic flow
What is nature of the project?	Roadside project signage	Roadside project signage	Pedestrian project signage (e.g. public transport project)
Who is the customer?	Customers are moving through a project zone at high speed (80 km/h or more) or Customer movements are infrequent	Customers are moving through a project zone at medium speed (80 km/h or less) or Customer movements are frequent	Customers are walking through a project zone Customer movements can be frequent or infrequent
What are the signage principles?	Minimal text for fast-moving traffic High usage of visual assets Simple call to action Minimal text may be increased slightly for medium-paced traffic High usage of visual assets Simple call to action	Minimal text may be increased slightly for medium-paced traffic High usage of visual assets Simple call to action	Increased use of text for pedestrian traffic High usage of visual assets Simple call to action
Where should you be communicating to the customers and what channels should you use?	Signage placements include: Roadside fixed signage (along the project route) Site boundaries (hoarding and site fence shadecloth) Existing infrastructure (bridge banners) Temporary site boundaries (site testing) Repurposing of acquired infrastructure (roadside totem structures, high-profile buildings)		Historically, signage placements include: Pedestrian traffic areas (posters and hoardings or barricades) Posters on existing Transport infrastructure Site boundaries (hoarding and site fence shadecloth) Temporary site boundaries
Future exploration of signage placement will be dependent on site locations and available assets.			

Federal or joint funding signage

For projects fully funded by **NSW Government**, only use the project signage as outlined in this style guide. The project introduction sign refers to the State funding source.

Projects that have any level of funding from the Australian Government have additional signage requirements.

For projects jointly funded by Australian Government and NSW Government

Signage for projects that are jointly funded by the Australian Government and the NSW Government should follow the rules in the **Building Our Future Signage Guidelines**. Use the Australian Government crest and the 'Building our Future' logo. Do not add any additional project information.



Which signage should customers see first?

As customers approach a project site, the Building Our Future sign should be the first sign they see. They should then see a project introduction sign as described in this guide.



For projects fully funded by Australian Government

Signage for projects that are funded by the Australian Government only should follow the rules in the **Building Our Future Signage Guidelines**. Use the Australian Government crest and the 'Building our Future' logo. Do not add any additional project information, and do not use the sign types described in this style guide.



Your project signage plan

By developing a project signage plan or map before designing your signage you will have a greater understanding of your project's overall requirements. This will help you develop the messages that project signs will carry during each phase.

The examples of a road project and transport project below demonstrate how the locations and types of project signs evolve with the phases as the project progresses.

Project sign types

- A** Project introduction
- B** Supplementary
- C** Site boundary
- D** Bridge banners
- E** Repurposing existing infrastructure

Road project

Phase 2



Phases 3 and 4



Phase 5

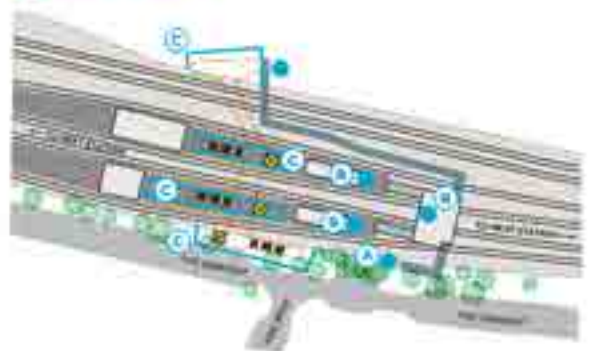


Transport project

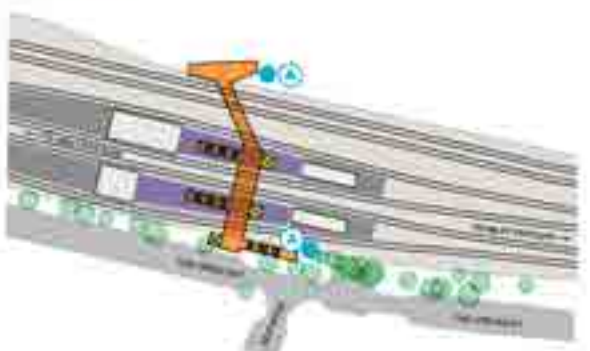
Phase 2



Phases 3 and 4



Phase 5





Project introduction signage

Project introduction signage is mandatory, and will always be the first signage erected (in phase 2). It can also carry the completion message when the project is finished. It must include key information about the project.

It usually comprises large roadside signs on the main approach, or coreflute signs mounted near the main pedestrian access to a project area.

As the project progresses to the next phase, complete panels can be replaced, or sections can be mounted over the top.



General rules

- Project introduction signs are usually rectangular and have modular panels.
- Dimensions are based on the best solution for each specific execution. Consider location, available space and the speed of passing traffic (category 1, 2 or 3).
- The height of each sign may vary depending on the amount of project information and text.
- All content/text must be vertically centred within the sign area. Some scaling of text may be required.
- Materials will vary depending on the final production method.

Project introduction – option 1



Example



Colours

- White**
CMYK 0, 0, 0, 0
- Navy**
PMS 281 or CMYK 100, 85, 5, 20
- Grey**
PMS Cool Gray 6 or CMYK 0, 0, 0, 40

Content

The overall structure of information should follow the same order for each sign:

- 1 Funding source**
Logos of respective funding sources, ordered by level of government, with higher level at left. Logos to be roughly equal sizing, evenly spaced in the available area. See funding source options illustrated above.
Colour logos on white background.

- 2 Project title**
Name of overarching program, where relevant. Program name should appear in a slightly smaller size to the project name where relevant.
Gotham Book, white on navy background.
Name of individual project.
Gotham Bold, white on navy background.

- 3 Project information**
Area will house various messages throughout the phases. Keep messages as clear and concise as possible. Allow space for future messages.
Additional grey divider lines may be used to separate different types of information. For example, separating infrastructure details from project management and contractor information.
During phase 4, this area will house the information around project manager and construction partner, as well as recommended details such as project cost, completion dates, etc.
Gotham Book, white on navy background for the messages, with Gotham Bold for key words and phrases to highlight.

- 4 More information**
List the primary contact channel for customers to find out more information. For example, phone number or website URL.
Gotham Book, navy on white background for the leader sentence. Gotham Bold for the URL or phone number.

Spacing and background

Spacing and sign shape should be consistent for each project.

- 1** Each module must allow clear space above and below the content for optimal readability.
- 2** Grey divider lines must be thick enough to provide clear separation of the panels, without taking up too much real estate. All divider lines are to be of equal size within the one sign.
- 3** When adding a grey divider line for a specific message, use the same style of line as between other modules.

Project introduction – option 2



Example



Colours

- White**
CMYK 0, 0, 0, 0
- Navy**
PMS 281 or CMYK 100, 85, 5, 20
- Grey**
PMS Cool Gray 6 or
CMYK 0, 0, 0, 40

Content

The overall structure of information should follow the same order for each sign:

- Funding source**
Logos of respective funding sources, ordered by level of government, with higher level at left. Logos to be roughly equal sizing, evenly spaced in the available area. See funding source options illustrated above.
Colour logos on white background.

- Project title**
Name of overarching program, where relevant. Program name should appear in a slightly smaller size to the project name where relevant.
Gotham Book, white on navy background.
Name of individual project.
Gotham Bold, white on navy background.

- More information**
List the primary contact channel for customers to find out more information. For example, phone number or website URL.
Gotham Book, navy on white background for the leader sentence. Gotham Bold for the URL or phone number.

Spacing and background

Spacing and sign shape should be consistent for each project.

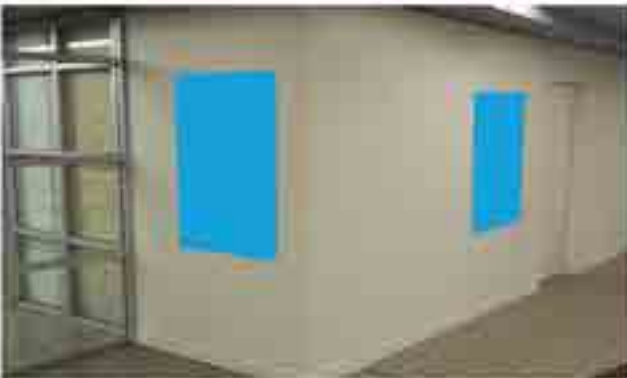
- Each module must allow clear space above and below the content for optimal readability.
- Grey divider lines must be thick enough to provide clear separation of the panels, without taking up too much real estate. All divider lines are to be of equal size within the one sign.
- When adding a grey divider line for a specific message, use the same style of line as between other modules.



Supplementary signage

Supplementary project signs can be used for additional messaging on a project site. They can also be used for secondary or side approaches to the project site, on the roadside or in high-traffic pedestrian areas.

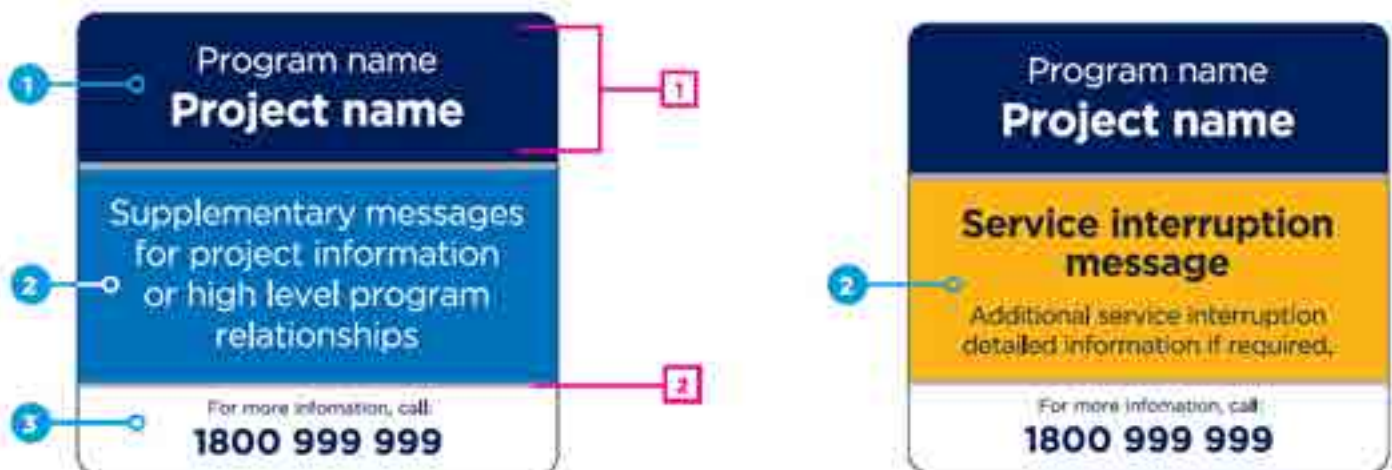
These signs can present non-critical information such as directions, additional benefits, infographics, maps, or interruptions to customer services.



General rules

- Supplementary signs are usually rectangular and have a modular panels.
- Dimensions are based on the best solution for each specific execution. Consider location, available space and the speed of passing traffic (category 1, 2 or 3).
- The height of each sign may vary depending on the amount of project information and text.
- All content/text must be vertically centred within the sign area. Some scaling of text may be required.
- Materials will vary depending on the final production method.

Supplementary



Colours

-  **White**
CMYK 0, 0, 0, 0
-  **Navy**
PMS 281 or CMYK 100, 85, 5, 20
-  **Grey**
PMS Cool Gray 6 or
CMYK 0, 0, 0, 40
-  **Signage Mid Blue**
PMS 2935 or CMYK 100, 50, 0, 0
-  **Yellow**
PMS 130 or CMYK 0, 32, 100, 0
-  **Black**
CMYK 0, 0, 0, 100

Content

The overall structure of information should follow the same order for each sign:

- 1 Project title**
Name of overarching program, where relevant. Program name should appear in a slightly smaller size to the project name where relevant.
Gotham Book, white on navy background.
Name of individual project.
Gotham Bold, white on navy background.

- 2 Supplementary message**
Supplementary message can be a sentence or phrase, or include a simple graphic - map. The height of module may vary, depending on the message.

White text on mid blue background.

If the message is about an interruption to a customer service, it must be in black text on a yellow background. See above right for details.

All text to be in Gotham Book, Gotham Bold, or a combination.

- 3 More information**
This panel may be as shown, or may show Agency and Phone number eg.
Roads and Maritime Services
1800 999 999.
Gotham Book, project brand colour on white background for leader sentence. Gotham Bold for URL or phone number.

Spacing and background

Spacing and sign shape should be consistent for each project.

- 1** Each module must allow clear space above and below the content for optimal readability.
- 2** Grey divider lines must be thick enough to provide clear separation of the panels, without taking up too much real estate. All divider lines are to be of equal size within the one sign.

Service Interruption

When services for customers will be partly or temporarily interrupted, supplementary project signs erected must take a specific format, in black text on a yellow background.

Service interruptions may include closures of commuter car parks, lifts or toilet facilities, closure of secondary service or access roads for the progress of a road project, and warnings of roadside workers and equipment.

Examples





Site boundary signage

Site boundary signs are solid panel hoarding or shadecloth-style fencing around a project site. These large format and highly visible assets are excellent opportunities to further promote the benefits and details of a project.



Consider the ways customers will engage with these signs:

Category 1: fast-paced traffic flow - roadside project signage

On highways and motorways where customers move through a project zone at high speed (80km/h or more) and may see the sign only once. The design should have large graphics and text, and spaced out accordingly.

Category 2: medium-paced traffic flow - roadside project signage

Suburban roadside locations where customers move through a project zone at a medium speed (less than 80km/h), or are likely to frequently move through a relatively fast-paced project zone frequently. These customers have more opportunity to read sign contents.

Category 3: slow-paced traffic flow - pedestrian project signage

Where customers move through a project zone on foot or at a very slow speed (less than 15km/h).

Temporary site boundaries

Temporary site boundaries, containing geotech (drilling) or site investigation teams and equipment may be set up for a couple of hours, or a couple of weeks. This provides more messaging opportunities.

The format and design of temporary site boundary signs can vary depending on the construction partner. For example, they could be A-frame sandwich boards, or temporary fence panels surrounding the site area. Engage with the construction partner to develop the style of sign.



General rules

- Site boundary signage is to be affixed to solid panel-style hoardings, or shadecloth-type material over a chain link fence.
- Temporary site signage for project tasks such as geotech and site testing must also follow these rules.
- Site boundary sign designs use a navy background to discourage graffiti. All content must be reversed out of the navy background.
- Consider the respective audience category (fast-paced, medium-paced or slow-paced) for each site boundary sign application. Vary the size and spacing of graphic elements accordingly.
- Remember that the final design will be repeated along the fence or boundary. Allow plenty of spacing between repeated site boundary signs.

Site boundary



Audience categories

Category 1: fast-paced traffic = roadside project signage



Category 2: medium-paced traffic = roadside project signage



Category 3: slow-paced traffic = pedestrian project signage



Note: Size and spacing of elements should vary according to audience categories.

Colours

White
CMYK 0, 0, 0, 0

Navy
PMS 281 or CMYK 100, 85, 5, 20

Content

The overall structure of information should follow the same order for each sign.

- Funding source**
Logos of funding source/s, to be ordered with the higher level of government to the left. Logos to be weighted equally, evenly spaced in the available area. See funding source options illustrated above.
White logos on navy background.

- Project title**
Name of overarching program, where relevant. Program name should appear in a slightly smaller size to the project name where relevant.
Gotham Book, white on navy background.

Name of individual project.
Gotham Bolt, white on navy background.

- Benefit message**
Use a short phrase to promote a customer benefit or describe a positive project detail.
Multiple messages can be included on one sign, but multiple messages should be distributed among other elements.
Infographics can also be used.
Gotham Bolt, white on navy background.

- More information**
List the primary contact channel for customers to find out more information. For example, phone number or website URL.
If this is a category 3 (slow-paced traffic) sign, you can also include additional project details in this area. Possible inclusions are project manager, construction partner, etc.
Gotham Book, white on navy background.

Spacing and background

Spacing and sign shape should be consistent for each project:

- Ensure adequate space between messages
- Information is to generally be vertically centred. Audience category, final location and landscape (grass, rubble, etc.) is also to be taken into consideration.
- Vertical white divider lines may be used to help separate the module-based messages if it improves the readability of the overall sign.

Example





Bridge banners

Bridge banners are vinyl signs that can be mounted on bridges and overpasses in high-traffic areas.

Roads and Maritime Services (RMS) manages a range of sites in the Sydney metropolitan and outer metropolitan areas, which are mainly used for road safety or community messages. They can also be used to communicate project benefits and related messages.

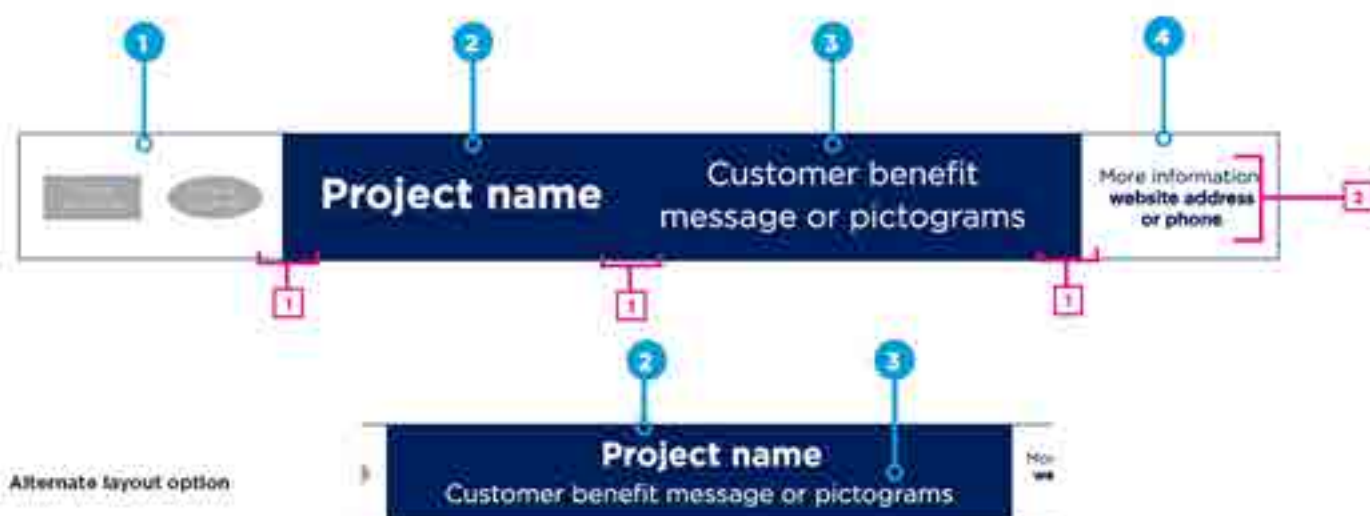
As bridge banners may not be viewed as customers pass through a project zone, and not all customers who see them will be affected by the project, consider a broader, more general, project benefit message.



General rules

- Bridge banners are 1 metre high and either 9 or 10 metres wide depending on the site.
- All content/text must be vertically centred. Some scaling of text may be required.
- For details of scheduling options and locations for bridge banner placements contact RMS.
- Bridge banner designs may also be applied to road safety banner placements in regional areas. Contact the appropriate RMS Regional Road User Safety Manager for more information.

Bridge banners



Colours

- White**
CMYK 0, 0, 0, 0
- Navy**
PMS 281 or CMYK 100, 85, 5, 20

Content

The overall structure of information should follow the same order for each sign.

- 1 Funding source**
Logos of funding source/s, to be ordered with the higher level of government to the left. Logos to be weighted equally, evenly spaced in the available area.
Colour logos on white background.
- 2 Project name**
Due to the restricted space, it is recommended to show only the project name. The program name may be written into the benefit message if required.
Gotham Bold, white on navy background.
- 3 Benefit message**
Use a short phrase and/or infographic to promote a customer benefit or describe a positive project detail.
Gotham Book, white on navy background.
- 4 More information**
List the primary contact channel for customers to find out more information. For example, phone number or website URL.
Gotham Book, navy on white background.

Modules and spacing

Spacing and sign shape should be consistent for each project.

- 1** Ensure adequate space between messages.
- 2** Vertically centre the information in each of the content sections.

Bridge banners – safety messaging

Bridge banners may also be used for safety messages around significant investment or high-profile project zones where project sites and road workers are close to moving traffic.

Project details may be combined with messaging encouraging driver patience.

To discuss the option of leveraging a Bridge Banner safety message and have the artwork created, contact the TfNSW Campaigns team at campaigns@transport.nsw.gov.au

Example





Repurposing existing infrastructure

When there is an opportunity to use an item of existing infrastructure, the design of the project messaging can be custom designed.

Try to provide as much project information as possible and make it easy for customers to read and understand.

All messaging is to be designed along the relevant brand guidelines.

The retail shopping complex totem sign on the right was acquired as part of the North West Rail Link project. Previous retail logos were removed, and replaced with project messages. New messages have been designed to fit into the existing panels. Panels are updated with fresh messages and images as the project progresses.

Another example could be a highly visible building acquired for a project. Messages may be installed or painted on the wall/s of the building. If the building is being demolished as part of the project, the message may promote the infrastructure that will be built in its place.

Design and production methods will vary.

Example



Other opportunities

Project signage is not just restricted to rectangular panels. Project Communication Managers should investigate all opportunities to extend the reach of additional project information and benefit messages.

These can include:

- variable Message Boards located on key roadways throughout NSW
- certain project information on the Live Traffic website and real-time road apps
- flags or banners permitted by construction partners to be applied to cranes or other equipment.

As with repurposing of acquired infrastructure, other additional signage opportunities need to be designed to the specific application. Where relevant, keep to the respective brand elements for the signage design.

Example



To investigate the option of integrating project messaging into Variable Message Boards, contact the Transport Management Centre at TMCVMSMessage@rms.nsw.gov.au

Referencing Live Traffic

When project-related disruption, delay or detour information is delivered through the Live Traffic website and app, a separate panel can be bolted on to an existing roadside sign. The design style follows the Live Traffic style - black text on a white background. This neutral colour scheme indicates that Live Traffic is separate to the Transport project itself.

Example

Further resources and contacts

Infrastructure Project Signage Policy and Infrastructure Project Signage Framework

These two documents work in conjunction with this style guide, comprehensively detailing the purpose, benefits and key principles of the Infrastructure Project Signage Framework.

[Infrastructure Project Signage Policy](#)

[Infrastructure Project Signage Framework](#)

Building Our Future Signage Guidelines

This document provides guidance for creating additional signage when the project has federal funding.

Building Our Future Signage Guidelines

Signage plan and messaging review

As project communication managers develop signage and messaging plans for a project, the TfNSW Brand team are available to provide guidance, advice and feedback on the application of the Infrastructure Project Signage Framework.

TfNSW Brand Team

brand@transport.nsw.gov.au

Roadside signage production and installation

The Installation and Maintenance of Signs Guidelines sets out procedures for the installation and maintenance of roadside signs and their supporting structures.

Traffic Management Branch, RMS

technical.directions.publication@rms.nsw.gov.au

Construction Environmental Management Plan Template

Transport for NSW



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About this release

Title	Construction Environmental Management Plan template
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Version	Date	Revision description
1	19 January 2018	Issue for review
2	6 February 2018	Issue for tender

Using this document

Introduction

This document has been developed to standardise and ensure quality of Transport for NSW Construction Environmental Management Plans (CEMP) for infrastructure construction activities.

The template allows for flexibility and tailoring of the CEMP to suit individual contractor's internal system requirements. Note that:

- This CEMP is to be consistent with the requirements of the Department of Planning and Environments *Post-approval requirements for State significant projects: Management Plan Guidelines* (Draft March 2017)
- Where issues are encountered, that may not be adequately covered by the template, additional chapters and sections may be added. In these situations you should first consult with Transport for NSW environmental staff
- Text and titles that can be altered to suit each project are highlighted grey
- Guidance is provided in orange boxes titled 'Guidance Text' as well as in [box brackets and highlighted grey]. Example text is provided in blue boxes titled 'Example Text'. All guidance and example text must be deleted from the document prior to submitting the first draft.
- This CEMP must be submitted as a Microsoft Word document with track changes for revision by Transport for NSW.
- CEMP updates by the contractor must be undertaken in a manner that will assist Transport for NSW in reviewing the amended content, including amendments in track changes, coloured text, or responses to comments tabled.
- This CEMP must:
 - Be reviewed and endorsed by Transport for NSW
 - Be submitted to DP&E by Transport for NSW
 - Include legible and relevant maps
 - Include a Conditions Compliance Table which identifies the Conditions of Approval relevant to the preparation and implementation of the CEMP and details how each condition and dependency has been met, including each separate document reference that fulfils the specific requirement, and
 - Include evidence of consultation with all relevant stakeholders including copies of correspondence.

All updates to the CEMP are to be communicated to and approved by Transport for NSW prior to finalisation and/or update of document.

This section and all preceding pages are to be deleted from the document.

Construction Environmental Management Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

Guidance Text:

Where appropriate replace this page with a project specific title page.

Document control

Approval

Guidance Text:

In approving this CEMP, the Project Manager is confirming this document has been prepared in accordance with DP&E Management Plan Guidelines and in consultation with relevant stakeholders, as outlined by Conditions of Approval.

Title	Parramatta Light Rail – Stage 1 Construction Environmental Management Plan
Prepared by	[Insert name of person who prepared document]
Signed	
Dated	
Approved on behalf of [Insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	
Endorsed by Environmental Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW by	[Insert name and title of Transport for NSW Environment Representative]
Signed	
Dated	

Version control

Guidance Text

The below document status table is for tracking the revisions of the CEMP, while the Project is in construction and if necessary during operation. The version control table is to be used to track CEMP revisions, including those incorporating changes following agency comments.

It may be modified where necessary to fit with requirements of the individual project.

Revision	Date	Description	Approval

Distribution of controlled copies

Guidance Text

Copies of this CEMP are to be distributed in accordance with the relevant project Conditions of Approval. Information from the conditions in relation to the distribution of controlled copies is to be reproduced below.

Example Text

This CEMP is available to all personnel and Subcontractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

List of emergency and key contacts

[Table to be updated with any relevant additional details]

Position	Name	Phone
EPA pollution hotline		131 555
Fire and Rescue NSW		000 (for pollution incidents that present an immediate threat to human health or property) 1300 729 579 (for pollution incidents that do not present an immediate threat to human health or property)
The Ministry of Health		[Insert detail of the local Public Health Unit]
SafeWork NSW		131 050
City of Parramatta Council	[insert detail]	[insert detail]
24 hour community information line		1800 [insert detail]
Construction Environmental Manager	[insert detail]	[insert detail]
Project Manager	[insert detail]	[insert detail]
Superintendent	[insert detail]	[insert detail]
Environmental Representative	[insert detail]	[insert detail]
Transport for NSW Representative	[insert detail]	[insert detail]
Transport for NSW Environment Manager	[insert detail]	[insert detail]
[insert detail]	[insert detail]	[insert detail]

Guidance Text:

Table of contents to be updated following completion of CEMP.

Note: When updating or altering headings within the document, ensure they relate to the appropriate word Style.

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Guidance text:

List of tables to be populated/updated following completion of CEMP.

Note: When updating or altering table headings within the document, ensure they relate to the appropriate word style.

Appendices

Guidance text:

Include the list of appendices required to support the CEMP. Below is the list of standard appendices. Where an Appendix is not required update formatting to 'strikethrough' the text and state 'Not used' after it.

- Appendix A1 Legal requirements and compliance tracking
- Appendix A2 Environmental risk register
- Appendix A3 Environmental policy
- Appendix A4 Ancillary facilities assessment
- Appendix A5 Document register
- Appendix A6 Environmental control maps
- Appendix A7 Environmental incident and emergency response plan

- Appendix B1 Construction Traffic Management Sub Plan
- Appendix B2 Construction Flora and Fauna Management Sub Plan
- Appendix B3 Construction Noise and Vibration Management Sub Plan
- Appendix B4 Construction Soil and Water Quality Management Sub Plan
- Appendix B5 Construction Aboriginal Heritage Management Sub Plan
- Appendix B6 Construction Heritage Management Sub Plan (non-Indigenous)
- Appendix B7 Construction Air Quality Management Sub Plan
- Appendix B8 Construction Waste and Resource Management Sub Plan
- Appendix B9 Construction Contaminated Land Management Sub Plan

Glossary/Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviation	Expanded text
ASS	Acid Sulfate Soils
CEMP	Construction Environmental Management Plan
CEMS	Contractor's Environmental Management System
Compliance audit	Verification of how implementation is proceeding with respect to a Construction Environmental Management Plan (CEMP) (which incorporates the relevant approval conditions)
CoA	Conditions of Approval
Minister, the	Minister of the NSW Department of Planning and Environment (or delegate)
DP&E	Department of Planning and Environment
ECM	Environmental Control Maps
EIS	Environmental Impact Statement
EEC	Endangered Ecological Community
Ecologically sustainable development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992)
EPA	NSW Environment Protection Authority
EPBC-CoA	Federal Conditions of Approval under the EPBC Act
ERG	Environmental Reference Group – generally comprising representatives of Transport for NSW, the Environmental Representative, Project delivery team, regulatory authorities, key stakeholders from interfacing projects (e.g. UrbanGrowth and NSW Health) and council (City of Parramatta Council). The ERG will be maintained for the duration of the Project and will meet regularly and undertake environmental inspections. The role the ERG is to work collaboratively to manage the cumulative impacts of the Project and other interfacing projects.
EMMM	Environmental Mitigation and Management Measure as outlined in the Project EIS documentation.
EMS	Environmental Management System
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment

Abbreviation	Expanded text
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve
Environmental policy	Statement by an organisation of its intention and principles for environmental performance
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives
Environmental Representative	A suitably qualified and experienced person independent of the Contractor and Proponent, and project design and construction personnel, employed for the duration of construction. The Environmental Representative sits under the Independent Certifier.
EMMM	Environmental Management and Mitigation Measure
EP&A Act	<i>Environmental Planning and Assessment Act 1979 (NSW)</i>
EPL	Environment Protection Licence
ESCP	Erosion and Sediment Control Plan
Hold point	Is a verification point that prevents work from commencing prior to approval from Transport for NSW
Minister, the	Minister for Planning and Environment
CoA	NSW Minister for Planning Conditions of Approval
Non-compliance	Failure to comply with the requirements of the Project approval or any applicable licence, permit or legal requirements
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation
OEH	Office of Environment and Heritage
PESCP	Progressive Erosion and Sediment Control Plan
PIRMP	Pollution Incident Response Management Plan
Planning Approval	The Planning Approval includes the Conditions of Approval, the EIS and the Submissions and Preferred Infrastructure Report
Principal, the	Transport for NSW
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
Project, the	Parramatta Light Rail – Stage 1 (Westmead to Carlingford)
ROL	Road occupancy licence
SEARs	Secretary's Environmental Assessment Requirements
SPIR	Submission and Preferred Infrastructure Report

1 Introduction

1.1 Background

Guidance Text

Provide a brief plain English background describing the need for this Project such as whether it's part of a larger package of works, the EIS approval process and what stage of the works this CEMP addresses

1.2 Purpose of this CEMP

This Construction Environmental Management Plan (CEMP) and sub plans have been prepared to outline and describe how [Insert name of Contractor], will comply with the environmental requirements, including the NSW Minister for Planning's Conditions of Approval (CoA) during the construction of Parramatta Light Rail – Stage 1 (Westmead to Carlingford) (the Project). Additionally it outlines how [Insert name of contractor] will minimise the environmental risks, and achieve environmental outcomes on the Project by providing a structured approach to ensure appropriate [revised] EMMM and controls are implemented.

A detailed description of the Project is provided [insert EIS project description reference].

Implementing the CEMP and sub plans effectively will ensure that the Project meets the requirements of the CoA, Environment Protection Licence [Include number of project EPL] (EPL) and [revised] EMMM ([see Appendix X and Compliance Tracking Program]). [Insert any other requirements such as are met.

The CEMP has been prepared in accordance with:

- The relevant legislative requirements
- The Deed
- The Planning Approval (including the CoA)
- [insert any other Authority Approvals]
- AS/NZS ISO 14001.

This CEMP will:

- [Provide a summary of the objectives of the CEMP]

The requirements of the Deed, the Planning Approval and AS/NZS SO 14001 are listed in Appendix A1, with a cross reference to where they are met in this CEMP. The agency consultation requirements for each sub plan are outlined in Appendix A5.

This CEMP is the overarching document in the environmental management system for the Project that includes a number of management documents. It is applicable to all staff and Subcontractors associated with the construction of the Project.

1.3 Project description

Guidance Text:

Provide a brief overview of the Project to provide context and reference appropriate sections of the EIS which outline project description, as referred to in the tender baseline Conditions of Approval.

This section must:

- Include a copy of the site plan
- Details of the proposed timing and scheduling of activities to be carried out pursuant to the approval.

1.4 Scope of the CEMP

Guidance Text:

In accordance with tender baseline Conditions of Approval, outline clearly which components of the Project this CEMP covers (for example staged projects).

This CEMP is required to be updated as necessary to ensure all components of the Project are covered.

1.5 Environmental Management System overview

Guidance Text:

Outline the Contractors corporate and project environmental management system, detail the EMS continuous improvement process and how this applies to the CEMP, and whether the corporate EMS is certified to ISO 14001.

This section must explain how this CEMP:

- Fits into the EMS
- Relates to or deals with other requirements of the CoA
- How this CEMP interacts with other plans such as a Construction Plan and Staging Plan, where relevant.

A figure may be used to provide this information.

This section is recommended to reference Appendix A5, Document Register.

2 Endorsement and approval

Guidance text:

Include in this section a summary of the process for internal approval of this CEMP and sub plans, and any external endorsement and approval processes required by the CoA. This is to include the CEMP is of appropriate standard for submission to relevant authorities, any approvals by the Project and/or Transport for NSW environmental managers, the Environmental Representative and the Minister, where relevant. The timing of submissions required by the approval are to be outlined.

Additionally, this section is to provide a summary of consultation with authorities and other stakeholders, undertaken during preparation of the CEMP and sub plans and any ongoing consultation requirements. This may have included the provision of draft documentation for review and comment.

Where appropriate, reference the EIS and other sections of this CEMP to describe consultation that occurred during the project development and assessment stage and that consultation will continue during delivery.

Management review and revisions of this document are to be outlined in Sections 3.11 and 3.12 of this document.

Appendix A5 is to be updated to outline agency consultation and approval requirements and referenced in this section.

3 Environmental Management Plan

3.1 Preparation and availability of the CEMP

Guidance text:

The CEMP must be submitted to Transport for NSW for approval prior to commencement of works. Outline in this section the public availability requirements including when and how the CEMP will be made available or reference alternative appropriate location within the CEMP.

The CEMP for this Project has been prepared in accordance with requirements of the Post-approval requirements for State significant projects: Management Plan Guidelines (Draft March 2017) and the [insert name of contractor's environmental policy]. It incorporates all requirements of the EIS documentation and all relevant licences, permits and approvals for the Project.

The environmental policy is displayed on the [Insert project name] Project website and at the site office, and communicated to staff and other interested parties via inductions and ongoing awareness programs.

Guidance text:

A Contractors' signed corporate environmental policy or project specific environmental policy must be incorporated either in the body of the CEMP or attached as an appendix. The policy must be developed in accordance with requirements outlined in Section 5.2 of ISO 14001.

3.2 Planning

3.2.1 Environmental Risk Assessment Workshop

An environmental risk assessment workshop was held on [Include date of the environmental risk workshop] for the Project and reviewed the following activities:

- [Insert list of activities here (usually the identified high risk activities, or those specified in the contract).]

The environmental risk assessment workshop involved [Include broad overview of the attendees].

Each activity was assessed to identify the relevant steps in the activity and the associated environmental hazards, initial risk levels, mitigation measures and to avoid, manage and/or minimise the risks and residual risks. Each of these items is documented in the environmental risk register (Appendix A2). Where relevant, the requirements from the Deed, CoA and Revised EMMM will be incorporated into the environmental risk assessment, particularly in developing the specific site controls.

Guidance text:

This section must either explain or provide reference to a program for ongoing analysis of risks associated with the Project and how the outcomes would be incorporated into this CEMP.

Note: minutes/notes of risk assessment workshop to be kept on file for auditing purposes.

3.2.2 Regulatory requirements and compliance

Legislation

A register of legal and other requirements for the Project is contained in Appendix A1. This register is maintained as a checklist. This register will be reviewed at regular intervals, such as during management reviews, and updated with any applicable changes. Any changes made to the legal requirements register will be communicated to the wider project team, including Subcontractors where necessary through toolbox talks, specific training and other methods detailed in Section 3.4 of this CEMP.

Guidance text:

The legislation register is to be current at the time of submission of the CEMP for approval and updated thereafter as legislative changes occur, and/or legal requirements become relevant. The onus is on the project team to regularly review legal and other requirements and ensure the register remains up to date and current.

Approvals, permits and licences

Guidance Text:

This section must identify all approvals, permits and licences that apply to the Project, or reference the location where this information is outlined. The information relating to approvals, permits and licences must include the following information:

- The name of the legislation and relevant sections of it that apply
- The component of the Project each approval, permit or licence applies to, or regulates
- Who will hold and be responsible for the approval/permit/licence
- Status of the approval/permit/licence.

Note: Where an approval, licence or permit must be granted prior to an activity occurring, the approval and activity must be included in the relevant Sub-Plan as a hold point.

Compliance tracking

The Planning Approval, [any other Authority Approvals], and Revised EMMM are contained in the compliance tracking program and provide a reference to where each requirement is addressed by this CEMP or other Project documentation.

The following CoA require compliance tracking [include detail of the specific State and Federal CoA requiring tracking or which require a compliance tracking program].

Environmental incidents and non-compliance reporting have been provided using the INX System. This system complies with the AS/NZS 4360:2004 Risk Management Standards and has the capability to record a risk review to establish the context, identification, analysis, evaluation and treatment of risks.

Reporting to Transport of NSW is in accordance with the *Guide to Environmental Incident and Non-compliance Reporting using the INX System and Environmental Incident Classification and Reporting*.

3.2.3 Environmental objectives and targets

Guidance text:

Environmental objectives are required to be developed in line with ISO14001 6.2.2 and it is recommended they reflect/align objectives outlined in any State and/or Federal CoA or EMMM.

Include any specific objectives and targets from the sub-plans into this table.

The table below has been provided as an example only. Adapt the targets to be specific to your project. Also include additional targets to meet any environmental outcomes included in the Project assessment documents, or other site specific targets.

As a means of assessing environmental performance during construction of the Project, environmental objectives and targets have been established. These objectives and targets have been developed with consideration of key performance outcomes for each key issue, as specified in the Project [SEARs/CoA/EMMM]. The objectives and targets are consistent with the Project environmental policy and will assist in monitoring whether the commitments of the policy are being met.

The performance of the Project will be monitored against the objectives and targets. Project performance monitoring will be documented in the Project construction compliance reports [Insert reference] and at least on an annual basis as part of the management review.

Environmental objectives and targets for the Project are incorporated into relevant environmental management sub plans and a summary is provided in Table [X] below.

Table 3-1: Environmental objectives and targets

Objective	Target	Measurement tool	Source
Construction of the Project in accordance with environmental approvals.	Full compliance with statutory approvals.	Audits, construction compliance reporting, management view.	Reference specific number / clause of CoA / Contract / EPL etc. in each row
Compliance with all legal requirements.	No regulatory infringements (PINs or prosecutions).	No formal regulatory warning. Audits, construction compliance reporting, management view.	
Implement a rigorous and comprehensive EMS that meets the requirements of AS/NZS ISO 14001.	Address non-conformances and corrective actions within specific timeframes.	Audits, management reviews.	
Engage with the affected and broader community, minimise complaints and respond to any complaints within a suitable timeframe.	Disseminate regular Project updates and other information through the Project website and other tools identified in the Community Engagement Strategy. Record and response to complaints within the timeframe specified in the Community Engagement Strategy.	Review complaints register, construction compliance report, audits.	
Continuously improve environmental	Develop and maintain a program of ongoing	Construction compliance report, management	

Objective	Target	Measurement tool	Source
performance.	<p>environmental training</p> <p>Capture lessons learnt from environmental incidents to minimise repeat issues.</p> <p>Encourage and reward innovation and effort throughout the works force.</p>	review.	

3.2.4 Environmental Control Maps

Guidance Text

Update the prompt text below to include activities which require the preparation of ECMs, who would prepare and review the ECMs, and monitoring of the implementation.

Outline the location of Environmental control maps, how these plans would be used on site and the requirement for update. Where appropriate reference other sections of this CEMP.

Environmental control maps (ECMs) are documents prepared to assist in the planning and delivery of the Project. The ECM allows for a focused risk assessment of the environmental and community impacts of specific work areas and activities. In accordance with the requirements of the Guide to Environmental Control Map (3TP-SD-015/8.0), the ECMs will be prepared prior to the commencement of relevant construction activities and will incorporate relevant mitigation measures and controls, including those from relevant management sub plans. They also identify key procedures to be used concurrently with the ECMs. ECMs are specifically designed to communicate requirements, actions, processes and controls to construction personnel using plans, diagrams and simply written instructions.

ECMs will be prepared progressively in the lead up to and throughout construction in consultation with relevant members from the Project team, and concurrence provided by the Transport for NSW Environmental Manager.

ECMs for activities identified as having high environmental risk will undergo a period of consultation with stakeholders and authorities prior to approval.

Environmental control maps will also be prepared for high risk activities including those outlined in the EIS and those identified through the Environmental Risk Assessment Workshop (see section 3.2.1. above).

The ECMS must meet the requirements of the Guide to Environmental Control Map (3TP-SD-015/8.0), to include details of:

- Where environmental controls are located and how they are used
- Where and when environmental monitoring is to occur
- How environmental control measures are communicated to project personnel.

All construction personnel and Subcontractors undertaking a task governed by an ECM must participate in training on the ECMs, and acknowledge that they have read and understood their obligations by signing an attendance record prior to commencing work.

Regular monitoring, inspections and auditing of compliance with the ECMS will be undertaken by Project management and environmental personnel to ensure that all controls are being followed and that any non-conformances are recorded and corrective actions implemented.

A register of ECMs will be maintained in [Appendix A5].

3.3 Resources, responsibilities and authority

The key environmental management roles and responsibilities for the construction phase of the Project are described below. The structure of these roles is shown in Figure 3.1.

Guidance text:

Insert details or include an appendix with the project organisation structure and contact details for staff responsible for delivering the Project. Generally the project organisation structure is displayed in the form of an organisational chart that outlines the organisational structure of the proponent and those carrying out the Project.

The roles and responsibilities must clearly identify the key personnel responsible for managing compliance with the CoA. The organisational chart is to also show the resource allocation for both pre-construction and construction phases.

Additionally, any specialists that are required to provide advice regarding environmental and compliance matters, or carry out specific activities and management actions, must be identified and their roles and responsibilities defined.

This section/organisational chart is to indicate the lines of communication and interaction between the contractor and Transport for NSW Staff, the independent verifier, regulators and other relevant independent staff.

Figure 3.1 Management structure

[Insert organisational chart]

3.3.1 Roles and responsibilities

Guidance text:

Insert details here of staff responsibilities and authority for CEMP implementation & monitoring; rectification & control of deficiencies; & keeping of environmental records. The role titles and respective roles and responsibilities must be amended to reflect the site specific structure

This section must identify the key personnel responsible for managing compliance with CoA and the key personnel responsible for supporting the construction environmental manager in achieving environmental outcomes and objectives.

Include in this section any details of the roles and responsibilities of specialists that are required to be engaged to provide advice regarding environmental and compliance matters, or carry out specific activities and management actions.

Example text is included in below each of the position titles.

Environmental Representative

Guidance text:

The role of the Environmental Representative is detailed in the CoA. The specific requirement of the role must be detailed in full in this section.

Transport for NSW Environmental Manager

Contractor Project Manager

Contractor Construction Manager

Contractor Superintendent

Contractor Construction Environmental Manager

Contractor Environmental [Officer/Coordinator]

Contractor Communications Manager

Contractor Project/Site Engineers

Contractor Foreman

Wider project team (including Subcontractors)

3.4 Selection and management of Subcontractors

Guidance text:

For the selection and management of Subcontractors, outline:

- the duties of each subcontractor for planning, implementing and monitoring environmental protection measures and for keeping environmental records;
- the duties the Contractor will retain for environmental protection of subcontracted work;
- how environmental protection measures on subcontracted work interact with adjacent work areas, as applicable; and
- the Contractor's surveillance program to monitor the effectiveness of each subcontractor's environmental protection measures together with the relevant project documentation.

3.5 Competence, training and awareness

Guidance text:

Three types of mandatory training are listed in sections 3.5.1 to 3.5.3 and represent minimum training methods utilised on site. Where appropriate, additional training methods can be outlined with detail including the purpose the training, how it will be implemented on site and the intended outcomes.

This section must outline how relevant personnel are:

- Aware of key environmental issues relating to the Project
- Aware of legislative responsibilities, including any associated penalties for failing to meet those responsibilities.

To ensure that this CEMP is effectively implemented, each level of management is responsible for ensuring that all personnel reporting to them are aware of the requirements of this CEMP. The construction Environmental Manager will coordinate the environmental training in conjunction with other training and development activities (eg safety).

3.5.1 Environmental induction

All personnel (including Subcontractors) are required to attend a compulsory site induction that includes an environmental component prior to commencement on-site. This is done to ensure all personnel involved in the Project are aware of the requirements of the CEMP and to ensure the implementation of [Revised] EMMM.

Short-term visitors to site undertaking inspections / entering the site (such as regulators) will be required to undertake a visitors induction and be accompanied by inducted personnel at all times.

Temporary visitors to site for purposes such as deliveries will be required to be accompanied by inducted personnel at all times.

The construction Environmental Manager (or delegate) will conduct the environmental component of the site inductions.

The environmental component of the induction must cover all elements of the CEMP and would include as a minimum:

- Relevant details of the CEMP including purpose and objectives
- Requirements of due diligence and duty of care
- Conditions of environmental licences, permits and approvals
- Potential environmental emergencies on Site and the emergency response procedures
- Reporting and notification requirements for pollution and other environmental incidents
- High risk activities and associated environmental safeguards
- Working in or near environmentally sensitive areas
- The ECM(s), their purpose, scope and use
- Specific environmental management requirements and responsibilities
- Mitigation measures for the control of environmental issues
- Incident response and reporting requirements
- Information relating to the location of environmental constraints.
- Key environmental issues
- [Update and amend grey elements where necessary]

A record of all environment inductions will be maintained and kept on-site. The construction Environmental Manager may authorise amendments to the induction at any time. Possible reasons for changes to the induction may be Project modifications, legislative changes or amendments to this CEMP or related documentation.

The Environmental Representative will review and approve the induction program (where required) and monitor implementation.

An Induction Register is kept [include details of where kept].

3.5.2 Toolbox talks, training and awareness

Toolbox talks will be one method of raising awareness and educating personnel on issues related to all aspects of construction including environmental issues. The toolbox talks are used to ensure environmental awareness continues throughout construction.

Toolbox talks will include details of ECMs and be tailored to specific environmental issues relevant to upcoming works.

Relevant environmental issues include (but are not limited to):

Guidance text:

Update to environmental issues list to be site specific. Examples of relevant environmental issues are listed below.

Example Text

- Erosion and sedimentation control
- Dewatering
- Hours of work
- Emergency and spill response
- Aboriginal and non-Aboriginal heritage
- Threatened species, endangered ecological communities, clearing controls and vegetation protection
- Weed management
- Dust control.

Toolbox talk attendance is mandatory and attendees of toolbox talks are required to sign an attendance form and the records maintained.

Targeted environmental awareness training will be provided to individuals or groups of workers with a specific authority or responsibility for environmental management or those undertaking an activity with a high risk of environmental impact. Topics covered may include those detailed above, or others deemed necessary in the lead up to or during construction.

Another way to inform construction personnel will be through the development and distribution of awareness notes. These will typically take the form of a poster, booklet, or similar and will be distributed to engineers, leading hands, foreman and others with a responsibility for managing specific work locations or activities. This documentation will be used to inform the broader workforce through either daily pre-starts meeting (see section 3.5.3) or provision in worker crib sheds / break facilities.

The Environmental Representative will review and approve the training program (where required) and monitor implementation.

A Training Register is kept [include details of where kept]

3.5.3 Daily Pre-Start Meetings

The pre-start meeting is a tool for informing the workforce of the day's activities, safe work practices, environmental protection practices, work area restrictions, activities that may affect the works, coordination issues with other trades, hazards and other information that may be relevant to the day's work.

The Foreman will conduct a daily pre-start meeting with the site workforce before the commencement of work each day (or shift) or where changes occur during a shift. Daily pre-start meetings are generally succinct in nature and take approximately 10-15 minutes.

The environmental component of pre-starts will be determined by relevant foreman and environmental personnel and will include any environmental issues that could potentially be impacted by, or impact on, the day's activities. All attendees will be required to sign on to the pre-start and acknowledge their understanding of the issues explained.

Pre-start topics, dates delivered and a register of attendees will be recorded and kept [include details of record location].

3.6 Working hours

Approved working hours on this Project are:

- [Fill in details of the working hours that have been approved for this project]

Approvals for any changes will be included and attached to this CEMP in [include CEMP Appendix or alternative location]

Guidance text:

Applications for works outside of standard construction hours are to be made in accordance with the requirements of the TfNSW's Construction Noise and Vibration Strategy. This process needs to outline the required/agreed community notification and agency approval requirements.

Include reference to any EPL and CoA that influence the working hours. Where appropriate, reference the Noise and Vibration Sub Plan.

3.7 Communication

3.7.0 Internal Communication

Guidance text:

The framework for communication, including methodology, frequency and responsibility, within the project team should be outlined in this section.

Include details of your:

- Procedures for notifying site personnel of any environmental problems & pollution incidents
- Procedures for internal/external written & verbal communication
- Contact names and telephone numbers for key personnel.

The type of internal communication might include, but is not be limited to:

- Environmental team meetings
- Regular meetings with Transport for NSW environmental staff and Environmental Representative
- Environmental Reference Groups
- Weekly toolbox training sessions
- Internal newsletters.

3.7.1 Government authority consultation

The [insert position title and name, generally the construction Environmental Manager] has the responsibility to report on the ongoing environmental performance of the Project to Transport for NSW and the Environmental Representative. The construction Environmental Manager will report regularly to Transport for NSW on progress and any key environmental matters through [insert detail of how regular communication would be achieved eg monthly EPL reports].

The [insert position title and name, generally the Project Manager] and the [insert position title and name, generally the construction Environmental Manager] are 24-hour contacts. They have the

authority to halt the progress of the works if necessary. They are the key emergency response personnel during an environmental site emergency.

Unless the Contractor obtains an EPL or is expressly authorised by Transport for NSW, the Contractor is not authorised to contact the EPA. Transport for NSW will retain the responsibility for notification and other communications with the EPA.

A report will be prepared on each occasion the site is visited by EPA, and Transport for NSW will be immediately notified. The Report will be provided to Transport for NSW within one working day of the visit.

3.7.2 Community liaison and/or notification

Guidance text:

Describe the process for communicating new or changed construction activities, and extended working hours as required by Transport for NSW and EPL (if applicable). Outline how the community and stakeholders will be kept informed about the construction, operation and environmental performance of the Project, and where required by CoA amendments to the CEMP and sub plans.

Address CoA and EMMM community consultation and notification requirements within the below section or if required by CoA, reference a separate community and stakeholder engagement plan.

The level and extent of stakeholder and community consultation will be dependent on the size of the Project and the level of impacts predicted in the Environmental Assessment. The Project approval may prescribe the nature, level and extent of stakeholder and community consultation and this section should reflect those requirements. Where a specific requirement is not prescribed by the approval, the Transport for NSW's Community Consultation Strategy must be followed.

3.7.3 Complaints management

Guidance text:

Provide details of your procedures for complaint management to address CoA, and EMMM including but not limited to:

- Requirement to provide Transport for NSW within one day, a written report detailing the complaint and action taken to remedy the problem.
- Requirement for a final report within 5 working days which includes proposed measures to prevent the reoccurrence.
- A complaints register.

3.8 Emergency and Incident Planning

Guidance text:

An Incident and Emergency Response Plan unless otherwise specified by the CoA, must be developed for the Project and a summary of the approach provided in this section. The plan should be consistent with the Transport for NSW's Environmental Incident Classification and Reporting Procedure (9TP-PR-105).

This plan would include as a minimum:

- Provide details of your Site Emergency Plan for this Project
- Include a list of your key emergency personnel including a list of internal personnel & external agencies names, numbers and specific responsibilities for emergency planning and response

here, or in an appendix

- Provide details of how staff are inducted into the emergency response procedures and Plan
- If required, when the Pollution Incident Response Management Plan (PIRMP) will be implemented and who determines when an incident requires use of the PIRMP
- Incident definition, incident notification and reporting requirements for relevant approval, permit and licences requirements
- Where appropriate, reference/include a Flood Action and Warning Plan.

This section should also outline a process for notifying the DP&E of incidents and non-compliances including the lines of communication and how compliance inspections would be managed. If this information is included in another section of the CEMP, this must be referenced.

Note: It is recommended that the PIRMP and the Incident and Emergency Response Plan are separate documents.

In the event of an environmental incident, the Environmental Incident and Emergency Response Plan will be implemented. The full plan is provided in Appendix A7.

The compliance tracking program is provided in Section 3.2.2 and compliance tracking in Appendix A1.

Where an incident involves a potential impact to an Aboriginal site, relevant the Office of Environment and Heritage, and Registered Aboriginal Parties will be notified and their input sought in closing out the incident.

All other environmental incidents, reportable events and regulatory action would be reported to Transport for NSW as outlined in the Transport for NSW's Environmental Incident Classification and Reporting Procedure.

The Contractor will provide all records of the environmental incidents and regulatory action to Transport for NSW Project team.

3.9 Monitoring, inspections and auditing

Guidance text:

This section should document the Contractors' procedures with reference to relevant requirements of the Deed and the CoA, as appropriate.

3.9.1 Environmental inspections

Environmental inspections

Guidance text:

The type and frequency of environmental inspections will be determined by the environmental risk assessment and the contractor's system requirements, with increased frequency for higher risk activities and processes, and work in environmentally sensitive areas.

In this section detail the program of environmental inspections and for each inspection to be undertaken the following must be provided:

- What is to be inspected
- When the inspection is to occur

- Who is to carry out the inspection
- How inspections are to be documented and reported

Copies of all environmental inspection reports prepared by [[include as required] project soil conservationist, ER, Environmental staff] will be kept with the project records and closed out within the agreed timeframes.

Weekly and post rainfall site inspections

Environmental Representative, Transport for NSW and ERG inspections

Pre - work inspections

Action Tracking Register

Guidance text:

The Contractor should maintain an action tracking register documenting the status of all actions, including date raised, status (open / closed) and date closed.

3.9.2 Environmental monitoring

Monitoring will be undertaken to validate the impacts predicted for the Project, to measure the effectiveness of environmental controls and implementation of this CEMP, and to address approval requirements. The monitoring requirements for required aspects are included in the relevant environmental management sub plans and summarised in Table 3.2 below.

Guidance text:

This section should document the Contractors' procedures with reference to relevant requirements of the Deed and the CoA, as appropriate. **Guidance text:**

Include in this section a summary of construction phase environmental monitoring programs and requirements prescribed by the CoA, EMMM and specifications. Where monitoring data is required to be reported to the DP&E clearly outline this requirement below. Where appropriate, reference the Compliance Tracking Program.

Table 3-2 can be updated to include construction phase monitoring requirements prescribed by the CoA, EMMM and specifications. The below should be a summary of all Project monitoring requirements. A monitoring procedure could be developed as an appendix to assist in managing monitoring requirements, example text is included below.

Table 3-2: Summary of construction phase environmental monitoring required by the Project approval

CoA / EMMM	Description	Relevant Sub-Plan or CEMP Chapter	Reporting Requirements

3.9.3 Auditing

Guidance Text:

If CoA require auditing other than environmental auditing, the requirement and approach must be described in a management plan in sufficient detail to demonstrate compliance with CoA. This information must include:

- what is to be audited and any relevant criteria
- who is to carry out the audit
- when the audit is to occur
- how project performance is to be assessed
- how the audit is to be recorded and distributed.

Table [X] presents auditing requirements that are applicable to the Project. [This table or similar must be updated to reflect any additional auditing requirements to the minimum prescribed.]

Contractor internal audits

Internal auditing will be undertaken generally on a six monthly basis throughout the Project. The purpose of auditing is to verify compliance with:

- This CEMP and Sub Plans
- Approval requirements (CoAs, [Revised] EMMM
- Any relevant legal and other requirements (e.g. licenses, permits, regulations, Transport for NSW contract documentation)

An audit checklist will be developed and amended as necessary to reflect changes to this CEMP, subsequent approvals and changes to Acts, regulations or guidelines.

Independent audits

Auditing will also be undertaken by an independent environment auditor independent to the [Insert project name] in accordance with ISO 19011:2014 - Guidelines for Quality and/ or Environmental Management Systems Auditing.

[Where the CoA include external independent audits, update this table to reflect the CoA requirements]

Table 3-3: Contractor and Independent Audit requirements

No.	Audit	Requirement	Timing	Responsibility	Recipient
1	Internal audit	Verify compliance with approval and legal requirements, Transport for NSW specifications and construction documentation	The first audit within three months of the commencement of construction and then at six monthly intervals there-after. The final submitted within five working days of contract completion date.	Construction Environmental Manager	Project manager, Transport for NSW
2	Independent audit	Verify compliance with approval and legal requirements, Transport for NSW specifications.	Six monthly	Construction Environmental Manager	Project manager, Transport for NSW

No.	Audit	Requirement	Timing	Responsibility	Recipient
		construction documentation and any other commitments			

3.9.4 Construction Phase Compliance tracking

Guidance text:

Compliance tracking is typically prescribed by the Project approval. Any CoA that reference compliance tracking are to be outlined in this section, including reference to the location of the Compliance Tracking Program.

A Compliance Tracking Program has been developed for the Project. The requirements of the Compliance Tracking Program, as prescribed in the CoA [insert CoA reference], include:

[Update the below dot points to include relevant CoA requirements]

- Provisions for the notification of the Minister of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the Project (including prior to each stage, where works are being staged)
- Provisions for periodic review of Project compliance with the requirements of this approval, EMMM and documents listed under condition [insert condition reference]
- Provisions for periodic reporting of compliance status against the requirements of this approval, EMMM and documents listed under condition [insert condition reference] to the Minister including at least one month prior to the commencement of construction and operation of the Project and at other intervals during the construction and operation, as identified in the Program
- A program for independent environmental auditing in accordance with ISO 19011:2014 - Guidelines for Quality and/ or Environmental Management Systems Auditing
- Mechanisms for reporting and recording incidents and actions taken in response to those incidents
- Provisions for reporting environmental incidents to the Minister during construction and operation
- Procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management.

The Compliance Tracking Program describes how the requirements of CoA [insert CoA reference] will be met and sets out a program and frequency for compliance reporting and independent auditing. The compliance reporting required under the Compliance Tracking Program will record how the CoA and [Revised] EMMM have been addressed. A summary of the required compliance reporting for the construction phase of the Project, as required by CoA [insert CoA reference], and as tracked and monitored in the Compliance Tracking Program [Insert Appendix Reference for Compliance Tracking Program here] is provided in Table 3-4.

Table 3-4: Compliance Reporting

No	Report	Requirement	Timing	Responsibility	Recipient
1	[Insert detail]	[Insert detail]	Prior to construction	[Insert detail]	[Insert detail]

3.9.5 Other reporting

Guidance Text:

Where CoA require other reporting conditions, reporting requirements can be described in this section.

Prior to, during and following construction, various reports will be prepared to fulfil Transport for NSW and other reporting needs, and requirements under the Project approval. Table 3-5 sets out the reporting requirements applicable to the Project, timing of the reporting, who is responsible for managing preparation of the reports and the intended recipient(s).

Additional reporting may be necessary as the works progress. In such a circumstance, Table 3-5 will be amended to reflect these changes.

Table 3-5: Reporting requirements

No.	Report	Requirement	Timing	Responsibility	Recipient

3.10 Environmental nonconformities

Guidance text:

This section must outline the contractors system for the management of non-conformity, including corrective, preventative actions and opportunities for improvement. The text provided below is a summary of a standard approach to the identification and management of non-conformities during construction. As a minimum this section must identify:

- who is to be involved in the review of issues and the development of corrective and preventative actions to address them
- how timeframes for the implementation of identified actions are to be decided
- how the implementation of actions is to be checked and tracked
- how the corrective action process is to be documented.

3.11 Records of environmental activities

Guidance text:

This section is to be updated to reflect any specific project requirements/needs.

3.11.1 Environmental records

The construction Environmental Manager is responsible for maintaining all environmental management documents and records as current at the point of use. Types of documents and records include:

- All monitoring, inspection and compliance reports/records
- Correspondence with public authorities
- Induction and training records
- Reports on environmental incidents, other environmental non-conformances, complaints and follow-up action
- Community engagement information
- Minutes of CEMP and construction environmental management system review meetings and evidence of any action taken
- CEMP and Sub Plans
- ECMs
- [Record types to be added or amended to be site specific]

All environmental management documents are subject to ongoing review and continual improvement. This includes times of change to scheduled activities or to legislative or licensing requirements.

Only the construction Environmental Manager, or delegate, has the authority to change any of the environmental management documentation.

3.11.2 Document control

The Contractor, or Transport for NSW where relevant, will coordinate the preparation, review and distribution, as appropriate, of the environmental documents and records listed above. During the Project, the environmental documents and records will be stored at the main site compound.

The Contractor will implement a document control procedure to control the flow of documents within and between Transport for NSW, stakeholders and Subcontractors.

The procedure will also ensure that documentation is:

- Developed, reviewed and approved prior to issue
- Issued for use
- Controlled and stored for the legally required timeframe
- Removed from use when superseded or obsolete
- Archived.

A register and distribution list will identify the current revision of particular documents, records or data. The Document Register is maintained in Appendix A5.

3.12 Management review

Guidance text:

This section is to provide an overview of the various methods of performance review and improvement. Typically a management review would be a minimum requirement, but other types of project team reviews may be part of the contractor's system requirements (eg environment team reviews). Where this is the case, this is to be outlined in this section.

The outcomes of the management review could include amendments to this CEMP and related documentation, revision to the Project's environmental management system, risk assessment review, re-evaluation of the Project objectives and targets as well as feeding into other Project documents.

This section is to be updated to reflect any specific project requirements/needs or review processes.

Meeting	Purpose	Frequency	Attendees

3.13 CEMP/Sub Plan revision and changes to the Project

3.13.1 CEMP Revision

Guidance text:

This section is to detail the process for revision of the CEMP and Sub Plans. A review process is to be outlined to occur:

- Following reportable environmental incidents
- Upon identification of new risks, including risks identified during risk register updates
- When non-compliances are identified
- Following environmental audits that identify matters that require attention
- In response to project change (including modifications)
- Within three months of any of the above occurrences
- As part of a continuous improvement process.

A description of what constitutes a minor CEMP change that can be endorsed by the ER, and those major changes requiring Minister approval, is to also be provided. See section the Review and Revision Process section of the DP&E Management Plan Guideline for further guidance.

It is recommended to include an agreed process for approvals and changes due to incidents that require immediate attention and action. For example approval for construction traffic route amendments in case of traffic accident on the usual route outlined in the TMP.

This section should also outline the process that would be adopted to notify the DP&E with changes to the CEMP.

3.13.2 Changes to the Project

Guidance text:

This section is to include a discussion of the Project change process including minor changes that are consistent with the approval, and those that are considered to be a modification. The text provided below is an example of what might typically be undertaken.

General project change obligations are discussed under this section and are generally standard for all CEMPs. However, individual projects may wish to provide additional detail to incorporate internal organisational processes.

Example Text

Refinements to the Project may result from detailed design refinements or changed circumstances throughout construction. Transport for NSW is required to seek formal approval from the Minister for any Project modifications and for documenting refinements that are consistent with the approved Project.

Any design changes or changes in scope of works must be communicated to the construction Environmental Manager. The Construction Environmental Manager or Construction Environmental Officer will then undertake an additional environmental assessment and consistency assessment in consultation with the Transport for NSW Environmental Manager to determine if a Project modification may be required.

Should the consistency assessment determine that a Project modification may be required i.e. the impacts are of a nature and scale that it is not considered consistent with the Project approval, the Environmental Representative will be informed and modification application under Section 115ZI(2) of the EP&A Act 1979 prepared and lodged by Transport for NSW to the Secretary DP&E for determination.

4 Construction control

Guidance Text:

The CoA or EMMM are likely to require sub plans that align with the below sub headings, where this is the case, retain the heading and reference the appropriate sub plan.

If for example CoA or EMMM call for specific sub plans the requirements would be addressed in the appropriate sub plan and does not need to be repeated below.

A number of environmental management sub-plans support the CEMP. These documents are prepared to identify requirements and processes applicable to specific impacts or aspects of the activities described in [Include reference]. They address requirements of the CoA, [Revised] EMMM and other measures identified in the environment assessment documentation.

Environmental strategies may also be developed as required throughout the Project. These will also guide environmental management of potential impacts on-site.

A list of construction sub-plans and strategies for the Project, and their approval requirements, are provided in Table 4.1. The Project Staging Report ([detail and reference to be included]) documents the required Project-wide environmental documentation to be prepared for the Project and the timing required for submission where required.

Table 4.1 Environmental management sub plans and strategies

Document name	Document number	Approval/Compliance Requirements

Where a separate sub-plan is not required, information regarding environmental management and control of specific areas is outlined in the below sections.

4.1 Soil and water quality management

Guidance text:

If approval documentation such as EIS, CoA etc identifies the need for a Soil and Water Management Plan (SWMP) or if there is a high erosion and sediment control risk identified on site, it is suggested that a separate standalone document is developed in line with the Soil Water Management Plan template.

If a separate SWMP is required it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to a SWMP if there is a reason to do so.

Example Text

A Soil and Water Management Plan has been developed to manage the soil and water risks on this Project. This document is developed in accordance with CoA X and located in [insert location].

4.1.1 Erosion and sediment control

Guidance text:

Where a separate SWMP is not required, it is suggested that the following points are described:

- Prepare an Erosion and Sediment Control Plan in accordance with the 'Blue Book'
- Describe how work will be programmed so that it ensures that the minimum area of disturbed ground is exposed to erosion
- Outline a process for management and maintenance of erosion and sediment controls, including sediment basins (where required)
- Outline a inspection schedule including weekly and post rainfall inspections
- Outline process for monitoring weather conditions including reference location of the rainfall register
- Describe the process for progressive stabilisation and removal of erosion and sediment controls
- Describe the process to update this section, where required

4.1.2 Waste water management

Guidance text:

Where a separate SWMP is not required, it is suggested the following points are described:

- List the on-site activities that could potentially create dirty water and any location restrictions around these activities
- Outline how the listed activities would be managed and their risks minimised.

4.1.3 Water quality monitoring

Guidance text:

If water quality monitoring is not required, delete contents of this cell and write "Not required".

Or

Where a separate SWMP is not required, it is suggested the following points are described:

If water quality monitoring program is required, include details of the monitoring required such as:

- Objectives, location and protocols of monitoring
- Methods of comparison of results, recording of results and responsibilities for managing the monitoring elements
- Reporting requirements in case of criteria exceedances.

Include any post-work requirements for wastewater discharge control. If there are none, delete all the contents of this cell and write "Not required".

4.1.4 Stockpile management

Guidance text:

Outline the process for stockpile management in accordance with the 'Blue Book'. It is suggested that the following are considered:

- Location of temporary stockpiles
- Height of temporary stockpiles
- Temporary stabilisation
- Stockpile separation
- Weed management

4.1.5 Tannin management

Guidance text:

Outline how tannins would be managed.

4.1.6 Water extraction

Guidance text:

Where water extraction is required, it is recommended the following is described:

- Identification of water sources
- Outline and permits/approvals required and the conditions
- How any required restoration would be undertaken
- Develop a Water Extraction register.

4.1.7 Construction site dewatering

The Contractor's process for dewatering activities shall form part of this CEMP.

The proposed dewatering controls will be prepared in accordance with the requirements of the Planning Approval and the Transport for NSW Water Discharge and Reuse Guideline (7TP-SD-024/3.0).

All staff involved in de-watering activities shall be tool boxed prior to the activity occurring.

Guidance text:

This chapter must include the following information:

- A map showing the area of the Site that will require dewatering
- Detailed description and justification of all selected dewatering methods
- Description of onsite water reuse requirements
- A map showing proposed discharge locations for any offsite discharge
- Design requirements for each offsite discharge location to prevent erosion at the discharge location or in the receiving environment
- Water quality objectives relevant to the type of dewatering activity
- Description of the water quality treatment techniques to be used
- Water sampling and testing regime prior to and (if required) during dewatering
- A list of personnel who are authorised to approve or carry out dewatering activities
- A clear description of how each dewatering activity is supervised and monitored
- The approval process to be undertaken prior to the commencement of dewatering.

Records of any dewatering discharges will be kept using the [Include name and location of dewatering register].

4.1.8 Works in waterways

Works in waterways will be conducted in accordance with the Planning Approval and EMMM.

A procedure will be prepared for any work to be conducted in waterways, in consultation with Transport for NSW before work begins and shall form part of this CEMP.

Guidance text:

The following measures must be included:

- Set out how planning will be done to avoid activities in aquatic habitats and riparian zones where possible
- Actions to signpost and protect as exclusion zones all areas of aquatic habitat and riparian zones outside of work areas
- Actions to minimise riparian vegetation removal and restrict access to waterways to the minimum possible bank length
- Actions to retain stumps in riparian zones to reduce the potential for bank erosion
- Actions to ensure refuelling and chemical storage will be done at least 50 metres away from aquatic habitats unless otherwise approved by Transport for NSW (also refer to Transport for NSW's Chemical Storage and Spill Response Guideline)
- Actions to ensure boats are operated in a manner to prevent boat wash damage to banks and seagrass damage
- If required include below details of any operational controls required to reduce impacts on water quality and waterway plants and animals.
- Prepare an ECM that identifies the relevant controls, as required.

4.1.9 Temporary waterway crossings

Guidance text:

Temporary waterway crossings must be provided if required to maintain the flow in the waterway, and designed, constructed and maintained in accordance with the requirements of the 'Blue Book'.

Temporary waterway crossings will be constructed with ...

Guidance text:

Material used for temporary waterways crossing must not result in fine sediment entering the waterway. Rock used must be hard, sound, durable rock, free of fine particles and not contaminated with foreign materials.

The following actions will be put in place to maintain fish passage:

Guidance text:

Maintain fish passage in accordance with DPI Fisheries Policy and guidelines for fish habitat conservation and management (2013 update).

The following erosion and sediment controls will be provided at entry exit points of the crossing to minimise mud-tracking:

- [Include controls]

4.1.10 Sediment basins

Guidance text:

If there is a sediment basin on your project, you must maintain a register that details basin inspections, maintenance, discharge volumes and dates, flocculation details, discharge-water quality and volumes of sediment removed. If so, include the following, if not, delete this section.

Sediment basins will be cleaned out and/or discharged to manage accumulated sediment in accordance with the Blue Book – Managing Urban Stormwater: Soils and Construction (Landcom 204 and DEC 2008). Before discharging water from the sediment basin it is tested to ensure it meets the following criteria: [Update if criteria different to tabled information, e.g. when specified in a CoA or an EPL]

Table 4-1: Water discharge criteria and criteria limits

Criteria	Criteria limits
Total suspended solids (TSS)	50mg/L
pH	6.5 – 8.5
Oil and grease	No visible trace

A sediment basin discharge register is kept and is located [Insert detail]

Access to basins to allow cleaning out will be maintained in all weather conditions.

4.1.11 Flocculation

Guidance text:

Outline your procedure for using and applying flocculants including:

- Types of flocculants to be used
- When and how flocculants would be applied
- Water testing process
- Process for establishing a correlation between TSS/NTU
- Training for use of flocculants

Gypsum is the only flocculant permitted, unless written approval has been obtained from the Transport for NSW for another flocculant.

4.2 Contaminated land

Guidance text:

If the Planning Approval identifies the need for a Contaminated Land Management Plan (CLMP), Soil Contamination Report or if there is a contaminated land risk identified on site, it is suggested that a separate standalone document is developed in line with the Contaminated Land Management Sub-plan template. If a separate CLMP is required, it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted.

Example Text

A Contaminated Land Management Plan [and a Soil Contamination Report] has been developed to manage contaminated land on this project. This document is developed in accordance with CoA X and located in [insert location].

Guidance Text:

Where a separate plan is not required, it is suggested the following points are described:

- Outline a process for unexpected contaminated finds, including when a Remediation Action Plan would be required.

4.3 Spill prevention and response

Guidance text:

If the Planning Approval or other Authority Approval identifies the need for a Pollution Incident Response Management Plan (PIRMP), Spill Response Plan or if there is a high spill risk identified on site, it is suggested that separate standalone document(s) are developed and appended to the SWMP and this section is deleted.

If a separate plan is required it is suggested that the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to a SWMP if there is a reason to do so.

Example Text

A [Insert name of plan(s)] has been developed to manage spill prevention and response on this project. This document is developed in accordance with CoA X and located in [insert location].

Guidance text:

Where a separate plan is not required, it is suggested the following points are described:

- Outline where fuels, oil, herbicides are stored and how they are stored e.g. bunding
- Indicate spill kit locations
- Outline activities that have a risk of spills and how this would be managed
- Describe how spills would be minimised, managed, cleaned up and reported, in accordance with Transport for NSW's Chemical Storage and Spill Response Guidelines (9TP-SD-066/4.0).

4.4 Air quality

Guidance text:

If the Planning Approval identifies the need for an Air Quality Management Plan (AQMP) or if there is a high air quality risk identified on site, it is suggested that a separate standalone document is developed in line with the Air Quality Management Plan template.

If a separate AQMP is required it is suggested that the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to an AQMP if there is a reason to do so.

Example Text:

An Air Quality Management Plan has been developed to manage the air quality risks on this Project. This document is developed in accordance with CoA X and located in [insert location].

Guidance Text:

Where a separate AQMP is not required, it is suggested that the following points are to be described:

- Measures to minimise risk of air pollution, including generation of dust, odour and vehicle emissions
- Map of sensitive dust receivers
- Outline how air pollution would be monitored and the frequency of monitoring
- How excessive dust generation would be managed
- Outline air pollution reporting procedures
- If there is an EPL outline any specific conditions or management measures described in the licence
- Outline requirement for reporting on air emissions performance requirements, in accordance with Transport for NSW's Air Quality Management Guideline (9TP-SD-107/3.0).

4.5 Fire safety and burning off

Guidance Text:

This section should outline how the Project complies with *Rural Fires Act 1997* (NSW), and the *Local Government Act 1993* (NSW) and is guided by the NSW Rural Fire Service publication "Equipment and Machinery Use in Bush Fire Prone Areas". The following is example text.

Example Text:

The following fire-fighting equipment is provided on site and in vehicles to ensure the safety of public and property:

- [Write here details of the equipment you have on site and in vehicles]

Total fire ban declarations and resultant work restrictions will be communicated to staff by [Write here how you will let staff know that it is a total fire ban day and the relevant activity restrictions.]

During total fire bans, the following items of plant that have the potential to discharge sparks, are fitted with spark arresters:

- [List plant items here.]

-

All personnel involved in welding, grinding, thermal or oxygen cutting, heating or other fire or spark-producing operations will be trained in fire prevention, safety and basic fire-fighting skills.

4.6 Noise control

Guidance text:

If the Planning Approval or other Authority Approval identifies the need for a Noise and Vibration Management Plan (NVMP) or if there is a noise risk identified on site, it is suggested that a separate standalone document is developed in line with the Noise and Vibration Management Plan template.

If a separate NVMP is required, it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to a NVMP if there is a reason to do so.

Example Text

A Noise and Vibration Management Plan has been developed to manage the risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

Guidance Text:

Where a separate NVMP is not required, it is suggested the following points are described:

- Normal working hours
- Out of hours work protocol
- Communication requirements for extending working hours
- If working outside of hours, outline how the works would be managed and monitored
- Include a map showing sensitive receivers in relation to the project footprint
- Include a list of noise generating activities and their expected impacts
- Measures outlining how noise impacts on adjacent receivers would be minimised and managed
- Outline any training requirements for staff and maintenance requirements plant/equipment
- Noise and vibration monitoring requirements, frequency and triggers for monitoring

4.7 Ground vibration

Guidance text:

If Planning Approval or other Authority Approval identifies the need for a Noise and Vibration Management Plan (NVMP) or if there is a high vibration risk identified on site, it's suggested that a separate standalone document is developed in line with the Noise and Vibration Management Plan template.

If a separate NVMP is required or there is no vibration impacts it is suggested that one of the below example texts are updated and retained within the document. However, all or part of the below section may be retained in addition to a NVMP if there is a reason to do so.

Example Text

A Noise and Vibration Management Plan has been developed to manage the risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

OR

If you are not doing any blasting or vibratory works, delete all the contents of this section and write Not required.

Guidance text:

Where a separate NVMP is not required, it is suggested the following points are described:

- Outline whether a Building Condition Survey/Report is required, if it's required outline how this process would be managed and communicated
- Outline how vibration risks would be managed and monitored

4.8 Biodiversity

Guidance text:

If Planning Approval identifies the need for a Fauna and Flora Management Plan (FFMP) it's suggested that a separate standalone document is developed in line with the Fauna and Flora Management Plan template.

If a separate FFMP is required, it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to a FFMP if there is a reason to do so.

This chapter (or the FFMP, where relevant) must be prepared in accordance with the following Transport for NSW guidelines:

- Fauna Management Guideline (3TP-SD-113/4.0)
- Weed Management and Disposal Guide (3TP-SD-110/2.0)
- Vegetation Management (Protection and Removal) Guideline (9TP-SD-111/3.0)
- Vegetation Offset Guide (9TP-SD-087/1.0).

Example Text

A Fauna and Flora Management Plan has been developed to manage the risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

Guidance text:

Where a separate FFMP is not required, it is suggested the following points are described in this chapter:

- Pre-clearing procedure
- Clearing limits and exclusion zones
- Management of woody debris and bush rock
- Management of noxious weeds
- Management of risks to drip lines of trees
- Management of fauna including during clearing
- Clearing procedure
- Unexpected finds

4.9 Indigenous heritage

Guidance text:

If the Planning Approval identifies the need for an Aboriginal Heritage Management Plan (AHMP) it's suggested that a separate standalone document is developed in line with the AHMP Plan template.

If a separate AHMP is required, it is suggested that the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to an AHMP if there is a reason to do so.

Example Text

An AHMP has been developed to manage the risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

Guidance text:

Where a separate AHMP is not required, it is suggested the following points are described:

- Location of Aboriginal heritage objects and places
- Measures to protect Aboriginal heritage objects and places
- Unexpected finds procedure
- Transport for NSW's Unexpected Heritage Finds Guideline (3TP-SD-115/3.0).

4.10 Non-Indigenous heritage

Guidance text:

If Planning Approval identifies the need for a Heritage Management Plan (HMP) it is suggested that a separate standalone document is developed in line with the Heritage Management Plan and this section is deleted.

If a separate HMP is required it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to a HMP if there is a reason to do so.

Example Text

A Heritage Management Plan has been developed to manage the risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

Guidance text:

Where a separate plan is not required, outline how any relevant EMMM would be implemented on site. Additionally, the following points are described:

- Location of non- Indigenous heritage objects and places
- Procedure of the management of non- Indigenous heritage objects and places
- Procedure for the management of unexpected finds procedure in accordance with *Unexpected Heritage Finds Guideline* (3TP-SD-115/3.0)
- Reference how site staff and Subcontractors would be trained in Aboriginal Heritage provisions of the *National Parks and Wildlife Act 1974 (NSW)* and any non-Aboriginal heritage objects or places, or reference where in the document this is located

4.11 Waste Management and Resource Recovery

Guidance text:

If Planning Approval identifies the need for a Waste and Resource Management Sub - Plan (WRMP) it is suggested that a separate standalone document is developed in line with template [X] and this section is deleted.

If a separate WRMP is required, it is suggested the below example text is updated and retained within the document. However, all or part of the below section may be retained in addition to a WRMP if there is a reason to do so.

Example Text

A Waste and Resource Management Sub-Plan has been developed to manage the soil and water risks on this Project. This document is developed in accordance with CoA X or EMMM and located in [insert location].

Guidance Text:

Where a separate WRMP is not required, it is suggested the following points are described:

- Identify the waste streams that will be generated during the Contract
- Provide details, for each of the identified waste streams, of the following:
 - The waste classification (refer to EPA's "Waste Classification Guidelines")
 - How and where the waste is to be reused, recycled, stockpiled or disposed of
 - The receptacles that will be used for storing identified waste materials prior to reuse, recycling, stockpiling or disposal
 - How, and by whom, will the waste be transported between generation, storage and point of reuse, recycling, stockpiling or disposal
 - Sampling and testing requirements
 - Licensing requirements under the POEO Act and/or relevant NSW Resource Recovery Orders and Exemptions
 - Procedures for verifying licenses and permits for handling, transportation and disposal of waste
- Provide controls for minimising consumption of fuel, oil and other consumables, on-site electricity and water required for construction
- Include methods for monitoring the implementation of the Waste Management Sub-Plan or mitigation strategies
- Identify the need or otherwise for "s.143 Notices" (see Clause 4.11.4) or any other additional approval, licence and/or permit from an appropriate authority or the Principal;
- Comply with the requirements of the POEO Act for any non-licensed as well as licensed waste activities that involve the storage, transport, treatment and/or disposal of waste.
- Include reference to a Waste Management Register that is maintained regularly until the completion of the project and includes all the appropriate information.
- Outline the process for Waste Avoidance and Recovery Reporting, including the yearly reporting requirements.

- Outline the process for offsite waste disposal including the process for s.143 preparation and submission to Transport for NSW

4.12 Use of pesticides

Guidance text:

Outline how herbicide and pesticides would be used on site and restrictions to their use.

If only small amounts of herbicide, as described in the below statement, use the below statement and delete the following statement:

Example Text

Herbicides used on site are applied only by hand or by hand-held equipment and, when applied outdoors on any one occasion, no more than 5 litres (or 5kg) of concentrate or 20 litres (20kg) of ready-to-use product will be used.

OR

If greater quantities of herbicides 5 litres (or 5kg) of concentrate or 20 litres (20kg) of ready-to-use product are to be used on any occasion, or application is to be by machine, use the below statement:

Example text

All herbicide use will be recorded on a herbicide application form, and copies provided to the client within 24 hours of application. All personnel managing, handling or applying pesticides must have completed appropriate training.

4.13 Ancillary Site facilities

Guidance text:

If Planning Approval identifies the need for an Ancillary Facilities Management Sub- Plan (AFMP) it is suggested that a separate standalone document is developed and this section is deleted.

If a separate AFMP is required it is suggested the below example text is updated and retained within the document, and the remainder of this section deleted. However, all or part of the below section may be retained in addition to an AFMP if there is a reason to do so.

Example Text

An Ancillary Facilities Management Plan has been developed to manage the risks on this Project. This document is developed in accordance with CoA X and located in [insert location].

Guidance text:

Where a separate AFMP is not required, it is suggested the following points are described and described on an ECM:

- Location of ancillary facilities
- A map of ancillary facilities
- Requirements for the management of the ancillary facilities such as fencing, bunded storage, environmental controls etc.
- Requirements for pre and post land condition assessments

4.14 Restoration of site

Guidance text:

On completion of the works, all areas disturbed by construction activities (including the site compound, materials storage, access and haul roads) must be reinstated and restored to conditions as outlined in the post-construction land assessment. Include in the list only the areas appropriate to your site and what you will be doing to restore them. Add any additional areas required.

This below section is to address:

- Site compound restoration
- Fuel and chemical/contaminated areas restoration
- Weed control
- Access and haul road restoration
- Stockpile site restoration
- Compacted ground restoration
- Disturbed ground restoration



Legal Requirements and Compliance Tracking

Guidance Text:

This appendix should be used to track all legislative requirements, Transport for NSW's specification requirements and compliance with all permits, approvals and licences.

The legislation table must with be updated to reflect the current status and applicability of legislation relevant to the project.

This Appendix can be used to track compliance with relevant approval, licence and permit requirements.

Legal requirements

Table 1: Legal register

Act	Activity / aspect	Requirement	Reference	Part 5.1 applicability
General				
<i>Environmental Planning and Assessment Act 1979</i>	All	Comply with the terms Minister for Planning and Infrastructure's approval for the project. Obtain the Minister's approval for any project modifications that are not consistent with the planning approval.	S115Z1	Yes
Water				
<p><i>Water Management Act 2000</i></p> <p>With the exception of controlled activity approvals, the <i>Water Management Act 2000</i> (WM Act) only applies in relation to those water sources covered by operational water sharing plans – these areas cover most of the State's major regulated river systems.</p>	Water access and use.	<p>Do not take water from a water source (a lake, river or estuary or place where water occurs naturally on or below the surface of the ground, and includes coastal waters) without an access licence.</p> <p>Do not use water on land (unless supplied by a water utility, irrigation corporation or in accordance with basic landholder rights) without a water use approval.</p>	S58 S60A S89 S91A	No

Act	Activity / aspect	Requirement	Reference	Part 5.1 applicability
<i>Water Management Act 2000</i>	Water management works	Do not construct/use a water supply work, drainage work or flood work without the appropriate approval.	S90 S91B S91C S91D	No
<i>Water Management Act 2000</i>	Waterfront land.	Do not deposit material, excavate, or remove material within a watercourse bank, shore or bed, or on land 40 metres inland, or interfere with the likely flow of water to such a body, without a controlled activity approval.	S91	No Public authorities are exempt from the need to obtain a controlled activity approval. <i>Water Management (General) Regulation 2004 (cl.39A)</i>
<i>Water Act 1912</i> Note that this Act is being progressively repealed by the <i>Water Management Act 2000 (WM Act)</i> . With the exception of controlled activity approvals, the WM Act only applies in relation to those water sources covered by operational water sharing plans – these areas cover most of the State's major regulated river systems.	Surface water	Obtain a licence or permit for construction or use of 'work' for purposes including the taking and using of water.	S21B	Yes
	Groundwater	Obtain a licence where interference with groundwater is likely to occur.	S112 S121A	S112 does not apply to the Crown. TfNSW is therefore not required to obtain a licence under this provision.

Act	Activity / aspect	Requirement	Reference	Part 5.1 applicability
	Floodplains	Obtain an approval for controlled works. These include works which occur on a designated floodplain, which can prevent land from being flooded or which can affect water flow to or from a river or lake.	S180	An exemption in relation to roads potentially applies – see clause 4 of the Water (Part 8-General) Regulation 2005.

Requirements of the Deed

Guidance Text

The following tables are to be amended where required and filled out to assist in documentation review. The tables should be amended to reflect the specifications prepared specifically for the project.

Table 2: Requirements of the Deed

Specification	Clause	Requirement	Reference

Specification	Clause	Requirement	Reference
		•	

DRAFT

CoA	Requirement	Reference

Item	Requirement	Reference

DRAFT

Appendix A2

Environmental Risk Register

Parramatta Light Rail – Stage 1

[Insert month and year]

This Environmental Risk Register has been prepared by [insert author], to supplement the Environmental Risk Analysis conducted as part of the Environmental Assessment (EA).

The identification of significant construction activities and associated impacts that could eventuate during construction of the Project is central to the selection of appropriate environmental safeguards.

The risk management process involved an assessment of all specific project activities/aspects in or near environmentally sensitive areas and resulted in the development of a list of environmental risks (effects and impacts) and a corresponding risk mitigation strategy and risk ranking. Each environmental risk was categorised, based on the following:

- The environmental aspect
- Relative scale of the potential impact
- Type of potential impact
- Likelihood of occurrence.

The identification of risks included a review of the proposed works, the CoA, environmental mitigation and management measures (EMMM), and review of the environmental risks identified by the EIS and subsequent Submissions Report.

Guidance Text:

The table below includes an example taken from a recent project. It should be revised to ensure that all relevant issues, activities and potential impacts specific to the project are identified and appropriately managed. Development of the table may be the subject of a workshop involving key personnel from various disciplines (e.g. construction, safety, environment) either initially at the development stage, or following the appointment of a successful construction contractor.

Example text is outlined in table 1.

Transport.nsw.gov.au/

13 15 00

Customer feedback
Transport for NSW
18 Lee Street,
Chippendale NSW 2008

Month Year
XX.XXX
ISBN: XXX-X-XXXXXX-XX-X

Appendix A3

Environmental Policy

Parramatta Light Rail – Stage 1

[Insert month and year]

Guidance Text:

A contractors corporate environmental policy or project specific environmental specific policy should be incorporated either in the body of the CEMP or attached as an appendix. The policy should be developed in accordance with requirements outlined in Section 5.2 of ISO 14001.

Appendix A4

Ancillary Facility Assessment Criteria

Parramatta Light Rail – Stage 1

[Insert month and year]

Guidance Text:

Outline or table how the proposed ancillary facilities would meet the requirements as outlined in the project CoA.

Outline the process for approval and amendment of ancillary facilities.

Include maps showing locations of proposed facilities in relation to requirements of the conditions and the project footprint.

Appendix A5

Document register

Parramatta Light Rail – Stage 1

[Insert month and year]

Guidance Text:

The table below is to be populated with relevant documentation generated by the project. This register should, as a minimum, include all relevant environmental documentation required by the approval and/or the CEMP (management system).

This document should also include references to agency correspondence/communication on CEMP and sub plans that are to be submitted with the approval, where appropriate amend table to match CoA.

Examples are included below.

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Table 1: Environmental document register [register to be completed by contractor]

Environmental management document	Purpose	Document no.	Review timeframe and status	Approval requirement	Agency Correspondence
Construction environmental management plan	Policy Legal and other requirements Risk assessment Objectives and targets Roles and responsibilities Communication and training Monitoring, auditing and reporting Corrective action Management review Management actions	[Detail to be added]	Review 3 monthly. Last review XX	Director General, DP & E	

Environmental management document	Purpose	Document no.	Review timeframe and status	Approval requirement	Agency Correspondence

transport.nsw.gov.au/

13 15 00

Customer feedback
Transport for NSW
18 Lee Street,
Chippendale NSW 2008

Mon Year

ISBN XXX-X-XX-XXXXXX-X

Appendix A6

Environmental Control Maps

Parramatta Light Rail – Stage 1

[Insert month and year]

Guidance Text:

Environmental control maps, or similar, should be developed for the project. Typically these plans incorporate key features of the project and relevant environmental constraints. Features often incorporated in environmental control maps might include:

- The alignment of the road (main carriageways, interchanges, medians, waterway crossings).
- The road boundary (the existing or future gazetted road corridor).
- Waterways.
- Aboriginal and non-Aboriginal heritage features.
- Endangered vegetation communities.
- Recorded threatened fauna sightings.
- SEPP 14 wetlands.
- No-go areas.
- Noise sensitive receivers.

This is not an exhaustive list. Environmental Control Maps should be specific to the project.

Appendix A7

Environmental Incident and Emergency Response Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Appendix B1

Traffic and Transport Management Sub-Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Construction Traffic Management Sub -Plan
Endorsed by Environment Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of <u>Insert name of Construction Contractor</u> by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the sub-plan, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This sub-plan is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website

The document is uncontrolled when printed. One controlled hard copy of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary / Abbreviations

Abbreviation	Expanded text
CEMP	Construction Environmental Management Plan
CoA	Condition of Approval
EIS	Environmental Impact Statement
EMMM	Environmental mitigation and management measures
EP&A Act	Environmental Planning and Assessment Act 1979
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EWMS	Environmental Work Method Statements
TCP	Traffic Control Plan
TTMP	Construction Traffic and Transport Management Sub-Plan
OEH	Office of Environment and Heritage
Roads and Maritime	Roads and Maritime Services
VMP	Vehicle Movement Plan
VMS	Variable message sign
[Insert detail]	[Insert detail]

1 Introduction

1.1 Context

This Construction Traffic and Transport Management Sub-Plan (TTMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the upgrade of the Parramatta Light Rail – Stage 1 (the Project).

This TTMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) and the environmental mitigation and management measures (EMMM) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation.

1.2 Background and project description

Guidance Text:

Suggest including brief summary of project description and impacts. Reference the CEMP, EIS and sections of this sub-plan where appropriate.

Example text:

The [Insert name of EIS document] considered the potential traffic impacts during the construction of the Project.

The EIS explained that the majority of the Proposal includes a bypass through rural or state forest land and would be constructed away from the existing [insert road name] and concluded that minimal traffic would be affected on the existing highway. It was noted that, in locations where the Proposal crosses the existing Highway, local and arterial roads, there are likely to be short-term, temporary traffic delays.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies.

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the [Insert contractor name] proposes to manage traffic during construction of the project.

2.2 Objectives

The key objective of the TTMP is to ensure that traffic impacts during construction are minimised and are within the scope permitted by the planning approval. This includes minimising delays, ensuring consideration is given to the needs of all road users and maintaining safety for both workers and the general public.

To achieve these objectives, [Insert contractor name] will undertake the following:

- Ensure appropriate controls and procedures are implemented during construction activities to address potential traffic impacts along the Project corridor
- Ensure appropriate measures are implemented to address the relevant CoA outlined in Table 3.1 and Table 3.2, and the safeguards detailed in the EIS
- Ensure appropriate measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 and Section 3.4 of this Plan
- [Insert additional measures that will be undertaken to achieve objectives]

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation and regulatory requirements

Identified regulatory requirements are:

- An approved and valid Road Occupancy Licence (ROL).
- An approved relevant Speed Zone Authorisation (SZA).
- Australian Road Rules
- [Insert any additional regulatory requirements]
- []

Legislation relevant to traffic management also includes the *Environmental Planning and Assessment Act 1979* (EP&A Act), under which the project approval was granted. Relevant provisions of the EP&A Act are explained in the register of legal and other requirements included in [Appendix A2](#) of the CEMP.

3.1.2 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

- Roads and Maritime QA Specification G10 – Traffic Management.
- Roads and Maritime Traffic Control at Worksites Manual (2010).
- AUSTROADS Guide to Traffic Management 2009 – Parts 1-13
- AUSTROADS Guide to Road Design 2009 – Parts 1-7
- AUSTROADS Guide to Road Safety 2009 _ Parts 1-9
- [Insert any additional relevant guidelines]

3.2 Ministers Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 : Conditions of Approval relevant to the TTMP

CoA No.	Condition Requirements	Document reference
[Insert CoA reference]	[Insert all relevant requirements from the approval that are specific to preparation and content of the TTMP.]	[Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.]

3.3 Environmental Mitigation and Management Measures

Relevant EMMM are listed in Table 3-2 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2: Environmental Mitigation and Management Measures relevant to this TTMP

Outcome	Ref #	Commitment	Timing	TTMP reference
[Outline impact]	[Include EMM reference number]	[Outline the commitment eg investigation, monitoring, further mitigation measures etc]	[Pre-construction / Construction / Operation]	[Include reference to where this is referenced in the TTMP]

4 Construction traffic impacts

Guidance text:

This section outlines the impact of the Project construction and the construction traffic on the roads and traffic that interface with the Project.

Detailed impact information may be required to address CoA, this information would be in addition to the below example text. This may include details of intersection level of service and potential disruptions to arrangements for pedestrians, property access, public transport, parking and/or cyclists.

It is suggested that the following items are considered to be addressed:

- Impacts due to increased heavy vehicles including heavy vehicle routes, increased average delay and the level of service expected
- Haul routes to be used and the justification
- Parking
- Impacts to vulnerable road users including pedestrians, public transport, cyclists, industry and freight.

Example text:

Potential traffic impacts from the construction of the Project were assessed in the EIS. The EIS identified that [Insert text summary from the EIS outlining the expected interface of the construction with local traffic on existing surrounding roads and the expected impact of construction and construction traffic on the surrounding traffic and roads].

The EIS noted that in locations where the proposal crosses the existing Highway and local roads, there are likely to be short-term, temporary traffic delays. Traffic impacts associated with increases in traffic volumes from construction vehicles and haulage of materials (including spoil and quarry material) to and from the construction site(s) were also noted.

5 Traffic Management

5.1 Construction stage traffic management

5.1.1 Construction staging

Guidance text:

Document any proposed strategy relating to construction staging / traffic staging – refer to Appendices as appropriate.

It is recommended that this section outlines how construction would be managed to minimise impacts on private road users and public transport.

5.1.2 Construction site traffic management

Guidance text:

Reference traffic control plans, or similar, for each specific section of works. Address the specifics of the proposed works and individual traffic controls / arrangements for each defined section – refer to Appendices as appropriate.

5.1.3 Site compound traffic management

Guidance text:

Reference arrangements for the management of traffic at site compounds including expected movements, parking, turning areas and ingress and egress points - refer to Appendices as appropriate.

Where appropriate, it is recommended that maps are used to demonstrate location of compounds and entry/exit locations.

5.1.4 Construction traffic routes

Guidance text:

Describe the proposed construction traffic routes and quantify expected volumes on these routes - refer to Appendices as appropriate.

It is suggested that the following factors are considered at minimum:

- Designation and management of haul routes
- Figures to show lay over bays, light and heavy vehicle parking locations
- Management of delivery of plant, equipment and materials

If appropriate reference the NVMP to indicate where construction traffic noise is addressed.

5.2 Road occupancy

Guidance text:

Detail arrangements for determining road occupancy requirements and the process Road occupancy licence (ROL) applications, any council lane closure permits and lane closures as appropriate.

5.3 Speed management

Guidance text:

Detail arrangements for determining whether speed limit changes are required and the process for Speed Zoning Authorisation (SZA) applications.

5.4 Signposting and delineation

Guidance text:

Detail arrangements for the use of signposting and delineation to manage traffic impacts.

5.5 Pedestrians and cyclists

Guidance text:

Detail arrangements to manage pedestrian and cyclist movements, refer to CoA where appropriate.

It is recommended that this section outlines how the works would be managed to minimise impacts on the movements of pedestrians and cyclists.

5.6 Public transport

Detail arrangements to manage public transport impacts.

5.7 Property access

Guidance text:

Detail the arrangements for maintaining access to private property. Establish appropriate guidelines which may include:

- Locating entries close as practicable to the existing entrance
- Achieving alternative arrangements that are acceptable to the property owner

- Signposting entries to any businesses where necessary
- Allowing free movement in and out of properties at all times.

5.8 Special events

Guidance text:

Describe the approach to managing special events / issues such as:

- Local festivals and celebrations
- Day light savings changes
- Seasonal variations in traffic volumes
- Holiday periods for NSW.

5.9 Incident management and response

Guidance text:

Detail arrangements for incident detection, management and response - refer to Appendices as appropriate.

6 Compliance management

6.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of construction traffic management are detailed below.

Guidance text:

Detail traffic management related roles and responsibilities here e.g. Traffic Manager, Traffic Planning Engineer, Traffic Control Site Manager, Traffic Field Crews.

6.2 Communication

Guidance text:

Detail the approach for disseminating information to the community regarding traffic management. Cross reference the Community Communication Strategy (refer to CoAs as appropriate).

Explain the membership and processes for any traffic / transport liaison group.

6.3 Inspections

Requirements and responsibilities in relation to inspections are documented in Section 3.9 of the CEMP.

Guidance text:

Detail any specific construction traffic related inspection and monitoring requirements.

6.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of traffic management measures, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9 of the CEMP.

6.5 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

7 Review and improvement

7.1 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of traffic management
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

7.2 TTMP update and amendment

The processes described in Section 3.9 and Section 3.11-3.12 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Construction Traffic Manager (in consultation with the Environment Manager) can amend this TTMP.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

Appendix A - [Contractor to allocate]

Appendix B - [Contractor to allocate]

Appendix C - [Contractor to allocate]

Appendix D - [Contractor to allocate]

Appendix B2

Flora and Fauna Management Sub-Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
BC Act	<i>Biodiversity Conservation Act 2016</i>
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
DPI	Department of Primary Industries
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ECM	Environmental Control Map
EMMM	Environmental Mitigation and Management Measure
FMP	Flora and Fauna Management Plan
FM Act	<i>Fisheries Management Act 1994</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NW Act	<i>Noxious Weeds Act 1993</i>
OEH	NSW Office of Environment and Heritage
TSC Act	<i>Threatened Species Conservation Act 1995</i>

Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Management Sub Plan	Flora and Fauna
Endorsed by Environment Representative	[Insert name and title of Environment Representative]	
Signed		
Dated		
Approved on behalf of Transport for NSW Services by	[Insert name of Transport for NSW project manager]	
Signed		
Dated		
Approved on behalf of [Insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]	
Signed		
Dated		

Version control

Guidance Text:

The below document status table is for tracking the revisions of the FFMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

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Distribution of controlled copies

This FFMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the FFMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

1 Introduction

1.1 Context

This Flora and Fauna Management Sub Plan (FFMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail – Stage 1 (the Project).

This FFMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) and the environmental mitigation and management measures (EMMM) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation.

1.2 Background and project description

Guidance text:

Suggest including a brief project description and summary of impacts relating to flora and fauna. Reference the CEMP, EIS and sections of this sub-plan where appropriate.

Example text:

[Insert title of environmental assessment and date] assessed flora and fauna impacts from construction of the Project.

As part of the EIS development, a detailed biodiversity assessment was prepared to address the Environmental Assessment Requirements issued by the then Department of Planning and Environment (DP&E). The flora and fauna assessment was included in the EIS as [include EIS document reference].

The project description is outlined in section 1.2 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this plan is to describe how construction impacts on flora and fauna will be minimised and managed during the construction of Parramatta Light Rail – Stage 1

2.2 Objectives

The objective of the FFMP is to ensure that all avoidance, EMMMs relevant to the protection of native flora and fauna including threatened species and endangered ecological communities referred to in:

- The environmental impact assessment prepared for Parramatta Light Rail – Stage 1
- Conditions of Approval granted to the project on [Insert date]
- [Insert any other additional approvals, authorisations, licences relevant to noise and vibration]

2.3 Targets

Guidance text:

Include targets established for the management of flora and fauna impacts during the project. These targets represent the intended or desired outcomes of flora and fauna management during construction.

Minimum recommended targets are outlined below.

Example Text

The following targets have been established for the management of flora and fauna impacts during the project:

- Ensure full compliance with the relevant legislative requirements, CoA and EMMM
- No disturbance to flora and fauna outside the proposed construction footprint and associated access roads and site compounds
- No increase in distribution of weeds currently existing within the project areas
- No new weeds introduced to the project areas
- No transfer of plant diseases or pathogens to or from the project work areas
- Effective rehabilitation / revegetation that meets its ecological and landscaping objectives
- All fauna species encountered during construction are handled humanely in accordance with industry standards
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat
- Minimise barriers to fauna movement and fish passage
- [Include additional measures as required]

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this FFMP is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the CEMP

3.1.3 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

- Department of Primary Industries Policy and Guidelines for Fish Habitat Conservation and Management (2013 update)
- Transport for NSW's Fauna Management Guidelines 3TP-SD-113/4.0
- Transport for NSW's Weed Management and Disposal Guideline 3TP-SD-110/2.0
- Transport for NSW's Vegetation Management (Protection and Removal) Guideline 9TP-SD-111/3.0
- DECCW 2008. Hygiene protocol for the control of disease in frogs.
- Australian Standard AS 4373 Pruning of Amenity Trees
- Australian Standard 4970 – 2009 Protection of Trees
- [Review and update list to include site specific and site relevant guidelines]

3.2 Ministers Conditions of Approval

The CoA relevant to this Plan are listed Table 3 1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other project management documents.

Table 3-1: Minister's Conditions of Approval

CoA No.	Condition Requirements	Document Reference
[Insert CoA reference]	[Insert all relevant requirements from the approval that are specific to preparation and content of the FFMP.]	[Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]

3.3 Commitments in the EIS

The EMMM from the EIS relevant to this Plan are listed Table 3.2 below. A cross reference is also included to indicate where the measure is addressed in this Plan or other project management documents.

Table 3-2: Environmental mitigation and management measures from the EIS

CoA No.	Environmental mitigation and management measures	Document Reference
[Insert CoA reference]	[Insert all relevant commitments from the EIS that are specific to preparation and content of the FFMP.]	[Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]

4 Existing Environment

Guidance text:

This section should be tailored to reflect specific environmental conditions relevant to the project and the area in which it is undertaken. Update the below section to include all relevant information as outlined within the EIS, CoA's and Transport for NSW's guidelines.

Where appropriate, include photos to assist in identification of sensitive areas and species, and maps of exclusion zones.

If there are any unexpected finds prior to or during construction this section will need to be updated.

The following sections summarise existing flora and fauna within and adjacent to the project area including species, communities and habitats. The key reference documents are [insert relevant EIS chapter and Appendix].

The project boundary and relevant ecological data is shown on the environmental control maps included in Appendix A8 of the CEMP.

4.1 Environmental aspects

4.1.1 [Endangered ecological communities]

EECs listed in NSW under the BC Act (or TSC act if applicable) have been located in the study area and are listed below:

- [Include list of EECs located within the study area]

Commonwealth listed EPBC Act listed EECs have been located in the study area and are listed below:

- [Include list of EECs located within the study area]

The location these EEC in relation to the project is shown on the environmental control maps included at Appendix A8 of the CEMP.

[No Commonwealth EPBC Act / BC Act listed endangered ecological communities (EEC) were identified in the study area.]

4.1.2 [Threatened or otherwise significant flora species]

Threatened flora species identified, or with the potential to occur within the project corridor, and their conservation status, are listed in Table 4 1.

Table 4-1: Threatened of otherwise significant flora species

Common name	Scientific name	EPBC Act	BC Act	Occurrence
[Insert detail]	[Insert detail]	[Insert status]	[Insert status]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]

Common name	Scientific name	EPBC Act	BC Act	Occurrence
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]

The location these flora species in relation to the project is shown on the environmental control maps included at Appendix A8 of the CEMP.

4.1.3 [Fauna habitat]

[Insert number of habitat types] fauna habitat types were identified by the EIS. These are listed below and shown on the Sensitive Area Maps included at Appendix A8 of the CEMP.

Table 4-2: Fauna habitat types

Name	Habitat features
[Include habitat type such as particular]	[Describe habitat features.]
[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]

4.1.4 [Threatened fauna]

Threatened fauna species identified during survey (confirmed) and those which have been previously recorded in the area are listed in Table 4 3.

Table 4-3: Threatened fauna

Common name	Scientific name	EPBC Act	BC Act	Occurrence likelihood
[Insert detail]	[Insert detail]	[Insert status]	[Insert status]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]

4.1.5 [Aquatic fauna]

[Species recorded in freshwater and estuarine habitats during investigations for the EIS and those predicted to occur are shown in Table 4 4.]

Table 4-4: Aquatic fauna

Habitat	Species
[Include name of water body]	[Include species detail]
[Insert detail]	[Insert detail]

[The fisheries habitat classification for each of the waterways referred to above is proved in table 4-5.]

Waterway	Classification #	Description
[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]

#Classification in accordance with NSW DPI Fisheries Guidelines

4.1.6 [Aquatic flora]

Species recorded in freshwater and estuarine habitats during investigations for the EIS are shown in Table 4 5.

Table 4-5: Aquatic flora

Common name	Scientific name	EPBC Act	BC Act	Occurrence
[Insert detail]	[Insert detail]	[Insert status]	[Insert status]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]
[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]	[Insert detail]

5 Environmental aspects and impacts

5.1 Construction activities

Guidance text:

The list of key aspects below should be updated to ensure relevance to the project.

Example text:

Key aspects of the project that could result in impacts to terrestrial and aquatic flora and fauna include:

- Clearing of native vegetation (including habitat). The EIS identifies clearing of approximately 255 hectares of native vegetation
- Works around and within watercourses
- Noise impacts
- Disturbance of soils, consequential erosion and the mobilisation of sediment
- Use of chemicals / fuels (potential for spills)

Refer also to the Aspects and Impacts Register included in Appendix A2 of the CEMP.

5.2 Ecological impacts

Guidance text:

Include a description of indirect and direct likely impacts as a result of the project. Below guidance text to be used as minimum requirements.

Example text:

Likely and/or potential impacts associated with project are discussed in [Chapter 10] of the EIS and include:

- Loss of threatened plant species and endangered ecological communities
- Direct and indirect impacts to fauna
- Loss of habitat
- Fragmentation of habitats and wildlife corridors
- Barrier effects on wildlife and riparian corridors (such as the erosion of genetic stock, impacts on home ranges, territorial disputes, increased competition etc)
- Spread of plant diseases
- Spread of feral animals
- Physical, chemical and biological changes to aquatic environments, wetlands etc
- Edge effects (such as weed invasion, pests and disease)
- [Disturbance to aquatic and riparian habitats potentially resulting in contamination and siltation of waterways.]
- [Cumulative impacts in association with [Update as required].]

Notwithstanding, EMMs provided in Table 6-1 aim to minimise the above likely and potential impacts on those threatened plant species identified in Table 4-1.

In the absence of appropriate mitigation measures, there is the potential for significant impacts on those threatened flora and fauna species identified in as occurring, or with the potential to occur, within the project corridor.

5.2.1 Pre-construction surveys

Guidance text:

Transport for NSW and/or the Contractor is to document the outcomes of pre-construction surveys required by CoA or other relevant documents here. Any additional mitigation or management measures will be incorporated into Chapter 5 as required.

Environmental control maps are to be updated with the information from these surveys.

6 Environmental mitigation and management measures

6.1 Flora and Fauna Management Strategies

Guidance Text:

Fauna and flora management strategies for pre-construction, construction and post-construction activities including environmental control measures for pre-clearing process.

6.2 Fauna Rescue and Release Procedure

Guidance Text:

Outline the procedure for fauna rescue and release. This must include the process for:

- Handling of injured fauna by licensed fauna handler such as fauna ecologist or wildlife carer
- Process to ensure if native fauna are captured during vegetation clearing, how it would be ensured they are released into a suitable nearby location that has been identified as such by an ecologist
- Process to keep records of fauna captured and relocated
- Process to report any injury or death of threatened species to the Roads and Maritime Services
- The fauna rescue and release management measures for aquatic fauna and fish

6.3 Weed and Pathogen Control Procedure

Guidance Text:

Include below or reference location where there is a procedure for controlling the introduction and spreading of weeds and pathogens caused by the project.

This is to include hygiene protocols and arrangements for monitoring.

6.4 Coarse Woody Debris and Bushrock

Guidance Text:

Include proposed strategies for the re-use of coarse woody debris and bushrock

6.5 Unexpected threatened species finds

Guidance Text:

Include a procedure or include reference to an unexpected threatened species find procedure. This

procedure must at a minimum include the following:

- i. stop work arrangements in the immediate area of the threatened species;
- ii. notification and communication protocol;
- iii. consultation with the specialists to assess the significance of the find; and (iv) a list of approvals, licences or permits that may need to be obtained before the works can recommence.

6.6 [Heading for contractor to add]

6.7 [Heading for contractor to add]

A range of environmental requirements and control measures are identified in the various environmental documents, including the EIS, EMMM, CoA and other Transport for NSW documents. Specific measures and requirements to address impacts on flora and fauna are outlined in Table 6.1.

6.8 [Biodiversity offsets]

Guidance text:

If offsets are required as outlined in the EIS and/or CoA or are not the responsibility of the construction contractor this should be outlined below. If offsets are not required this section can be deleted.

Example text:

Biodiversity offsets are proposed as required by CoA [X]. These are documented separately in the Biodiversity Offset Strategy.

Table 6-1: Flora and fauna management and mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
[GENERAL]					
[Include a unique ID for this measure e.g. FF1]	[Outline the measure or requirement]	[List any specific resources required to implement this measure]	[Include which stage of the project the measure would be implemented]	[Include who is responsible for implementation]	[Include where this requirement is from e.g. CoA number, best practice]
[VEGETATION CLEARING, PROTECTION AND MANAGEMENT]					

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
[THREATENED FLORA]					
[WILDLIFE PROTECTION]					

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
[FAUNA HABITAT AND CONNECTIVITY]					
[AQUATIC HABITATS]					
[PESTS AND DISEASES]					

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
[ADDITIONAL CATEGORY]					

7 Compliance management

7.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

Guidance text:

The below example text should be reviewed and updated, where necessary, to ensure relevance to project.

Example text:

All employees, contractors and utility staff working on site will undergo site induction training relating to flora and fauna management issues. The induction training will address elements related to flora and fauna management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Specific species likely to be affected by the construction works and how these species can be recognised
- Mulch stockpile location and management measures
- Fauna rescue requirements
- Weed control measures
- General flora and fauna management measures
- Specific responsibilities for the protection of flora and fauna.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

7.3 Monitoring and inspections

Inspections of sensitive areas and activities with the potential to impact flora and fauna will occur for the duration of the project.

Requirements and responsibilities in relation to monitoring and inspections are documented in Section 3.9.1 and 3.9.2 of the CEMP.

7.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.5 Reporting

Guidance text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

Example text is below.

Example text:

Reporting requirements and responsibilities are documented in Section 3.9.5 of the CEMP. There are specific reporting requirements associated with additional survey work and monitoring including:

- Results of pre-clearing surveys
- Threatened Flora Management Plan
- Giant Barred Frog and Green-thighed Frog Management Plans
- Nest Box Plan.

The Ecological Monitoring Program (as required by CoA XX) will assess and report on the effectiveness of mitigation measures implemented as part of the project. Details of the Ecological Monitoring Program are included in Appendix D of this Plan.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement. The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2 FFMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Any revisions to the FFMP will be in accordance with the process outlined in **Section 1.6** of the CEMP.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to 3.11.2 of the CEMP.

Appendix A – Procedure for Vegetation Clearing

Guidance Text

Where mulch may be transferred offsite for reuse, it is recommended that a pre-clearing Ecologist is utilised to undertake the visual assessments of the material to be mulched as per The Mulch Order 2016 (EPA 2016).

Appendix B - Unexpected flora or fauna finds procedure

Appendix C - [Contractor to allocate]

Appendix D - [Contractor to allocate]

Appendix E - [Contractor to allocate]

Appendix B3

Noise and Vibration Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Guidance Text:

The Contents table has been included in the navigation pane and accessible PDF bookmarks. As a result it will appear as a line item within the table of contents. Please delete the 'Contents' line item from the table of contents prior to finalising the submissions report.

Guidance Text:

It is noted that additional plans and procedures to be included as appendices are likely to be outlined within the CoA or environmental management measures.

Suggested appendices are listed below:

Example Text:

Appendix A - Out of Hours Work Protocol

Appendix B - Noise and Vibration Monitoring Program

Appendix C - Procedure for addressing noise and vibration exceedances

Appendix D - Noise minimisation options

Document control

Approval and certification

Title	[Title of proposal] Noise and Vibration Management Sub - Plan
Accepted on behalf of Transport for NSW by	
Signed	
Dated	

Version control

The below document status table is for tracking the revisions of the NVMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This NVMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the NVMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the Project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with Project specific terms and acronyms where relevant]

Abbreviations	Expanded Text
Ambient noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
Attenuation	The reduction in the level of sound or vibration.
CEMP	Construction Environmental Management Plan
CoA	Condition of Approval
dBA	Decibels using the A-weighted scale measured according to the frequency of the human ear.
DP&E	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EMS	Environmental management system
Environmental aspect	Defined by AS/NZS ISO 14001:2015 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2015 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental objective	Defined by AS/NZS ISO 14001:2015 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
EMMM	Environmental Mitigation and Management Measure
Environmental target	Defined by AS/NZS ISO 14001:2015 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
ER	Environmental Representative
ERG	Environmental Review Group
ECM	Environmental Control Map

Feasible and reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Feasible relates to engineering considerations and what is practical to build. Reasonable relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements..
LAeq (15min)	The A-weighted equivalent continuous (energy average) A-weighted sound pressure level of the construction works under consideration over a 15-minute period and excludes other noise sources such as from industry, road, rail and the community.
LA (max)	the A-weighted maximum noise level only from the construction works under consideration, measured using the fast time weighting on a sound level meter.
OEH	Office of Environment and Heritage
RBL	The Rating Background Level for each period is the medium value of the ABL values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night)
SWP	Sound Power Level
SPL	Sound Pressure Level

1 Introduction

1.1 Context

This Construction Noise and Vibration Management Sub Plan (CNVMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the [Insert project name] (the Project).

This CNVMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) and the environmental mitigation and management measures (EMMM) listed in the [Insert project name] Environmental Impact Statement (EIS) and all applicable legislation.

1.2 Background and project description

Guidance Text:

Suggest including a brief Project description and summary of impacts relating to construction noise and vibration. Reference the CEMP, EIS and sections of this sub-plan where appropriate.

Example Text:

[Insert title of environmental assessment and date] assessed noise and vibration impacts on sensitive receivers and structures from construction of the Project.

As part of the EIS development, a detailed construction and operational noise and vibration assessment was prepared to address the Environmental Assessment Requirements issued by the then Department of Planning and Environment (DP&E). The noise and vibration assessment was included in the EIS as [include EIS document reference].

The Project description is outlined in section 1.2 of the CEMP.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the Project to which this sub-plan applies.

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the [Insert contractor name] proposes to manage potential noise and vibration impacts during construction of the Project.

2.2 Objectives

The key objective of the NVMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to noise and vibration are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for [Insert Project name]
- Conditions of Approval granted to the Project on [Insert date]
- Transport for NSW's Construction Noise and Vibration Strategy
- [Insert any other additional approvals, authorisations, licences relevant to noise and vibration]

2.3 Targets

Guidance Text:

Include targets established for the management of noise and vibration impacts during the Project. These targets are to represent the intended or desired outcomes of noise and vibration management during construction.

Minimum recommended targets are outlined below.

Example Text:

Targets have been established for the management of noise and vibration impacts during the Project to ensure:

- Full compliance with the relevant legislative requirements, CoA and EMMMs
- Implement feasible and reasonable noise mitigation measures with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009)
- That blasting activities are only undertaken at designated times and remain within established/agreed criteria
- Complaints from the community and stakeholders are minimised.

3 Environmental requirements

3.1 Relevant legislation

3.1.1 Legislation

All legislation relevant to this NVMP is included in Appendix [A1] of the CEMP.

3.1.2 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include: [update the following reference documents as required]

- NSW Interim Construction Noise Guideline (ICNG), Department of Environment and Climate Change 2009
- NSW Road Noise Policy, Dept. of Environment, Climate Change and Water 2011
- NSW Industrial Noise Policy, Environment Protection Authority 2000
- NSW Assessing Vibration – a technical guideline (AVTG), Department of Environment and Conservation 2006
- Australian Standard AS/NZS 2107:2000 Acoustics - Recommended design sound levels and reverberation times for building interiors
- Australian Standard 2834-1995 Computer Accommodation, Chapter 2.9 Vibration
- Australian Standard AS 2187.2 Explosives - Storage and use - Part 2 Use of explosives
- Australian Standard AS2436-1981 Guide to Noise Control on Construction, Maintenance and Demolition Sites
- British Standard BS 6472-2008, 'Evaluation of human exposure to vibration in buildings (1-80Hz)'
- British Standard 7385: Part 2-1993 'Evaluation and measurement of vibration in buildings'
- German Standard DIN4150-1999 Structural vibration Part 3: Effects of vibration on Structures
- Transport for NSW's Construction Noise and Vibration Strategy

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other project management documents.

Table 3-1: Minister's Conditions of Approval

CoA No.	Condition Requirements	Document Reference
[Insert CoA reference]	[Insert all relevant requirements from the approval that are specific to preparation and content of the NVMP.]	[Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.]

3.3 Environmental Mitigation and Management Measures

Relevant EMMs are listed Table 3-2 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2: Environmental mitigation measures relevant to this NVMP

Outcome	Ref #	Commitment	Timing	NVMP
[Outline impact]	[Include EMM reference number]	[Outline the commitment eg investigation, monitoring, further mitigation measures etc]	[Pre-construction / Construction / Operation]	[Include reference to where this is referenced in the NVMP]

4 Existing environment

Guidance Text:

This section should be sufficiently detailed to capture all sensitive receivers/receiver groups predicted to be impacted by the Project. Background noise levels used to establish noise management levels in the subsequent sections should also be provided.

4.1 Sensitive receivers

Guidance Text:

Minimum detail required includes:

- Identification of surrounding land use
- The type and number of sensitive receivers
- Reference to map showing the receivers categorised based on sensitivity and mapped in relation to Project footprint.

4.2 Ambient noise

Guidance Text:

Minimum detail required includes:

- EIS noise monitoring locations
- Details of ambient noise monitoring results

5 Noise and vibration criteria for NSW

The EPA recommends management levels and goals when assessing construction noise and vibration. These are outlined in:

- The Interim Construction Noise Guideline (ICNG), Assessing Vibration: a technical guideline
- The ANZECC, Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration.

Relevant elements of these documents are summaries and discussed in this Chapter.

5.1 Construction noise and assessment objectives

The DECC Interim Construction Noise Guideline (ICNG, July 2009) provides guidelines for the assessment and management of construction noise. The ICNG focuses on applying a range of work practices to minimise construction noise impacts rather than focusing on achieving numeric noise levels.

The main objectives of the ICNG are to:

- Identify and minimise noise from construction works
- Focus on applying all 'feasible' and 'reasonable' work practices to minimise construction noise impacts
- Encourage construction during the recommended standard hours only, unless approval is given for works that cannot be undertaken during these hours
- Reduce time spent dealing with complaints at the project implementation stage
- Provide flexibility in selecting site-specific feasible and reasonable work practices to minimise noise impacts.

5.2 Quantitative noise assessment criteria

Guidance Text:

Outline noise assessment criteria for the different receiver types within the noise catchment areas.

5.3 Adopted project noise management levels

Guidance Text:

Detail the project-specific noise objectives for each representative monitoring location for works within and outside of standard working hours.

Update and identify noise catchment areas (NCA) and corresponding construction noise management levels for relevant section/stage. A figure showing the location of NCA's and noise sensitive receivers to be referenced.

5.4 Vibration criteria

Guidance Text:

Minimum level of information to be included is outlined below:

- Outline the effects of vibration and categories of impact.
- Outline the types of vibration criteria
- Outline appropriate standards
- Table the continuous vibration acceleration criteria for different receiver types
- Table the impulsive vibration acceleration criteria for different receiver types
- Table the intermittent vibration impact criteria for different receiver types
- Table the structural damage criteria for different receiver types

6 Environmental aspects and impacts

6.1 Environmental aspects

Guidance Text:

Outline and describe the aspects of the Project that will result in noise generation. Where appropriate, split this up into sub-headings such as tunnelling works, noise intensive activities etc.

Example Text:

The Project will involve a range of activities incorporating various heavy machinery, plant and equipment that will operate in a number of locations across the Project. In order to assess the level of potential impact on noise and vibration sensitive receivers, the broad categories of construction activity likely to interact with these receivers are identified below.

[The list of key aspects below should be updated to ensure relevance to the Project.]

- Site establishment
- Clearing and grubbing
- Demolition
- Earthworks and drainage
- Drilling and blasting
- Quarrying – crushing and screening and rock hammering
- Concrete batching (batch plant)
- Bridgeworks (piling)
- Paving and concrete saw cutting
- Road furnishing.

6.2 Environmental impacts

Guidance Text:

Outline the extent of the modelled noise and vibration impact on surrounding receivers during construction of the Project.

Example Text:

The potential for noise and vibration impacts on sensitive receivers or structures will depend on a number of factors. Typically these might include:

[Update list of potential impacts to ensure relevance to Project.]

- The type of equipment in use
- The number of equipment simultaneously in use
- Ground condition
- Topography and other physical barriers
- Proximity to sensitive receivers
- The condition of sensitive receivers
- Hours/duration of construction works
- Proximity of heavy traffic areas such as the highway.

Relevant aspects and the potential for related impacts have been considered in a risk assessment at [Section 3.4/Appendix A2 of the CEMP].

Noise and vibration impacts attributable to the Project are anticipated. Chapter 8 provides a suite of mitigation measures that will be implemented to avoid or minimise impacts on the receiving community and/or built environment.

7 Construction noise and vibration assessment

Guidance Text:

This Chapter should be updated in line with a construction noise and vibration assessment carried out specifically for the Project.

The Chapter is to include a summary of anticipated construction scenarios and predicted noise levels. This Chapter is to describe the potential impacts on the receivers and the adaptive management approach that would be taken to the implementation of mitigation measures to minimise and manage impacts on the community.

It is suggested that an EIS process flow chart is included within this section assist in demonstrating how any additional assessment and approvals would be undertaken.

7.1 Construction activities

Guidance Text:

Where the equipment and construction activities outlined within the EIS assessment have been altered to minimise noise and vibration impacts additional assessment could be undertaken to provide more exact mitigation requirements.

Certain activities and equipment may be required to be managed or avoided in specific locations e.g. adjacent to sensitive receivers. Where this is required it is suggested that maps/figures are used to demonstrate restrictions and compliance would be achieved.

Include a table summary of construction scenarios and associated plant and equipment required for the works.

A reference to a list of equipment and plant correlating sound pressure levels is to be included.

Table 7-1: Construction scenarios and associated plant and equipment

Scenario reference no.	Construction scenario	Typical plant and equipment required

7.2 Construction noise impacts

7.2.1 General construction

Guidance Text:

Include a table of the predicted noise impacts from each related construction scenario. The table is

to include noise management level thresholds for each key sensitive receiver locations and for each time frame.

7.2.2 Ancillary facility and stockpile operation (including access)

Guidance Text:

Outline activities that would occur at the ancillary facility and stockpiles.

Include a table that details the likely combination of activities, plant and equipment anticipated at each facility.

Detail the predicted noise levels from each facility and include predicted noise levels at incremental distances from the facility.

If vibration impacts are predicted at the facilities include the same level of detail as outlined in the above two sentences.

Include reference that shows locations of the ancillary facilities and stockpile locations.

7.3 Construction vibration impacts

7.3.1 Vibration assessment

Guidance Text:

Discussion of ground bound vibration impacts on both human perception and structural damage to be provided

8 Environmental control measures

Specific measures and requirements to address contract specifications, CoA and EMMMs in relation to impacts from noise and vibration are outlined in Table 8-1.

Guidance Text for Table 8-1:

This table is to explain how CoA, EMMMs and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

Guidance Text for projects using ISCA ratings:

It is recommended that the contractor also use **Table 8-1** to:

- Document additional best practice measures that they will commit to in order to improve project outcomes and minimise impacts.
- For example projects that are required to achieve a sustainability rating under the Infrastructure Sustainability (IS) rating scheme (administered by the Infrastructure Sustainability Council of Australia (ISCA)) can use **Table 8-1** to cross-reference the project IS Management Plan and document specific initiatives as they relate to the IS rating credit points. These initiatives may include: <Insert initiatives here>

9 Compliance management

9.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Chapter 8 of this Plan.

9.2 Training

Guidance Text:

This section should outline the training relevant to this sub plan. Example text is included below.

Example Text

All employees, contractors and utility staff working on site will undergo site induction training that includes construction noise and vibration management issues. The induction training will address elements related to noise and vibration management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Normal construction hours
- Out of hours works protocol, including consultation
- Location of noise sensitive areas
- Complaints reporting
- General noise and vibration management measures
- Specific responsibilities to minimise impacts on the community and built environment from noise and vibration associated with the works.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

9.3 Inspection and monitoring

Guidance Text:

This section is to be reviewed and updated, where necessary, to ensure relevance to the Project. Suggest this section includes a general outline of monitoring and how monitoring results would be regularly communicated to Transport for NSW, example text is included below.

It is recommended that this section includes a process for verification of noise and vibration monitoring results.

Example Text

Weekly and other routine inspections by Environmental Officers, Transport for NSW, ERG representatives and ER will occur throughout construction. Detail on the nature and frequency of these inspections are documented in Section 3.9.1 and 3.9.2 of the CEMP.

Noise and vibration monitoring will also occur routinely for the duration of the Project. Monitoring will be undertaken by an Acoustic Consultant or the Environmental Officer during the construction phase of the Project.

Exceedances of criteria would be sent to Transport for NSW environmental staff.

9.3.1 Noise monitoring

Guidance Text:

Outline the noise monitoring that would occur, when and how this would occur

Outline what would happen if noise levels are found to exceed identified criteria

Outline the standards and guidelines which monitoring would be carried out in accordance with

9.3.2 Vibration monitoring

Guidance Text:

Outline the vibration monitoring that would occur, when and how this would occur

Outline what would happen if vibration is found to exceed identified criteria

Outline the standards and guidelines which monitoring would be carried out in accordance with

9.4 Complaints

Complaints will be recorded and managed as detailed in Section 3.7.3 of the CEMP.

9.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

9.6 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan and where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5. Example text is below.

Where required by CoA outline a process for reporting monitoring data to DP&E.

Example Text:

Reporting requirements and responsibilities are documented in Section 3.9.4 and 3.9.5 of the CEMP.

Specific reports prepared in response to noise and vibration monitoring will capture detail including, but not limited, to:

- The locations and description of monitoring undertaken
- A tabulation of results (e.g. for noise including LMAX, L10, L90 and LAeq noise levels) together with notes identifying the principle sources and operations
- Summary of any measurements exceeding the nominated criteria, and descriptions of the plant or operations causing these exceedances
- Detail of any corrective actions and confirmation of their successful implementation.

10 Review and improvement

10.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

10.2 Update and amendment

Guidance Text

Outline the update and amendment process for the NVMP. If amendments require consultation or approval from Community Groups or Government agencies outline the agreed process.

Example text

The processes described in [Chapter 3.9] and [Chapter 3.13] of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to [Section 3.11.2] of the CEMP.

Appendix B4

Soil and Water Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Guidance Text:

The Contents table has been included in the navigation pane and accessible PDF bookmarks. As a result it will appear as a line item within the table of contents. Please delete the 'Contents' line item from the table of contents prior to finalising the submissions report.

Guidance Text:

It is noted that additional plans and procedures to be included as appendices are likely to be outlined within the CoA or environmental mitigation measures.

Suggested additional appendices are listed below.

Example Text:

- Appendix A - Erosion and sediment control plan(s)
- Appendix B - Construction Site Dewatering and Discharge Procedure
- Appendix C - Acid Sulfate Soil Management Procedure
- Appendix D - Groundwater Management Strategy
- Appendix E - Management of Tannins from Vegetation Mulch
- Appendix F - Water Quality Monitoring Program
- Appendix G - Contaminated Land Management Plan

Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Soil and Water Management Sub - Plan
Endorsed by Environment Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of [Insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the SWMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This SWMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the SWMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
ASS	Acid Sulfate Soil
CEMP	Construction Environmental Management Plan
CLMP	Contaminated Land Management Plan
CoA	Conditions of Approval
DP&E	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
EIS	Environmental Impact Statement
ESCP	Erosion and Sediment Control Plan
EEC	Endangered Ecological Community
EMMM	Environmental Mitigation and Management Measure
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ECM	Environmental Control Maps
OEH	Office of Environment and Heritage
PESCP	Progressive Erosion and Sediment Control Plan
PIRMP	Pollution Incident Response Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RUSLE	Revised Universal Soil Loss Equation
SWMP	Soil and Water Management Plan
TSC Act	<i>Threatened Species Conservation Act 1995</i>

1 Introduction

1.1 Context

This Soil and Water Management Sub Plan (SWMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the [Insert project name] (the Project).

This SWMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the environmental mitigation and management measures (EMMMs) listed in the [Insert project name] Environmental Impact Statement (EIS) and all applicable legislation. This plan will be finalised and updated by the successful construction contractor.

1.2 Background and project description

Guidance Text:

Background to the project that is specifically relevant to water quality and flooding should be summarised from the project assessment documentation. The background should also identify the source of the requirement to develop and implement this plan. Example text included below.

Example text

[Insert title of environmental assessment and date] assessed the impacts of construction and operation of the Project on soils and water, within chapters [proved document reference].

As part of EIS development, a detailed flooding and water quality assessment was prepared to address the Environmental Assessment Requirements issued by the then Department of Planning and Environment. The flooding and water quality assessment was included in the EIS as Working Paper 5 – Flooding and Water Quality.

The EIS identified the potential for direct and indirect impacts on water quality but concluded that provided the proposed mitigation and management measures are implemented, no significant long-term impacts would be expected.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the [Insert contractor name] proposes to manage and protect water quality during construction of the Project.

2.2 Objectives

The key objective of the SWMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to soil and water including water quality are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for [Insert project name]
- CoA granted to the project on [Insert date]
- [Insert any other additional approvals, authorisations, licences relevant to soil and water]

2.3 Targets

Guidance Text:

Include targets established for the management of soil and water impacts during the project. These targets are to represent the intended or desired outcomes of soil and water management during construction.

Minimum recommended targets are outlined below.

Example Text

The following targets have been established for the management of soil and water impacts during the project:

- Ensure full compliance with the relevant legislative requirements, CoA and environmental mitigation measures.
- Meet environmental protection licence water quality discharge parameters for all planned basin discharges (i.e. those within design capacity).
- Manage downstream water quality impacts attributable to the project (i.e. maintain water waterway health by avoiding the introduction of nutrients, sediment and chemicals outside of that permitted by the environmental protection licence and/or ANZECC guidelines)
- Ensure training on best practice soil and water management is provided to all construction personnel through site inductions.
- [Insert or amend targets as required]

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this SWMP is included in Appendix [A1] of the CEMP.

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this plan include:

[Review and update list where relevant]

- Acid Sulfate Soil Manual (ASSMAC 1998).
- Acid Sulfate Soil and Rock – Victorian EPA Publication 655.1 – July 2009.
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC and ARMCANZ 2000).
- Department of Environment and Conservation (DEC): Bunding & Spill Management. Insert to the Environment Protection Manual for Authorised Officers - Technical section "Bu" November 1997.
- Managing Urban Stormwater: Soils and Construction. Landcom, (4th Edition) March 2004 (reprinted 2006) (the "Blue Book"). Volume 1 and Volume 2.
- Volume 2A Installation of Services (DECCW 2008).
- Volume 2C Unsealed Roads (DECCW 2008).
- Volume 2D Main Roads Construction (DECCW 2008).
- Fairfull, S. and Witheridge, G. (2003) Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings. NSW Fisheries
- Policy and Guidelines for Fish Habitat Conservation and Management (2013 update), DPI Fisheries
- Transport for NSW's Water Discharge and Reuse Guideline (7TP-SD-024/3.0)
- Transport for NSW's Guide to Environmental Control Map (3TP-SD-015/8.0)
- Environmental Best Management Practice Guideline for Concreting Contractors (DEC, 2004)

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the SWMP

CoA No.	Condition Requirements	Document Reference
Insert CoA reference	Insert all relevant requirements from the approval that are specific to preparation and content of the SWMP.	Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.

3.3 Environmental Mitigation and Management Measures

Relevant EMMs are listed in Table 3-2. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2 Environmental mitigation and management measures relevant to this SWMP

Outcome	Ref #	Commitment	Timing	SWMP Reference

4 Existing Environment

Guidance Text:

This section is a summary of information from the environmental assessment and other relevant documentation on site characteristics and known factors that influence the potential for surface and groundwater impacts during construction. Headings and content should be tailored to reflect specific environmental conditions relevant to the project and the area in which it is undertaken.

The following sections summarise what is known about factors influencing soils and water within and adjacent to the Project corridor.

The key reference documents are [Insert relevant references from the environmental assessment or working papers].

4.1 Topography and soil characteristics

Guidance Text:

Describe the terrain units, topography, geology and soils of this area.

4.2 Surface water

Guidance Text:

Outline the water bodies within or adjacent to the project footprint.

Describe and detail the outcomes of any water quality testing that has occurred.

Briefly outline and reference any pre-construction, construction and operational testing that would occur.

4.3 Ground water

Guidance Text:

Describe any ground water regimes that in proximity or intersect with the project footprint.

Identify ground water dependent vegetation communities.

Identify any likely or potential ground water contamination sources outside of the project impacts, including any testing results of ground water.

Identify any licensed bores.

4.4 Rainfall

Guidance Text:

Include past rainfall records that would reflect the potential rainfall conditions on site.

If information about climatic condition that are known to influence summer rainfall, detail of that

could be added here.

4.5 Rainfall erosivity factor

The rainfall erosivity factor is a measure of the ability of rainfall to cause erosion (referred as "R" in the Revised Universal Soil Loss Equation RUSLE). The rainfall erosivity factor is used to determine the soil loss in tonnes per hectare over one year, and is used in calculations when sizing construction sediment basins.

The Project has a Rainfall Erosivity Factor of [Contractor to insert detail] SI. [Contractor to insert detail] is the closest location with detailed R-factor data and is detailed below in Table 4-1 below.

Table 4-1: Monthly % and annual rainfall erosivity (R - factor) values for [Contractor to insert detail]

Monthly % and annual rainfall erosivity (R – factor) values													
	Dec	Jan	Feb	Mar	Apr	Mar	Jun	July	Aug	Sep	Oct	Nov	Year
%													
R - Value													

4.6 Flooding

Guidance Text:

Outline the waterways that had flows modelled.
Include detail on the flooding regime for each of the waterways.

5 Environmental aspects and impacts

5.1 Construction activities

Key aspects of the Projects that could result in adverse impacts to soils and water include:

- [Vegetation clearing and topsoil stripping.]
- [Bulk earthworks]
- [Site access including temporary waterway crossings]
- [Culvert and drainage works]
- [Bridge construction]
- [Material stockpiles including the treatment of acid sulfate soil and rock]
- [Batch plant operation]
- [Paving activities]
- [Water use / extraction]
- [Compounds operation including fuel and chemical storage, refuelling and chemical handling]
- [Noxious weed treatment including herbicide spraying]
- [Update and amend the above list of key aspects to ensure relevance to the Project]

Refer also to the Aspects and Impacts Register included in [Appendix A2](#) of the CEMP.

5.2 Impacts

The potential for impacts on soil and water will depend on a number of factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction might include:

- [Update list of potential impacts to ensure relevance to the Project]

Some impacts on soil and water attributable to the Project are anticipated. Relevant aspects and the potential for related impacts have been considered in a risk assessment at Section [\[X\]/Appendix A2](#) of the CEMP. Chapter [\[X\]](#) provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

6 Environmental control measures

Specific measures and requirements to meet the objectives of this SWMP and to address impacts on soil and water are outlined in Table 6-1.

Guidance Text:

This table is to explain how CoA, Environmental Mitigation Measures and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

This table can be used as an opportunity to demonstrate best practice measures and to identify actions which would be used to contribute to an Infrastructure Sustainability Council of Australia (ISCA) rating.

7 Compliance management

7.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

Guidance Text:

This section should be reviewed and updated, where necessary, to ensure relevance to project.

All employees, contractors and utility staff working on site will undergo site induction training relating to soil and water management issues. The induction training will address elements related to soil and water management including:

- [Include relevant elements to be addressed in induction training]

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in soil and water management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

7.3 Monitoring and inspection

Guidance Text:

Include detailed inspection criteria such as:

- Monitoring locations
- What is to be monitored
- Type of monitoring
- Frequency of monitoring

Where appropriate, reference and include a Water Quality Management Program as an Appendix to this document.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

7.4 Licences and permits

Guidance Text:

Include details of licences relevant to this SWMP. Recommended information includes: licence parameters, criteria, sampling methods, analytical methods etc.

7.5 Weather monitoring

Guidance Text:

In this section outline the number and locations of automatic rainfall/weather devices.

Rainfall at the premises will be measured and recorded in millimetres per 24-hour period at the same time each day from the time that the site office associated with the activities is established.

7.6 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.7 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2 SWMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

Appendix A – Erosion and Sediment Control Plan

Guidance Text:

An ECM may be adequate as an ESCP and may be used to avoid duplication of requirements, except where an ESCP is specifically required by the Planning Approval.

Appendix B – Construction Site Dewatering and Discharge

|

Appendix B5

Aboriginal Heritage Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Aboriginal Heritage Management Plan
Endorsed by Environment Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW Services by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of [insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the AHMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This AHMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the AHMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
Aboriginal place	An Aboriginal Place is an area declared by the Minister administering the Act to be of special significance with respect to Aboriginal culture.
Aboriginal objects	Aboriginal objects include any deposit, object or material evidence (not being a handicraft made for sale), including Aboriginal remains, relating to the Aboriginal habitation of NSW, before or concurrent with occupation by non-Aboriginal people, as defined in section 5 of the NPW Act
AHMP	Aboriginal Heritage Management Sub Plan
CEMP	Construction Environmental Management Plan
CoA	Condition of approval
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
EMMM	Environmental Mitigation and Management Measure
Environmental heritage	Places, buildings, works, relics, movable objects and precincts, of State or local heritage significance as outline in Section 4 of the Heritage Act
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ECM	Environmental Control Map
Heritage Act	<i>Heritage Act 1997</i>
HMP	Heritage Management Sub Plan
LALC	Local Aboriginal Land Council
NPW Act	<i>National Parks and Wildlife Act 1974</i>
OEH	Office of Environment and Heritage
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime, 2011)
PAD	Potential Archaeological Deposit
Project, the	Parramatta Light Rail – Stage 1 (Westmead to Carlingford)

V | Parramatta Light Rail – Stage 1 CEMP, Aboriginal Heritage Management Sub-Plan

Day/Month/Year Version 2

UNCONTROLLED WHEN PRINTED

RAP	Registered Aboriginal Parties
Secretary	Secretary of the NSW Department of Planning and Environment (or delegate)

1 Introduction

1.1 Context

This Aboriginal Heritage Management Sub Plan (AHMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail – Stage 1 (the Project).

This AHMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) and the environmental mitigation and management measures (EMMMs) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation. This plan will be finalised and updated by the successful construction contractor.

1.2 Background and project description

Guidance Text

Background to the project that is specifically relevant to Aboriginal heritage should be summarised from the project assessment documentation. Suggest including a brief summary of project description and impacts. Reference CEMP, EIS and sections of this sub-plan where appropriate.

The below text is an example.

Example text

[Insert title of environmental assessment and date] assessed the impacts of construction and operation of the Project on Aboriginal heritage.

As part of EIS development, a detailed Aboriginal cultural heritage assessment was prepared to address the Environmental Assessment Requirements issued by the then Department of Planning. The Aboriginal cultural heritage assessment was included in the EIS as Working Paper 4 – Aboriginal Heritage. An addendum to Working Paper 4 was also prepared to document the process and results of additional archaeological and cultural heritage sub-surface testing undertaken in response to government agency comment during the Adequacy Review of the EIS.

The EIS identified direct and indirect impacts on Aboriginal archaeological and cultural sites, but concluded that provided the proposed EMMMs are implemented, no significant long-term impacts would be expected.

The EIS identified potential direct or indirect impacts on seven non-Aboriginal items assessed as having heritage significance.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

1.5 Consultation for preparation

Guidance Text:

It is suggested that this section is used to describe the consultation with regulators. Section 4 is used to outline consultation and ongoing consultation with Aboriginal stakeholders.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how Aboriginal heritage will be protected and managed during construction of the Project.

2.2 Objectives

The key objective of the AHMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to Aboriginal heritage are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for Parramatta Light Rail – Stage 1
- Conditions of Approval granted to the project on [Insert date]
- [Insert any other additional approvals, authorisations, licences relevant to Aboriginal Heritage]

2.3 Targets

Guidance Text:

Include targets established for the management of Aboriginal heritage impacts during the project. These targets are to represent the intended or desired outcomes of Aboriginal heritage management during construction.

Minimum recommended targets are outlined below.

Example Text:

The following targets have been established for the management of Aboriginal cultural heritage and non-Aboriginal heritage impacts during the project:

- [Ensure full compliance with the relevant legislative requirements, CoA and environmental management measures.]
- [Minimise or avoid impacts on known Aboriginal and non-Aboriginal heritage sites.]
- [Follow correct procedure and ensure notification of any Aboriginal heritage objects/places uncovered during construction.]
- [Ensure Aboriginal Cultural Heritage Awareness Training is provided to all personnel in the form of inductions before they begin work on-site.]
- [Add or amend objectives as necessary]

3 Environmental Requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this AHMP is included in [Appendix A1](#) of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to [Appendix A1](#) of the AHMP

3.1.3 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

[Review and update list where relevant]

- Procedure for Aboriginal Cultural Heritage Consultation and Investigation (Roads and Maritime Services 2011).
- Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW 2010) (for reference only).
- Archaeological Assessment Guidelines (NSW Heritage Office and NSW Department of Urban Affairs and Planning 1996).
- NSW Government Policy on Aboriginal Participation in Construction (released 1 May 2015, updated 1 August 2016)
- Transport for NSW Unexpected Heritage Finds Guideline 3TP-SD-115/3.0

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the AHMP

CoA No.	Condition Requirements	Document Reference
Insert CoA reference	Insert all relevant requirements from the approval that are specific to preparation and content of the AHMP.	Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.

3.3 Environmental Mitigation and Management Measures

Relevant EMMs are listed in Table 3-2 below. This includes references to required outcomes, the timing of when the commitment applies relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2 Environmental mitigation and management measures relevant to this AHMP

Outcome	Ref #	Commitment	Timing	AHMP Reference

4 Consultation

4.1 Consultation undertaken to date

Guidance Text

If relevant, outline any more recent more recent consultation activities be it through intrusive site investigations or Aboriginal Focus Group meetings.

Consultation and collaboration with registered Aboriginal stakeholders has been integral to the assessment and management of Aboriginal cultural heritage for the project. Consultation is outlined in the EIS in [chapter XX].

4.2 Ongoing consultation

Guidance Text

This section is to be completed by the contractor and will detail the ongoing involvement of registered Aboriginal parties in the project including the implantation of management strategies for Aboriginal cultural heritage.

It is suggested that text is included to outline to approving agencies that this section would be updated once the construction contractor is engaged. Example text is outlined below.

Example text

It is intended that the AHMP be provided to the registered Aboriginal parties once a preferred contractor for the project is announced and an updated plan with specific and relevant information, i.e. the Heritage Education and Training Package is prepared. Following consultation, the plan will be updated to include any comments raised and to also document the consultation undertaken.

5 Existing environment

The following sections summarise what is known about Aboriginal heritage within and adjacent to the project corridor.

The key reference documents are [Insert relevant references from the environmental assessment or working papers.]

Guidance Text

This section is a summary of information from the environmental assessment and other relevant documentation on what is known about Aboriginal within and adjacent to the project. The structure and content may need to change to adequately reflect the nature and complexity of the project. Example format is outlined below.

Example text

Aboriginal object

The below Aboriginal objects were identified through the cultural assessment and consultation process undertaken for the EIS and are listed below in Table 5-1. The location of these items is shown on the [Include map name] in [insert location].

Table 5-1: Aboriginal objects

Name	Location	Significance	Project Impact

Aboriginal Place

[X] Aboriginal places were identified through the cultural assessment and consultation process undertaken for the EIS and are listed below in Table 5-2. The location of these items is shown on the [Include map name] in [insert location].

Table 5-2: Aboriginal places

Name	Location	Significance	Project impact

[Include map of Aboriginal items in relation to the project footprint or reference location of maps e.g. environmental control maps]

6 Environmental aspects and impacts

Guidance Text:

Include an outline of how the environmental aspects and risks related to Aboriginal heritage were identified and the consequence/likelihood decided.

Include reference to where the risk assessment is located.

6.1 Construction activities

Key aspects of the project that could result in adverse impacts to Aboriginal heritage include:

- [The list of key aspects below should be updated to ensure relevance to the project]
- [Early works including non-substantial construction activities such as services relocations.]
- [Planned salvage of Aboriginal heritage items.]
- [Initial clearing and/or grubbing of vegetation.]
- [Initial removal of topsoil.]
- [Construction of site compounds and spoil / mulch and / or equipment stockpile areas.]
- [Temporary access roads during construction.]

6.2 Aboriginal heritage impacts

Guidance Text:

This section describes the identified actual and potential impacts and their management measures in relation to known Aboriginal heritage recordings, landscapes, items and places.

Items to be described include (where applicable):

- Items that would be avoided or impacted (directly/indirectly) by the project
- Salvage
- Collection
- Protection and monitoring
- Relocation including locations
- AHIP status
- Details of any further studies/reports

Some of this information can be tabled or tables from other documents referenced. Example table included below.

Example tables

Table 6-1: Aboriginal object- impacts and management

Name	Impact	Management
------	--------	------------

Table 6-2: Aboriginal places – impacts and mitigation:

Name	Impact	Management

7 Environmental mitigation and management measures

Specific measures and requirements to address contract specification, CoA and EMMMs in relation to Aboriginal heritage are outlined in [Table 7.1].

Guidance Text:

This table is to explain how CoA, EMMMs and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

This table can be used as an opportunity to demonstrate best practice measures and to identify actions which would be used to contribute to an Infrastructure Sustainability Council of Australia (ISCA) rating.

Table 7-1: Aboriginal heritage mitigation and management measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
GENERAL					
[Include a unique ID for this measure eg H1]	[Outline the measure or requirement]	[List any specific resources required to implement this measure]	[Include which stage of the project the measure would be implemented]	[Include who is responsible for implementation]	[Include where this requirement is from e.g. CoA number, best practice]
SITE SPECIFIC ABORIGINAL HERITAGE MANAGEMENT / MITIGATION MEASURES					

8 Compliance Management

8.1 Roles and responsibilities

The [Insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in [Include section of CEMP]. Specific responsibilities for the implementation of environmental controls are detailed in [Section 7] of this Plan.]

8.2 Training

Guidance Text:

This section is to include specific Aboriginal Heritage training that is relevant to the project and project risks. Example text is included below.

Example text

All employees, contractors and utility staff working on site will undergo site induction training relating to Aboriginal and non-Aboriginal heritage management issues prior to construction commencing. The induction training will address elements related to heritage management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Roles and responsibilities for heritage management
- Location of identified heritage sites and no-go areas
- Proposed heritage management and protection measures
- Procedure to follow in the event of an unexpected heritage item find or discovery of human remains during construction works (Roads and Maritime Services Unexpected Heritage Items, Heritage Procedure 02 (November 2015) (refer Appendix [X])).

Further details regarding staff induction and training are outlined in [Section X] of the CEMP.

The Aboriginal Heritage Education and Training Package for the project is included in [Appendix X]. The non-Aboriginal Heritage Education and Training Package for the project is included in Appendix F.

8.3 Monitoring and inspections

If monitoring and inspection requirements are above those listed in the CEMP these are to be outlined below. If there are no additional requirements, below example text is suggested.

It is strongly recommended that there are clear and strict requirements to install, inspect and monitor physical demarcation of any Aboriginal heritage objects and/or places prior to construction commences.

Example text

Inspections of sensitive areas and activities with the potential to impact Aboriginal heritage will occur for the duration of the project. Some specific monitoring requirements in relation to some items have been documented in [Table 7.1].

Requirements and responsibilities in relation to monitoring and inspections are documented in sections [X and X] of the CEMP.

8.4 Auditing

Example text

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.5 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E. Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

9.2 AHMP update and amendment

Guidance Text

Outline the update and amendment process for the AHMP. If amendments require consultation or approval from Aboriginal Land Councils, Community Groups or Government agencies outline the agreed process.

Example text

The processes described in [Chapter 3.9] and [Chapter 3.13] of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to [Section 3.11.2] of the CEMP.

Appendix A – Transport for NSW Standard Management Procedure: Unexpected Heritage Items

Appendix B

[Constructor to allocate]

Appendix C

[Constructor to allocate]

Appendix B6

Heritage Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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 [Constructor to allocate] 18

Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Heritage Management Plan
Endorsed by Environment Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW Services by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of [insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the HMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This HMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the HMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
CEMP	Construction Environmental Management Plan
CoA	Condition of approval
DP&E	Department of Planning and Environment
EIS	Environmental Impact Statement
Environmental heritage	Places, buildings, works, relics, movable objects and precincts, of State or local heritage significance as outline in Section 4 of the Heritage Act
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
ECM	Environmental Control Map
Heritage Act	<i>Heritage Act 1997</i>
HMP	Heritage Management Sub Plan (Non-Indigenous)
AHMP	Aboriginal Heritage Management Sub Plan
NPW Act	<i>National Parks and Wildlife Act 1974</i>
OEH	Office of Environment and Heritage
Project, the	Parramatta Light Rail – Stage 1 (Westmead to Carlingford)
Secretary	Secretary of the NSW Department of Planning and Environment (or delegate)

1 Introduction

1.1 Context

This Heritage Management Sub Plan (HMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail – Stage 1 (the Project).

This HMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA) and the environmental mitigation and management measures (EMMMs) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation. This plan will be finalised and updated by the successful construction contractor.

1.2 Background and project description

Guidance Text

Background to the project that is specifically relevant to non-indigenous heritage should be summarised from the project assessment documentation. Suggest including a brief summary of project description and impacts. Reference CEMP, EIS and sections of this sub-plan where appropriate.

The below text is an example.

Example text

[Insert title of environmental assessment and date] assessed the impacts of construction and operation of the Project on non-Aboriginal heritage.

As part of EIS development, detailed built heritage and archaeological assessments were prepared to address the Environmental Assessment Requirements issued by the then Department of Planning. The assessments were included in the EIS as Working Paper 10 – Built Heritage Impact Assessment and Working Paper 11 – Non-Aboriginal Archaeological Assessment.

The EIS identified direct and indirect impacts on archaeological and heritage sites, but concluded that provided the proposed EMMMs are implemented, no significant long-term impacts would be expected.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies.

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

1.5 Consultation for preparation

Guidance Text:

It is suggested that this section is used to describe the consultation with regulators.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how non-Indigenous heritage will be protected and managed during construction of the Project.

2.2 Objectives

The key objective of the HMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to non-Indigenous heritage are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for Parramatta Light Rail – Stage 1
- Conditions of Approval granted to the project on [Insert date]
- Transport for NSW's Unexpected Heritage Finds Guideline 3TP-SD-115/3.0
- [Insert any other additional approvals, authorisations, licences relevant to non-Indigenous Heritage]

2.3 Targets

Guidance Text:

Include targets established for the management of non-Indigenous heritage impacts during the project. These targets are to represent the intended or desired outcomes of non-Indigenous heritage management during construction.

Minimum recommended targets are outlined below.

Example Text:

The following targets have been established for the management of and non-Aboriginal heritage impacts during the project:

- [Ensure full compliance with the relevant legislative requirements, CoA and environmental management measures.]
- [Minimise or avoid impacts on known non-Aboriginal heritage sites.]
- [Follow correct procedure and ensure notification of any heritage objects/places uncovered during construction.]
- [Add or amend objectives as necessary]

3 Environmental Requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this HMP is included in Appendix A1 of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to **Appendix A1** of the HMP

3.1.3 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

[Review and update list where relevant]

- Altering Heritage Assets (Heritage Office and DUAP 1996).
- Assessing Heritage Significance (NSW Heritage Office 2001).
- Archaeological Assessment Guidelines (NSW Heritage Office and NSW Department of Urban Affairs and Planning 1996).
- Transport for NSW Unexpected Heritage Finds Guideline 3TP-SD-115/3.0

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the HMP

CoA No.	Condition Requirements	Document Reference
Insert CoA reference	Insert all relevant requirements from the approval that are specific to preparation and content of the HMP.	Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.

3.3 Environmental Mitigation and Management Measures

Relevant EMMMs are listed in Table 3-2 below. This includes references to required outcomes, the timing of when the commitment applies relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2 Environmental mitigation and management measures relevant to this HMP

Outcome	Ref #	Commitment	Timing	HMP Reference

4 Consultation

4.1 Consultation undertaken to date

Guidance Text

If relevant, outline any more recent consultation undertaken to date.

4.2 Ongoing consultation

5 Existing environment

The following sections summarise what is known about non-Indigenous heritage within and adjacent to the project corridor.

The key reference documents are [Insert relevant references from the environmental assessment or working papers.]

Guidance Text

This section is a summary of information from the environmental assessment and other relevant documentation on what is known about non-Indigenous heritage within and adjacent to the project. The structure and content may need to change to adequately reflect the nature and complexity of the project. Example format is outlined below.

Example text

Heritage

Heritage places, buildings, works, relics, movable objects and precincts located within or adjacent to the project corridor are listed below in Table 5-3. The location of these items is shown on the [Include map name] in [insert location].

Table 5-1: Heritage items

Name	Location	Significance	Project Impact

[Include map of heritage items in relation to the project footprint or reference location of maps e.g. environmental control maps]

6 Environmental aspects and impacts

Guidance Text:

Include an outline of how the environmental aspects and risks related to non-indigenous heritage were identified and the consequence/likelihood decided.

Include reference to where the risk assessment is located.

6.1 Construction activities

Key aspects of the project that could result in adverse impacts to heritage include:

- [The list of key aspects below should be updated to ensure relevance to the project]
- [Early works including non-substantial construction activities such as services relocations.]
- [Planned salvage of heritage items.]
- [Initial clearing and/or grubbing of vegetation.]
- [Initial removal of topsoil.]
- [Construction of site compounds and spoil / mulch and / or equipment stockpile areas.]
- [Temporary access roads during construction.]

6.2 Heritage impacts

Guidance Text

This section describes the identified actual and potential impacts and their management measures in relation to known Non-Indigenous heritage recordings, landscapes, items and places.

Items to be described include (where applicable):

- Items that would be avoided or impacted (directly/indirectly) by the project
- Statement of Heritage Impact (SOHI) outcomes
- Heritage permit status
- Effect on existing heritage items (such as removals or amendments from the s.170 Register)
- Salvage
- Collection
- Protection and monitoring
- Relocation including locations
- Details of any further studies/reports

Some of this information can be tabled or tables from other documents referenced. Example table included below.

Example table

Table 6-1: Heritage - impacts and mitigation

Name	Impact	Management

7 Environmental mitigation and management measures

Specific measures and requirements to address contract specification, CoA and EMMMs in relation to non-Indigenous heritage are outlined in [Table 7.1].

Guidance Text:

This table is to explain how CoA, EMMMs and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

This table can be used as an opportunity to demonstrate best practice measures and to identify actions which would be used to contribute to an Infrastructure Sustainability Council of Australia (ISCA) rating.

Table 7-1: Heritage management and mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
GENERAL					
[Include a unique ID for this measure eg H1]	[Outline the measure or requirement]	[List any specific resources required to implement this measure]	[Include which stage of the project the measure would be implemented]	[Include who is responsible for implementation]	[Include where this requirement is from e.g. CoA number, best practice]
SITE SPECIFIC NON-ABORIGINALHERITAGE MANAGEMENT / MITIGATION MEASURES					

8 Compliance Management

8.1 Roles and responsibilities

The [Insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in [Include section of CEMP]. Specific responsibilities for the implementation of environmental controls are detailed in [Section [7] of this Plan.]

8.2 Training

Guidance Text:

This section is to include specific heritage training that is relevant to the project and project risks. Example text is included below.

Example text

All employees, contractors and utility staff working on site will undergo site induction training relating to heritage management issues prior to construction commencing. The induction training will address elements related to heritage management including:

- Existence and requirements of this sub-plan
- Relevant legislation
- Roles and responsibilities for heritage management
- Location of identified heritage sites and no-go areas
- Proposed heritage management and protection measures
- Procedure to follow in the event of an unexpected heritage item find or discovery of human remains during construction works (Transport for NSW Unexpected Heritage Finds Guideline (refer Appendix [X])).

Further details regarding staff induction and training are outlined in [Section X] of the CEMP.

The non-Aboriginal Heritage Education and Training Package for the project is included in [Appendix X]. The non-Aboriginal Heritage Education and Training Package for the project is included in Appendix F.

8.3 Monitoring and inspections

If monitoring and inspection requirements are above those listed in the CEMP these are to be outlined below. If there are no additional requirements, below example text is suggested.

It is strongly recommended that there are clear and strict requirements to install, inspect and monitor physical demarcation of any non-Aboriginal heritage items prior to construction commences.

Example text

Inspections of sensitive areas and activities with the potential to impact heritage will occur for the

duration of the project. Some specific monitoring requirements in relation to some items have been documented in [Table 7.1].

Requirements and responsibilities in relation to monitoring and inspections are documented in sections [X and X] of the CEMP.

8.4 Auditing

Example text

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.5 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E. Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

9.2 HMP update and amendment

Guidance Text

Outline the update and amendment process for the HMP. If amendments require consultation or approval from Community Groups or Government agencies outline the agreed process.

Example text

The processes described in [Chapter 3.9] and [Chapter 3.13] of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to [Section 3.11.2] of the CEMP.

Appendix A – Transport for NSW Standard Management Procedure: Unexpected Heritage Items

Appendix B

[Constructor to allocate]

Appendix C

[Constructor to allocate]

Appendix B7

Air Quality Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Guidance Text:

The Contents table has been included in the navigation pane and accessible PDF bookmarks. As a result it will appear as a line item within the table of contents. Please delete the 'Contents' line item from the table of contents prior to finalising the submissions report.

Guidance Text:

It is noted that additional plans and procedures to be included as appendices are likely to be outlined within the CoA or environmental mitigation and management measures.

Suggested additional appendices are listed below:

Example Text:

Appendix A - Dust catchment areas and sensitive receivers

Document control

Approval and authorisation

Title	[Title of proposal] Air Quality Management Sub-Plan
Endorsed by Transport for NSW Environment Branch	[Insert name and title of Transport for NSW Environment Manager or Officer]
Signed	
Dated	
Approved on behalf of Transport for NSW by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of [Insert Name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the AQMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal

Revision	Date	Description	Approval

Distribution of controlled copies

This AQMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the AQMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
AQMP	Air Quality Management Sub-Plan
BoM	Australian Government Bureau of Meteorology
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
DP&E	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
ECM	Environmental Control Map
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EMMM	Environmental Mitigation and Management Measure
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
ESCP	Erosion and Sediment Control Plan
GREP	Government Resource Efficiency Policy
OEH	Office of Environment and Heritage
PESCP	Progressive Erosion and Sediment Control Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
SWMP	Soil and Water Management Plan

1 Introduction

1.1 Context

This Air Quality Management Sub Plan (AQMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for [Insert project name] (the Project).

This AQMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the environmental mitigation and management measures (EMMMs) listed in the [Insert project name] Environmental Impact Statement (EIS) and all applicable legislation.

1.2 Background and project description

Guidance Text:

Background to the project that is specifically relevant to air quality should be summarised from the project assessment documentation. The background should also identify the source of the requirement to develop and implement this plan. It is suggested that a brief summary of project description is included. Reference CEMP, EIS and sections of this sub-plan where appropriate.

Example text included below.

Example text

[Insert title of environmental assessment and date] assessed the impacts of construction and operation of the Project on air quality, within chapter [provide document reference].

The EIS identified the potential for minor impacts on air quality during construction typically associated with dust. However, it concluded any potential impacts could be managed by standard mitigation and management measures.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the [Insert contractor name] proposes to manage and protect water quality during construction of the Project.

2.2 Objectives

The key objective of the AQMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to air quality are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for [Insert project name]
- Conditions of Approval granted to the project on [Insert date]
- Transport for NSW's Air Quality Management Guideline 9TP-SD-107/3.0
- [Insert any other additional approvals, authorisations, licences relevant to soil and water]

2.3 Targets

Guidance Text:

Include targets established for the management of air quality impacts during the project. These targets are to represent the intended or desired outcomes of air quality management during construction.

Minimum recommended targets are outlined below.

Example Text:

The following targets have been established for the management of air quality impacts during the project:

- Ensure full compliance with the relevant legislative requirements, CoA and EMMMs
- Meet environmental protection licence air quality parameters
- Ensure training on best practice air quality management is provided to all construction personnel through site inductions.
- [Insert or amend targets as required]

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this AQMP is included in Appendix [A1] of the CEMP.

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this plan include:

[Review and update list where relevant]

- National Environment Protection Councils (NEPC) – National Environment Protection Measure (NEPM) for Ambient Air Quality Guidelines
- AS 3580.1.1-2007 Methods of Sampling Analysis of Ambient Air. Part 1.1 Guide to Siting Air Monitoring Equipment
- AS 3580.10.1-2003 Methods of Sampling Analysis of Ambient Air. Determination of Particulate Matter – Deposited Matter - Gravimetric Method
- Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (DEC 2005).
- Managing Urban Stormwater: Soils and Construction, Volume 1 (Landcom 2004) and Volume 2 (DECC 2008) (the "Blue Book")
- Transport for NSW's Air Quality Management Guideline 9TP-SD-107/3.0
- Air Quality Monitoring Criteria for Deposited Dust (DEC Guideline), Refer to Table 5.1 below.
- Government Resource Efficiency Policy (OEH 2014).

3.2 Air quality criteria

Guidance Text:

Outline the air quality monitoring criteria for this project, such as criteria for deposited dust.

3.3 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1: Conditions of Approval relevant to the AQMP

CoA No.	Condition Requirements	Document Reference
Insert CoA reference	Insert all relevant requirements from the approval that are specific to preparation and content of the AQMP.	Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.

4 Existing Environment

Guidance Text:

This section is a summary of information from the environmental assessment and other relevant documentation on site characteristics and known factors that influence the air quality management during construction. Headings and content should be tailored to reflect specific environmental conditions relevant to the project and the area in which it is undertaken.

The following sections summarise what is known about factors influencing air quality impacts and management associated with the project, within and adjacent to the Project corridor.

The key reference documents are [Insert relevant references from the environmental assessment or working papers].

4.1 Air quality records

Guidance Text:

If air quality monitoring has been undertaken include records within this section.

Outline the existing air quality in the project area and existing sources that effect air quality.

4.2 Rainfall, soil dryness and wind

Guidance Text:

Table monthly climate averages from the Australian Government Bureau of Meteorology (BoM) from the closest monitoring station.

Where appropriate, describe the known climatic trends and conditions that are likely to impact air quality.

4.3 Soil Characteristics

Guidance Text:

Table and where appropriate describe the soil type, soil characteristics and dust emission risks.

5 Environmental aspects and impacts

5.1 Construction activities

Guidance text:

The list of key aspects below should be updated to ensure relevance to the project.

Example Text:

Emissions to the atmosphere during construction that could result in adverse impacts to air quality are typically divided into two categories. These are:

- Dust and particulates
- Gaseous.

Key aspects of the Project that could result in dust emissions include:

[The list of key aspects below should be updated to ensure relevance to the project.]

- General earthworks particularly during site establishment
- Vegetation clearing
- Bulk Earthworks
- Drilling and Blasting
- Operating, crushing and screening
- Operation of concrete / asphalt batching plants
- Topsoil / material handling including stockpiling, material loading and material haulage
- Vehicular movements over unpaved surface (including unsealed access roads)
- Wind erosion of exposed areas and temporary stockpiles
- Tracking of dirt onto roads.

Air emissions, other than dust, which may be generated by construction activities include:

[The list of emission types below should be updated to ensure relevance to the project.]

- Vehicle and plant exhaust emissions, which may be excessive if vehicles and plant are poorly maintained.
- Odours/gases released during:
 - Excavations of organic or contaminated materials
 - During sealing works
 - Operation of concrete / asphalt batching plants.

Refer also to the Aspects and Impacts Register included in Appendix A2 of the CEMP.

5.2 Factors likely to affect dust generation and impacts

Example Text:

In addition to the inherent risks of specific construction activities creating the potential to generate

dust, a number of other environment factors also affect the likelihood of dust emissions. These include:

- Wind direction – determines whether dust and suspended particles are transported in the direction of the sensitive receivers
- Wind speed – governs the potential suspension and drift resistance of particles
- Soil type - more erodible soil types have an increased soil or dust erosion potential
- Soil moisture – increased soil moisture reduces soil or dust erosion potential
- Rainfall or dew – rainfall or heavy dew that wets the surface of the soil and reduces the risk of dust generation.

5.3 Impacts

Guidance Text:

Include a description of indirect and direct likely impacts as a result of the project. Below guidance text to be used as minimum requirements.

Example Text:

The potential for impacts on air quality will depend on a number of factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with the natural environment. Potential impacts attributable to construction might include:

[Update list of potential impacts to ensure relevance to project.]

- Deposition of dust on surfaces where it may cause damage and/or lead to a need for increased cleaning or repair
- Aesthetic effects that arise from visible airborne dust plumes and from deposits of dust on surfaces
- Need for increased maintenance of air filtering systems (eg air conditioners etc)
- Potential adverse health effects including eye, nose and throat irritation from excessive inhalation of fine particles
- Impacts on water quality and/or vegetation health from dust deposition
- Impacts on residential sensitive receivers, including impacts on living areas, swimming pools and general amenities
- Complaints from the public relating to dust or odours.

Some impacts on air quality attributable to the Project are anticipated and have been described in the EIS. Section 7 provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

6 Environmental control measures

Specific measures and requirements to meet the objectives of this AQMP and to address impacts on air quality are outlined in Table 6.1.

Guidance Text:

This table is to explain how CoA, EMMMs and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

This table can be used as an opportunity to demonstrate best practice measures and to identify actions which would be used to contribute to an Infrastructure Sustainability Council of Australia (ISCA) rating.

7 Compliance management

7.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

Guidance Text:

This section should be reviewed and updated, where necessary, to ensure relevance to project.

All employees, contractors and utility staff working on site will undergo site induction training relating to soil and water management issues. The induction training will address elements related to air quality management including:

- [Include relevant elements to be addressed in induction training]

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in air quality management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

7.3 Monitoring and inspection

Guidance Text:

Detail air quality monitoring information including:

- What is to be monitored
- Location of monitoring
- Type of monitoring
- Frequency and duration of monitoring
- Applicable standards/comments
- Responsibility
- Reporting/records
- Mapped location of dust monitors

Where appropriate reference and include an Air Quality Management Program as an Appendix to this document.

Example Text:

Regular monitoring and inspections will be undertaken during construction. Monitoring and inspections will include, but not be limited to:

- Monthly dust monitoring in accordance with DEC's "Approved Method for the Sampling and Analysis of Air Pollutants in NSW" guidelines.
- Weather data at the premises, including rainfall measured and recorded in millimetres per 24-hour period at the same time each day from the time that the site office is established.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

7.4 Licences and permits

Guidance Text:

Include details of licences relevant to this AQMP. Recommended this section includes or references location of information including : licence parameters, criteria, sampling methods, analytical methods etc.

7.5 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.6 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

Example text is below.

Example Text

Reporting requirements and responsibilities are documented in Section 3.9.5 of the CEMP

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2 AQMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

Appendix B8

Construction Waste and Resource Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Guidance Text:

The Contents table has been included in the navigation pane and accessible PDF bookmarks. As a result it will appear as a line item within the table of contents. Please delete the 'Contents' line item from the table of contents prior to finalising the submissions report.

Guidance Text:

It is noted that additional plans and procedures to be included as appendices are likely to be outlined within the CoA or environmental management measures.

Suggested additional appendices are listed below:

Example Text:

Appendix A - Waste contact list

Appendix B - Location of Waste facilities

Appendix C - Waste management register

Document control

Approval and authorisation

Title	Parramatta Light Rail – Stage 1 Waste and Energy Management Sub - Plan
Endorsed by Environment Representative	[Insert name and title of Environment Representative]
Signed	
Dated	
Approved on behalf of Transport for NSW by	[Insert name of Transport for NSW project manager]
Signed	
Dated	
Approved on behalf of [Insert name of Construction Contractor] by	[Insert name of Construction Contractor project manager]
Signed	
Dated	

Document status

The below document status table is for tracking the revisions of the WRMP, while the proposal is in construction and if necessary during operation. It may be modified where necessary to fit with requirements of the individual proposal.

Revision	Date	Description	Approval

Distribution of controlled copies

This WRMP as part of the CEMP is available to all personnel and sub-contractors via the Project document control management system. An electronic copy can be found on the Project website.

The document is uncontrolled when printed. One controlled hard copy of the WRMP as part of the CEMP and supporting documentation will be maintained by the Quality Manager at the Project office [and on the project website].

Copy number	Issued to	Version

Glossary/ Abbreviations

[Update table with project specific terms and acronyms where relevant]

Abbreviations	Expanded text
CEMP	Construction Environmental Management Plan
CoA	Conditions of Approval
DP&E	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
ECM	Environmental Control Map
EIS	Environmental Impact Statement
EMMM	Environmental Mitigation and Management Measures
ENM	Excavated Natural Material, as defined in <i>The excavated natural material exemption</i>
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environmental Protection Licence
PESCP	Progressive Erosion and Sediment Control Plan
RAP	Reclaimed asphalt pavement
Resource	Resource covers energy, fuel, oil, water and other materials used for construction of the project.
VENM	Virgin Excavated Natural Material
WARR Act	<i>Waste Avoidance and Resource Recovery Act 2001</i>
WRMP	Waste and Resource Management Sub-Plan
WRAPP	Waste Reduction and Purchasing Policy

1 Introduction

1.1 Context

This Waste and Energy Management Sub Plan (WRMP or Plan) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail – Stage 1 (the Project).

This WRMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the Transport for NSW's environmental mitigation and management measures (EMMMs) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation.

1.2 Background and project description

Guidance Text:

Background to the project that is specifically relevant to waste and resources should be summarised from the project assessment documentation. It is suggested that a brief summary of project description is included. Reference the CEMP, EIS and sections of this sub-plan where appropriate.

The text below is provided as an example only.

Example text

[Insert title of environmental assessment and date] assessed the impacts of construction in terms of waste generation/management and resource use, within chapter [provide document reference].

The EIS identified the various waste streams that would be generated during the construction of the Project, including construction and demolition waste, vegetation waste, packaging materials and liquid wastes. It also identified opportunities to avoid, reduce and recycle waste.

The EIS identified the main sources of resource consumption for the project and estimated the consumption of electricity and fuel to indicatively quantify greenhouse gas emissions. Measures to reduce resource consumption during construction were identified.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies.

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this Plan is to describe how the [insert contractor name] proposes to manage and protect waste and resources during construction of the Project.

2.2 Objectives

The key objective of the WRMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to waste and resources are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for Parramatta Light Rail – Stage 1 (Westmead to Carlingford).
- CoA granted to the project on [insert date]
- [insert any other additional approvals, authorisations, licences relevant to waste and resources]

2.3 Targets

Guidance Text:

Include targets established for the management of waste and resource impacts during the project. These targets are to represent the intended or desired outcomes of waste and resource management during construction.

Minimum recommended targets are outlined below.

Example Text

The following targets have been established for the management of waste and resource impacts during the project:

- Avoid the unnecessary production of waste where practical to do so
- Dispose of waste materials in accordance with legislative requirements
- Minimise / reduce the quantities of resources to be used
- Achieve the waste re-use / recycling targets nominated
- [insert or amend targets as required]

3 Environmental requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this WRMP is included in **Appendix [A1]** of the CEMP.

3.1.2 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this plan include:

[Review and update list where relevant]

- NSW Waste and Resource Recovery Strategy 2014-21 (EPA, 2014)
- NSW Government Resource Efficiency Policy (GREP) (OEH 2014)
- Waste Classification Guidelines (EPA 2014)

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the WRMP

CoA No.	Condition Requirements	Document Reference
[Insert CoA number]	[Detail CoA]	[Include where this condition is addressed]

3.4 Environmental Mitigation and Management Measures

Relevant EMMs are listed in table 3-2 below. This includes reference to required outcomes, the timing of when the commitment applies, relevant documents or sections of the environmental assessment influencing the outcome and implementation.

Table 3-2 Environmental mitigation and management measures relevant to this WRMP

Outcome	Ref #	Commitment	Timing	WRMP Reference
[Outline impact]	[Include mitigation reference number]	[Outline the commitment e.g. investigation, monitoring, further mitigation measures etc.]	[Pre-construction / Construction / Operation]	[Include reference to where this is referenced in the WRMP]

4 Environmental aspects and impacts

4.1 Construction waste streams and resource use

Guidance Text: The list of key aspects/streams below should be updated to ensure relevance to the project. Where appropriate reference EIS documentation and other sections of the CEMP to consolidate information.

Example Text:

The following construction related waste streams have been identified:

- Demolition wastes from existing structures that require demolition, pipe work, pavements and concrete pathways.
- Excavation wastes.
- Vegetation from removal of shrubs and trees.
- Packaging materials associated with items delivered to site such as pallets, crates, cartons, plastics and wrapping materials.
- Wastes produced from the maintenance of various heavy construction equipment including liquid hazardous wastes from cleaning, repairing and maintenance.
- Non-hazardous wastes would be generated through the use of worker's facilities such as toilets.
- General wastes including office wastes, scrap materials and biodegradable wastes.

The following sources of construction related resource consumption (fuel and power) have been identified:

- Procurement and delivery of materials to site
- Vegetation removal
- Site establishment, including compound set up
- Relocation and protection of services
- Earthworks including earth and rock cuttings and retaining walls
- Removal, relocation and compaction of excavated material in fill embankments
- Construction of pavements, bridges and culverts
- Demolition of structures and pavements
- Operation of batching plants, site compounds and lighting
- Construction plant including cranes, rollers, excavators, bulldozers, graders and water trucks
- Removal of waste from the site.

4.2 Impacts

Guidance Text: Include a description of indirect and direct likely impacts as a result of the project. Below guidance text to be used as minimum requirements and where appropriate use sub headings e.g. Waste Impacts, Resource Impacts, Water Impacts etc.

Example Text:

The potential environmental impacts associated with construction waste generation and resource use include:

- Generation of construction waste, such as excavated soil and rock
- Generation of vegetation waste from corridor clearing
- Generation of domestic waste from construction personnel
- Inappropriate disposal of hazardous waste
- Generation or spread of contaminated waste/soils, e.g. groundwater, used or expired chemicals, or construction materials
- Water pollution due to sediment runoff from soil excavation and excess spoil storage
- Weed infestation from dispersion of seeds and so forth during clearing and access upgrading activities
- Consumption of non-renewable resources such as energy, diesel and other chemicals
- Greenhouse gas emissions due to consumption of energy from non-renewable resources.

Refer also to the Environmental Risk Register included in Appendix A2 of the CEMP.

5 Waste management

5.1 Waste management hierarchy

Guidance Text:

Outline the general approach to the hierarchy of waste management in accordance with the EPA's *NSW Waste Avoidance and Resource Recovery Strategy 2014-21*.

5.1.1 Reuse and recycling

Example Text:

Waste separation and segregation will be promoted on-site to facilitate reuse and recycling as a priority of the waste management program as follows:

Waste segregation onsite – Waste materials, including spoil and demolition waste, will be separated onsite into dedicated bins/areas for either reuse onsite or collection by a waste contractor and transport to offsite facilities.

Waste separation offsite at an appropriately licenced facility – Wastes to be deposited into one bin where space is not available for placement of multiple bins, and the waste is to be sorted offsite by a waste contractor.

5.1.2 Waste handling and storage

Guidance Text: Outline how waste is to be handled and stored on site, including the receptacles that will be used for storing identified waste materials prior to reuse, recycling, stockpiling or disposal.

Example Text:

Where waste is required to be handled and stored onsite prior to onsite reuse or offsite recycling/disposal, the following measures apply:

- Spoil, topsoil and mulch are to be stockpiled onsite in allocated areas, where appropriate, and mitigation measures for dust control and surface water management will be implemented as per the Air Quality Management Sub Plan and the Soil and Water Management Sub Plan.
- Liquid wastes are to be stored in appropriate containers in bunded areas until transported offsite. Bunded areas will have the capacity to hold 110 per cent of the liquid waste volume for bulk storage or 120 per cent of the volume of the largest container for smaller packaged storage
- Hazardous waste will be managed by appropriately qualified and licensed contractors, in accordance with the requirements of the *Environmentally Hazardous Chemicals Act 1985* and the EPA waste disposal guidelines.
- All other recyclable or non-recyclable wastes are to be stored in appropriate covered receptacles (e.g. bins or skips) in appropriate locations onsite and contractors commissioned to regularly remove/empty the bins to approved disposal or recycling facilities.

5.1.3 Waste disposal

Example Text:

Waste (and spoil) disposal is to be in accordance with the *Protection of the Environment Operations Act 1997* and the *Waste Avoidance and Resource Recovery Act 2001*. Wastes that are unable to be reused or recycled will be disposed of offsite to an appropriately licenced waste management facility following classification (refer to section 5.2). Locations of waste management/disposal facilities are included in Appendix A and B. Details of waste types, volumes and destinations are to be recorded in the Waste Management Register (Appendix X).

5.2 Classification of waste streams

Guidance Text:

Outline the six classes of waste and describe the process for management, handling and classification of each stream.

Where required outline any sampling and testing requirements for the waste streams.

The recording of project specific waste streams is to be tabled in the below section 5.3.

Example Text:

Where waste cannot be avoided, reused or recycled it will be classified and appropriate disposal will then occur. The classification of waste is undertaken in accordance with the EPA Waste Classification Guidelines Part 1: Classifying Waste (2014). This document identifies six classes of waste: Special, Liquid, Hazardous, Restricted Solid, General Solid (putrescible) and General Solid (non-putrescible), and describes a six step process to classifying waste. That process is described below:

Step 1: Is it 'special waste'?

Establish if the waste should be classified as special waste. Special wastes are: clinical and related, asbestos, waste tyres. Definitions are provided in the guidelines.

Note: Asbestos and clinical wastes must be managed in accordance with the requirements of Clauses 42 and 43 of the *Protection of the Environment Operations (Waste) Regulation 2005*.

Step 2: If not special, is it 'liquid waste'?

If it is established that the waste is not special waste it must be decided if it is 'liquid waste'. Liquid waste means any waste that: has an angle of repose of less than 5° above horizontal becomes free-flowing at or below 60° Celsius or when it is transported is generally not capable of being picked up by a spade or shovel.

Liquid wastes are sub-classified into:

- Sewer and stormwater effluent
- Trackable liquid waste according to *Protection of the Environment Operations (Waste) Regulation 2005* Schedule 1 Waste to which waste tracking requirements apply
- Non-trackable liquid waste

Step 3: If not liquid, has the waste already been pre-classified by the NSW EPA?

The EPA has pre-classified several commonly generated wastes in the categories of hazardous, general solid waste (putrescibles) and general solid waste (non-putrescibles). If a waste is listed as 'pre-classified', no further assessment is required.

Step 4: If not pre-classified, is the waste hazardous?

If the waste is not special waste (other than asbestos waste), liquid waste or pre-classified, establish if it has certain hazardous characteristics and can therefore be classified as hazardous waste.

Hazardous waste includes items such as explosives, flammable solids, substances liable to spontaneous combustion, oxidizing agents, toxic substances and corrosive substances.

Step 5: If the waste does not have hazardous characteristics, undertake chemical assessment to determine classification

If the waste does not possess hazardous characteristics, it needs to be chemically assessed to determine whether it is hazardous, restricted solid or general solid waste (putrescible and non-putrescible). If the waste is not chemically assessed, it must be treated as hazardous.

Waste is assessed by comparing Specific Contaminant Concentrations (SCC) of each chemical contaminant, and where required the leachable concentration using the Toxicity Characteristics Leaching Procedure (TCLP), against Contaminant Thresholds (CT).

Step 6: Is the general solid waste putrescible or non-putrescible?

If the waste is chemically assessed as general solid waste, a further assessment is available to determine whether the waste is putrescible or non-putrescible. The assessment determines whether the waste is capable of significant biological transformation. If this assessment is not undertaken, the waste must be managed as general solid waste (putrescible).

5.3 Classification of potential waste streams

The types of wastes which may be generated during construction are outlined within classifications in Table 5-2.

Guidance Text: Update the below table to be relevant to the project. Proposed reuse / recycling / disposal should take into consideration options including reuse onsite, s.143 notices, disposal offsite to a licensed facility, resource recovery offsite etc.

For each of the identified waste streams, provide details on the following:

- i. the waste classification (refer to EPA's "Waste Classification Guidelines");
- ii. how and where the waste is to be reused, recycled, stockpiled or disposed of;
- iii. the receptacles that will be used for storing identified waste materials prior to reuse, recycling, stockpiling or disposal;
- iv. how, and by whom, will the waste be transported between generation, storage and point of reuse, recycling, stockpiling or disposal;
- v. sampling and testing requirements;
- vi. licensing requirements under the POEO Act and/or relevant NSW Resource Recovery Orders and Exemptions;
- vii. procedures for verifying licenses and permits for handling, transportation and disposal of waste;

Table 5-2: Classification of potential waste streams

Construction Activity	Waste Type	Waste Classification	Approx. quantity	Proposed reuse/recycling/disposal methods	Reuse / Recycle Target	Comments
[List construction activity]	[List waste type generated by activity. Note: multiple waste types may be required for some activities]	[Identify classification or whether assessment may be required]	[Outline quantity]	[Outline the proposed methods for waste management]	[Outline reuse/recycle target]	[Add any additional comments as required]

5.4 Waste exemption

Clause 51 Protection of the Environment Operations (Waste) Regulation 2005 enables the EPA to grant exemptions to the licensing and payment of levies for the land application or use of waste. The EPA has issued general exemptions for a range of commonly recovered, high volume and well characterised waste materials that allow their use as fill or fertiliser at unlicensed, off-site facilities. The general Resource Recovery Exemptions and Orders may be applicable to this project are defined in Table 3-1 below. These are general gazette exemptions that do not require approval. A specific exemption may be granted where an application is made to the EPA.

Guidance Text:

Update the below table with exemptions and/or orders that are relevant to the project and outline how they would be applied onsite.

Table 5-1: Waste Recovery Exemptions and Orders, and associated conditions relevant to the project

Exemption/Order	General Conditions
Effluent Exemption 2014 Effluent Order 2014	The effluent can only be applied to land for the purposes of irrigation or as a soil amendment material. The consumer must apply the effluent within a reasonable period of time.
The excavated natural material exemption 2014 The excavated natural material order 2014	The chemical concentration or other attributes of the excavated natural material listed in the Excavated Natural Material Exemption must not be exceeded. The excavated natural material can only be applied to land as engineering fill or used in earthworks. ENM handling, processing and testing requirements are outlined in detail in the exemption.
The excavated public road material exemption 2014 The excavated public road material order 2014	The excavated public road material can only be stored within the road corridor at the site where it is to be applied to land. The excavated public road material can only be applied to land within the road corridor for public road related activities including road construction, maintenance and installation of road infrastructure facilities. This exemption does not apply to the land application of excavated public road material on any land outside the road corridor. The excavated public road material cannot be applied on private land. The consumer must land apply the relevant waste within a reasonable period of time.
The mulch exemption 2016 The mulch order 2016	The raw mulch can only be applied to land for the purposes of filtration or as a soil amendment material or used either singularly or in any combination as input material(s) to a composting process. The consumer must land apply the raw mulch within a reasonable period of time.

Exemption/Order	General Conditions
<p>The recovered aggregate exemption 2014</p> <p>The recovered aggregate order 2014</p>	<p>The chemical concentration or other attribute of the recovered aggregate listed in the Recovered aggregate Exemption must be met.</p> <p>The recovered aggregate can only be applied to land for road making activities, building, landscaping and construction works. This approval does not apply to any of the following applications:</p> <p>Construction of dams or related water storage infrastructure,</p> <p>Mine site rehabilitation,</p> <p>Quarry rehabilitation,</p> <p>Sand dredge pond rehabilitation,</p> <p>Back-filling of quarry voids,</p> <p>Raising or reshaping of land used for agricultural purposes, and</p> <p>Construction of roads on private land unless: the relevant waste is applied to land to the minimum extent necessary for the construction of a road, and a development consent for the development has been granted under the relevant Environmental Planning Instrument (EPI), or it is to provide access (temporary or permanent) to a development approved by a Council, or the works undertaken are either exempt or complying development.</p>
<p>The blast furnace slag exemption 2014</p> <p>The blast furnace slag order 2014</p>	<p>Blast furnace slag or blended slag can only be applied to land in cementitious mixes such as concrete or in non-cementitious mixes such as an engineering fill in earthworks or roadmaking activities.</p>
<p>The reclaimed asphalt pavement exemption 2014</p> <p>The reclaimed asphalt pavement order 2014</p>	<p>Reclaimed asphalt can only be applied to land for road related activities including road construction or road maintenance</p>

6 Resource management and conservation

Guidance Text

The WESP is required to provide controls for minimising consumption of fuel, oil and other consumables, on-site electricity and water required for construction, consistent with the requirements of the Parramatta Light Rail Sustainability Strategy. It is recommended that this information is outlined below.

Example Text:

The Project Team is dedicated to implementing resource conservation best practice and the reduction of greenhouse gases by adopting energy efficient work practices including:

- Developing and implementing procedures to minimise energy use.

- Conducting awareness programs for all site personnel regarding energy conservation methods.

7 Environmental control measures

Specific measures and requirements to meet the objectives of this WRMP and to address contract specifications, CoA and EMMMs are outlined in Table 6.1.

Guidance Text:

This table is to explain how CoA, EMMMs and contract specifications would be implemented, managed and monitored. Measures are to be written in a manner which allows monitoring and compliance checks.

This table can be used as an opportunity to demonstrate best practice measures and to identify actions which would be used to contribute to an Infrastructure Sustainability Council of Australia (ISCA) rating.

8 Compliance management

8.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

8.2 Training

Guidance Text:

This section should be reviewed and updated, where necessary, to ensure relevance to project.

All employees, contractors and utility staff working on site will undergo site induction training relating to waste and energy management issues. The induction training will address elements related to waste and energy management including:

- [Include relevant elements to be addressed in induction training]

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in waste and energy management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

8.3 Monitoring and inspection

Guidance Text:

Include detailed inspection criteria such as:

- Monitoring locations
- What is to be monitored
- Type of monitoring
- Frequency of monitoring

Include details of monitoring criteria

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

8.4 Auditing

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

8.5 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

Example text is below.

Example Text

Reporting requirements and responsibilities are documented Section 3.9.5 of the CEMP

9 Review and improvement

9.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance.
- Determine the cause or causes of non-conformances and deficiencies.
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies.
- Verify the effectiveness of the corrective and preventative actions.
- Document any changes in procedures resulting from process improvement.
- Make comparisons with objectives and targets.

9.2 WRMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the CEMP.

Appendix A – [Contractor to allocate]

Appendix B9

Contaminated Land Management Sub Plan

Parramatta Light Rail – Stage 1

[Insert month and year]

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Guidance Text:

The Contents table has been included in the navigation pane and accessible PDF bookmarks. As a result it will appear as a line item within the table of contents. Please delete the 'Contents' line item from the table of contents prior to finalising the submissions report.

Guidance Text:

The below example text outlines recommended appendices. Inclusion would be guided by CoA. The appendices listed outside this guidance box are required inclusions.

Example Text:

Potential asbestos containing soil/material contamination management

Procedure to assess potential contaminated sites

Contamination management plan for [Insert name of specific known contaminated site]

Asbestos management plan

Appendix A – Unexpected discovery of contaminated lands procedure

Appendix B – Asbestos Management Plan

Appendix C - Contamination management plan for [Insert name of specific known contaminated site]

Glossary / Abbreviations

Abbreviations	Expanded text
ACM	Asbestos containing material
CEMP	Construction Environmental Management Plan
CLM Act	<i>Contaminated Land Management Act 1997</i>
CoA	Conditions of Approval
DP&E	Department of Planning and Environment
DPI	Department of Primary Industries
ECM	Environmental Control Map
EIS	Environmental Impact Statement
EEC	Endangered Ecological Community
EMMM	Environmental Mitigation and Management Measure
EPA	NSW Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
OEH	Office of Environment and Heritage
PESCP	Progressive Erosion and Sediment Control Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RAP	Remediation Action Plan
SAR	Site Audit Report
SAS	Site Audit Statement
TSC Act	<i>Threatened Species Conservation Act 1995</i>
VENM	Virgin Excavated Natural Material

[Update table with project specific terms and acronyms where relevant]

1 Introduction

1.1 Context

This Contaminated Land [Sub] Plan (CLMP) forms part of the Construction Environmental Management Plan (CEMP) for the Parramatta Light Rail – Stage 1 (the Project).

This CLMP has been prepared to address the requirements of the Minister's Conditions of Approval (CoA), the Transport for NSW environmental mitigation and management measures (EMMMs) listed in the Parramatta Light Rail – Stage 1 Environmental Impact Statement (EIS) and all applicable legislation. This plan will be finalised and updated by the successful construction by the contractor.

1.2 Background and project description

Guidance Text:

Outline areas of known and potential contamination summarised from the environmental assessment documentation. Maps and figures should be included to assist in describing the locations and extent of actual and likely contamination. The background should also identify the source of the requirement to develop and implement this plan and any additional studies that have been undertaken since the EIS prior to construction.

It is suggested that a brief summary of project description is included. Reference CEMP, EIS and sections of this sub-plan where appropriate.

1.3 Scope of the Sub-Plan

Guidance Text:

Outline the extent and scope of the project to which this sub-plan applies

1.4 Environmental management systems overview

The environmental management system overview is described in section 1.4 of the CEMP.

2 Purpose and objectives

2.1 Purpose

The purpose of this CLMP is to establish a set of best practice procedures for the identification and management of contaminated land if encountered during works undertaken for the Project.

This plan has been prepared to address the applicable statutory requirements and aims to ensure that the commitments with regard to contaminated land are met.

2.2 Objectives

The key objective of the CLMP is to ensure all CoA, EMMMs and licence/permit requirements relevant to contaminated land are described, scheduled and assigned responsibility as outlined in:

- The environmental impact assessment prepared for Parramatta Light Rail – Stage 1
- Conditions of Approval granted to the project on [Insert date]
- [Insert any other additional approvals, authorisations, licences relevant to contaminated land]

2.3 Targets

The following targets have been established for the management of contaminated land during the project:

Example Text:

- Ensure full compliance with the relevant legislative requirements, CoA, EMMMs and Roads and Maritime specifications
- Minimise or avoid impacts from contaminated land
- Manage downstream water quality impacts attributable to the project (i.e. maintain water waterway health by avoiding the introduction of nutrients, sediment and chemicals outside of that permitted by the environmental protection licence and/or ANZECC guidelines).
- Ensure training on best practice soil and water management is provided to all construction personnel through site inductions.

3 Environmental Requirements

3.1 Relevant legislation and guidelines

3.1.1 Legislation

All legislation relevant to this CLMP is included in Appendix [A1] of the CEMP.

3.1.2 Additional approvals, licences, permits and requirements

Refer to Appendix A1 of the CLMP

3.1.3 Guidelines and standards

The main guidelines, specifications and policy documents relevant to this Plan include:

[Review and update list where relevant]

- NEPM Guidelines for the Assessment of Site Contamination
- Waste Classification Guidelines – Part 1: Classification of waste (NSW EPA 2014)
- NSW Environment Protection Authority (EPA) Contaminated Land Management – Guidelines for the NSW Site Auditor Scheme (3rd edition) (2017);
- NSW Department of Planning State Environmental Planning Policy 55 – Remediation of Land;
- Department of Urban Affairs and Planning and Environment Protection Authority Planning Guidelines SEPP 55 – Remediation of Land (1998);
- NSW Office of Environment and Heritage (2011) Guidelines for Consultants Reporting on Contamination Sites; and
- Guidelines on the Duty to Report Contamination under the *Contaminated Land Management Act 1997* OEH (2009).

3.2 Minister's Conditions of Approval

The CoA relevant to this Plan are listed in Table 3-1 below. A cross reference is also included to indicate where the condition is addressed in this Plan or other Project management documents.

Table 3-1 Conditions of Approval relevant to the CLMP

CoA No.	Condition Requirements	Document Reference
Insert CoA reference	Insert all relevant requirements from the approval that are specific to preparation and content of the CLMP.	Include a reference to where the requirement is addressed. This might be a section of the CEMP, sub plan, procedure or report.

4 Existing Environment

This section describes the existing environment of the Project, specific to contaminated land. It also summaries previous contaminated land investigations undertaken to date and outlines further investigation required.

4.1 Previous investigations

Guidance Text:

It is recommended this section summarises types and findings of previous investigations. The below table can be used to document the findings of previous investigations.

Site number	Site description	Location

4.2 Further investigations

Guidance Text:

This section should include details of investigations that were undertaken after project approval. Additionally this section is to outline the approach that will be taken for any future investigations.

5 Environmental aspects and impacts

Guidance Text:

Include an outline of how the environmental aspects and risks related to contaminated land were identified and the consequence/likelihood decided.

Include reference to where the risk assessment is located.

5.1 Construction activities

Key aspects of the Project that could result in adverse impacts to soils and water include:

- [Pre-construction activities including utility adjustment, site access provisions, property adjustments]
- [Clearing of vegetation]
- [Initial removal of topsoil]
- [General earthworks particularly during site establishment]
- [Building demolition]
- [Removal of redundant utilities]
- [Construction of site compounds and spoil / mulch and / or equipment stockpile areas]
- [Temporary access roads during construction]
- [Bulk Earthworks]
- [Drilling and Blasting]
- [Update and amend the above list of key aspects to ensure relevance to the project]

Refer to Appendix A2 of the CEMP – Environmental Risks Register.

5.2 Impacts

The potential for contaminated land disturbance and impacts will depend on a number of factors. Primarily impacts will be dependent on the nature, extent and magnitude of construction activities and their interaction with known and potential contaminated land sources. Potential impacts attributable to construction might include:

- [Update list of potential impacts to ensure relevance to the Project]

Relevant aspects and the potential for related impacts have been considered in a risk assessment at Section [X]/Appendix A2 of the CEMP. Chapter [X] provides a suite of mitigation measures that will be implemented to avoid or minimise those impacts.

6 Environmental control measures

Specific measures and requirements to meet the objectives of this CLMP by addressing contract specifications, CoA and EMMM in relation to impacts on contaminated land are lined in Table 6-1.

Guidance Text for projects using ISCA ratings:

It is recommended that the contractor also use Table 6-1 to:

- Document additional best practice measures that they will commit to in order to improve project outcomes and minimise impacts.
- For example projects that are required to achieve a sustainability rating under the Infrastructure Sustainability (IS) rating scheme (administered by the Infrastructure Sustainability Council of Australia (ISCA)) can use Table 6-1 to cross-reference the project IS Management Plan and document specific initiatives as they relate to the IS rating credit points.

Table 6-1 Contaminated Land management mitigation measures

ID	Measure/Requirement	Resources needed	When to implement	Responsibility	Reference
[Include a unique ID for this measure e.g. CL1]	[Outline the measure or requirement]	[List any specific resources required to implement this measure]	[Include which stage of the project the measure would be implemented]	[Include who is responsible for implementation]	[Include where this requirement is from e.g. CoA number, best practice]

7 Compliance management

7.1 Roles and responsibilities

The [insert contractor name] Project Team's organisational structure and overall roles and responsibilities are outlined in Section 3.3 of the CEMP. Specific responsibilities for the implementation of environmental controls are detailed in Section 6 of this Plan.

7.2 Training

Guidance Text:

This section should be reviewed and updated, where necessary, to ensure relevance to project.

All employees, contractors and utility staff working on site will undergo site induction training relating to contaminated land management issues. The induction training will address elements related to contaminated land management including:

- [Include relevant elements to be addressed in induction training]

Targeted training in the form of toolbox talks or specific training will also be provided to personnel with a key role in contaminated land management.

Further details regarding staff induction and training are outlined in Section 3.5 of the CEMP.

7.3 Monitoring and inspections

Guidance Text:

Outline location, frequency and standards applicable to contaminated land monitoring. It is recommended that this information is tabled.

Additional requirements and responsibilities in relation to inspections are documented in Section 3.9.1 and Section 3.9.2 of the CEMP.

7.4 Auditing

Guidance Text:

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this Plan, CoA and other relevant approvals, licenses and guidelines.

Audit requirements are detailed in Section 3.9.3 of the CEMP.

7.5 Reporting

Guidance Text:

Include the reporting requirements relevant to this sub-plan as outlined by the CoA, this must include what and when monitoring reports would be provided to the DP&E.

Where appropriate reference Sections in the CEMP such as Section 3.9.4 and Section 3.9.5.

8 Review and improvement

8.1 Continuous improvement

Continuous improvement of this Plan will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

The continuous improvement process will be designed to:

- Identify areas of opportunity for improvement of environmental management and performance
- Determine the cause or causes of non-conformances and deficiencies
- Develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies
- Verify the effectiveness of the corrective and preventative actions
- Document any changes in procedures resulting from process improvement
- Make comparisons with objectives and targets.

8.2 CLMP update and amendment

The processes described in Section 3.9 to Section 3.13 of the CEMP may result in the need to update or revise this Plan. This will occur as needed.

Only the Environment Manager, or delegate, has the authority to change any of the environmental management documentation.

A copy of the updated plan and changes will be distributed to all relevant stakeholders in accordance with the approved document control procedure – refer to Section 3.11.2 of the C Department of Urban Affairs and Planning and Environment Protection Authority Planning Guidelines SEPP 55 – Remediation of Land (1998).

Exhibit B – Works Brief



Exhibit B

Works Brief

Parramatta Light Rail Stage-1 Enabling Works

5TP-FT-425/3.0

Infrastructure and Services

Integrated Management System

Status: Approved

Version: 3.1

Section: Commercial

Business unit: Procurement

Date of issue: 25 June 2018

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Asset classes: Heavy Rail; Light Rail; Multi Sites;
 Systems; Fleets

Project type: For all project types

Project lifecycle: Feasibility; Scoping; Definition;
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Process owner: Director Commercial

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	22/03/2018	5899254_19	Addendum 7
	25/05/2018	5899254_20	RFC
	20/06/2018	5899254_21	RFC
	25/06/2018	5899254_22	Execution

Note - this document includes hyperlinks to TfNSW authored reference documents.

Where the TfNSW reference document is publicly available, the link will take the user to TfNSW's Internet website, where the particular reference document can be located. Access to these documents is available to all users.

Where the TfNSW reference document is not publicly available, the link will take the user to TfNSW's intranet and the QMS system where the document is located. Access is limited to users with TfNSW intranet access. Contractors do not have access to QMS and must therefore be provided with these reference documents as part of this TSR. The list of these reference documents can be found in Annexure G of the TSR.

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1. Introduction

1.1. Works Brief Overview

1.1.1. Purpose

The purpose of this Works Brief is to:

- (a) describe the extent of the Contractor's Activities;
- (b) provide an introduction and guide to the Concept Design;
- (c) allow the Contractor to obtain a clear view of the extent of Works; and
- (d) provide additional detail required for the determination of the total cost not contained in other contractual documentation.

1.1.2. Content

The content is subdivided in to four main sections and Annexures:

Section 1: Introduction, which describes the context and environment in which the "Works" are to be carried out.

Section 2: General Requirements, which sets out the extent of the Contractor's Activities and how the Contractor's Activities are to be performed.

Section 3: Design Requirements, outlines the Contractor's design obligations and the requirements to be achieved by the Contractor.

Section 4: The Works, which describes the scope of the Works and the Contractor's Activities.

Annexures that contain supplementary material are referred to in sections 2 to 4.

1.1.3. Abbreviations and Acronyms

Abbreviation/Acronym	Meaning
TCS	Traffic Control Signalling
RSA	Road Safety Audit
RTC	Remote Time-lapse Camera
RMS	Roads and Maritime Services
CADD	Computer-aided design and drafting
INF	Infrastructure
SOM	Supply, Operate & Maintain
DPE	Department of Planning and Environment
ROL	Roads Occupancy Licence
CoA	Conditions of Approval
GTA	Integrated Traffic and Transport Consultants

- (a) Unless stated otherwise, any reference to a 'section' or 'clause' in this Works Brief is a reference to a section or clause of this Works Brief.
- (b) Unless stated otherwise, any reference to an 'Appendix' or 'Appendices' in this Works Brief is a reference to an Appendix or Appendices of this Works Brief.

- (c) Unless stated otherwise, wherever used in this Works Brief, words and phrases have the meaning given to them in the General Conditions of Contract. In addition, the words or phrases have the meaning given to them in Annexure F.

1.2. Parramatta Light Rail - Overview

PLR – Stage 1 is one of the NSW Government's major infrastructure projects being delivered to serve a growing Sydney. Connecting Westmead to Parramatta and Carlingford via Camellia, this will be the first stage of the Project and is expected to open in 2023.

Light rail will create new communities, connect great places and help both locals and visitors move around and explore what the region has to offer. The route will link Parramatta's CBD and train station to a number of key locations including: the Westmead health precinct; the Parramatta North urban transformation area; the new Western Sydney Stadium; the Camellia precinct; the new Powerhouse Museum; the private and social housing redevelopment at Telopea; Rosehill Gardens Racecourse; and three Western Sydney University campuses.

In summary, key elements of PLR – Stage 1 are shown in Figure 1 and they include:

- (a) a new light rail network approximately 12 kilometres in length, including approximately 7 kilometres within the existing road corridor separated from general traffic between Westmead and Camellia, and approximately 5 kilometres utilising the existing T6 Carlingford Line and former Sandown freight line and replacing current heavy rail services;
- (b) a total of 16 stops. The stops will have either side or island platforms depending on the final design, the proposed functionality, and the existing constraints at each stop location. Platforms would be approximately 45 metres long;
- (c) interchanges with existing rail and bus facilities at Westmead, Parramatta CBD, and Carlingford;
- (d) creation of two light rail and pedestrian zones (i.e. no general through-vehicle access) within the Parramatta CBD: one along Church Street (generally between Lennox Bridge and Macquarie Street); and the other in Macquarie Street (generally between Horwood Place and Smith Street);
- (e) an integrated stabling and maintenance facility consisting of a number of elements, including:
 - (i) a stabling area for Light Rail Vehicles (LRVs);
 - (ii) a stabling and maintenance building, including: a workshop containing servicing tracks to undertake LRV inspections; and administration facilities for managing the administration, operation and maintenance of the project systems; and
 - (iii) an automated train wash plant and sanding plant for replenishing LRV sand boxes and for testing sanding equipment;
- (f) LRV driver amenities at the light rail termini at Westmead and Carlingford, and at the stabling and maintenance facility at Camellia;
- (g) a number of new bridge structures along the alignment including over James Ruse Drive and Clay Cliff Creek, Parramatta River (near the Cumberland Hospital), Kissing Point Road and Vineyard Creek, Rydalmere;
- (h) modification of Lennox Bridge (Church Street) and a number of existing bridge structures along the Carlingford Line (including Parramatta River, Adderton Road and Pennant Hills Road) to accommodate the light rail alignment and active transport links;
- (i) alterations to the existing road network to accommodate the Project, including line marking, additional traffic lanes and turning lanes, new traffic signals, and changes to traffic flows (e.g. creation of left-in, left-out arrangements etc.), and

- (j) ancillary infrastructure including up to eight electricity substations, and overhead lines and poles to allow for LRV operations.

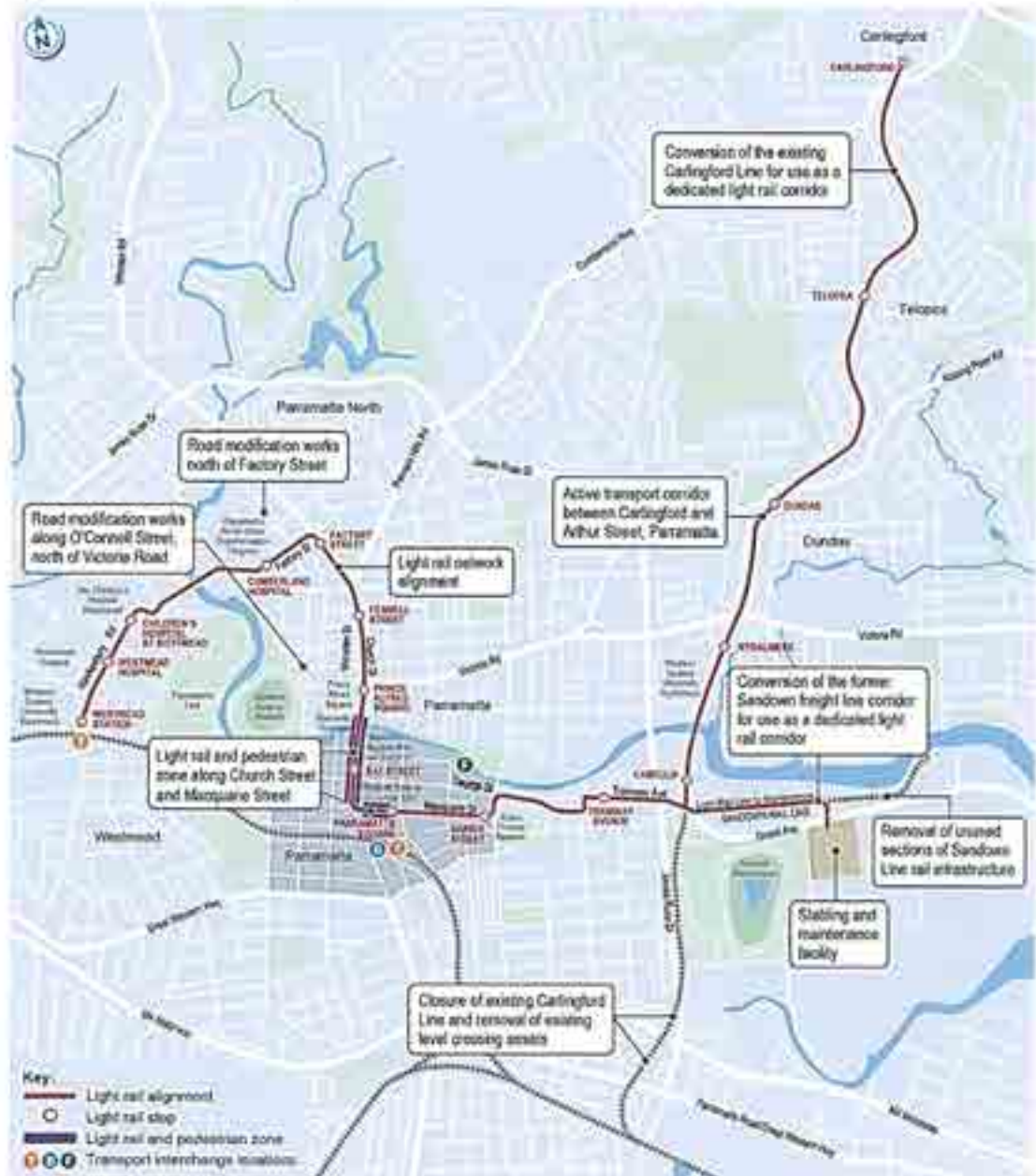


Figure 1: Key elements of PLR – Stage 1

1.3. Key Impacts of Parramatta Light Rail on Roads

- the minimum light rail corridor width required on streets is 7.4m, but will be wider at curves and stops;
- a standard four (4) lane street is 12.8m wide and has sufficient width for the LRVs plus two (2) traffic lanes;
- a proportion of traffic needs to be diverted away from the light rail corridor and substantial lengths of street will need widening as standard four (4) lane roads will be converted to two (2) lanes; and
- permanent traffic diversion needs to be introduced on Church and Macquarie streets.

1.4. Purpose of the Works

The Works are necessary to modify the existing road network in the Parramatta North and Parramatta CBD in order to minimise disruption on the flow of traffic during the construction and the operation of the Parramatta Light Rail. This will be achieved by:

- (a) diverting south bound and north bound traffic from Church Street to O'Connell Street, north of Factory Street, and:
 - (i) increasing traffic capacity along O'Connell Street to four (4) lanes (two (2) in each direction from Barney St to Albert St). This will be achieved through road widening and conversion of parking lanes to travelling lanes;
 - (ii) increasing outbound traffic capacity from Parramatta CBD by adding a second eastbound lane and left turn lane from Barney Street to Church Street; and
 - (iii) increasing inbound traffic capacity to Parramatta CBD by adding a second westbound lane and right turn lane from Church Street to Barney Street;
- (b) creating additional capacity on Victoria Road and O'Connell Street intersection (south of Factory Street), and:
 - (i) providing a new left turn only lane on Victoria Road at the O'Connell Street and Victoria Road intersection; and
 - (ii) the new left turn only lane will enable the existing lane to be converted to a right turn only lane on Victoria Road at the Victoria Road and O'Connell Street intersection;
- (c) diverting west bound traffic from Macquarie Street to George Street in Parramatta CBD, and:
 - (i) converting the existing one way in George Street to two way (single lane each way) between the O'Connell Street and Harris Street intersection;
 - (ii) providing a left turn and a right turn lane at George Street for north and south bound traffic entering O'Connell Street; and
 - (iii) modifying the existing lanes on George Street and Harris Street intersection to allow the traffic to travel both in north and south directions on to Harris Street or MacArthur Street.

1.5. Works Location

The Works are located as shown on Figures 2, 3 and 4.

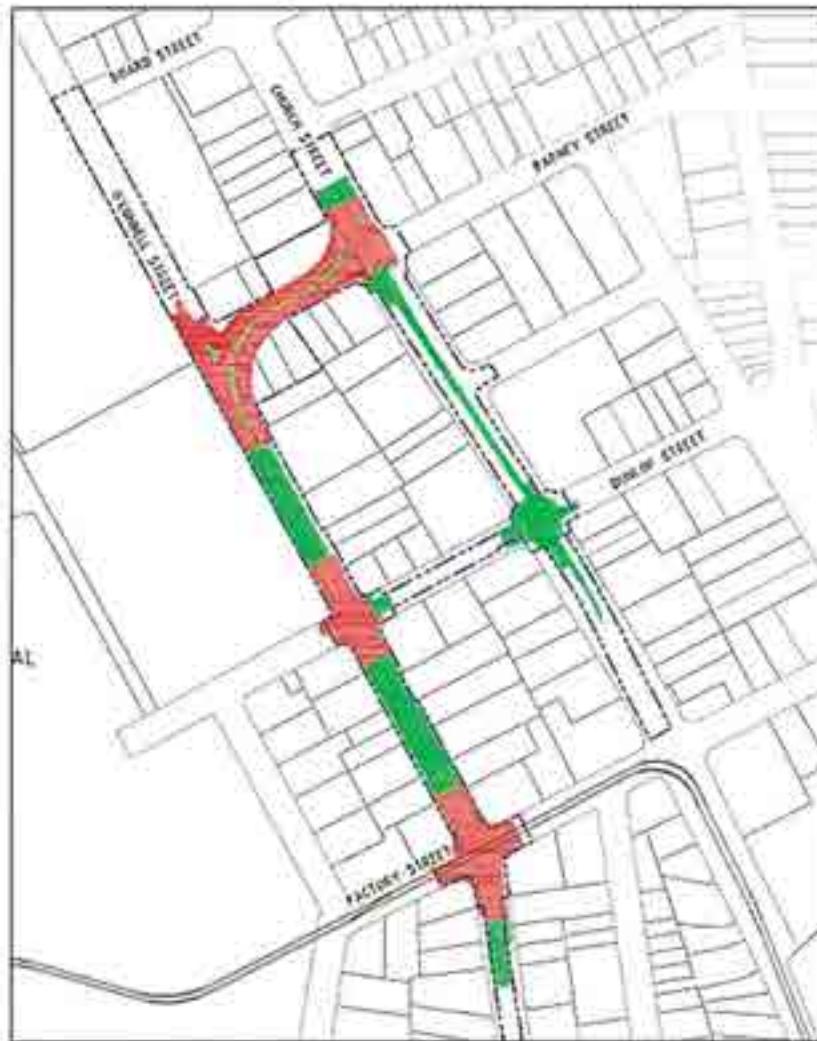


Figure 2: O'Connell Street – North of Factory Street

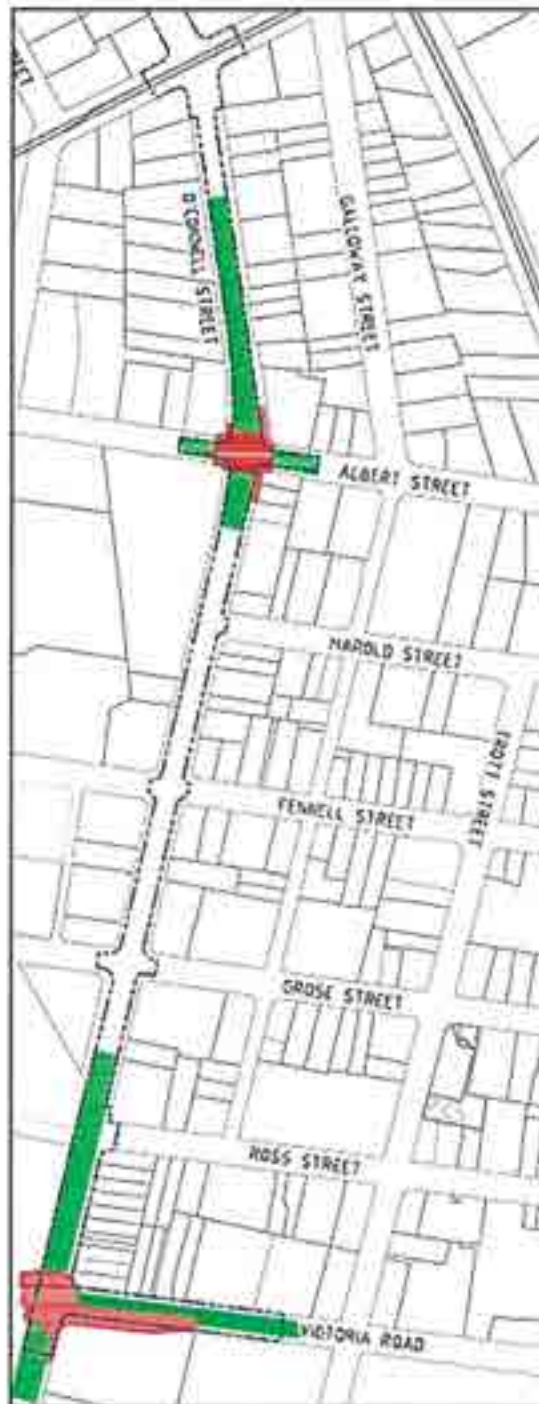


Figure 3: O'Connell Street – South of Factory Street



Figure 4: Parramatta CBD, George Street

2. General Requirements

2.1. Introduction

The Contractor must execute the Contractor's Activities in accordance with the requirements of the Contract.

2.2. General

The Works (including the Temporary Works) must be designed and constructed to comply with the requirements of the Contract.

2.3. Safety Management

The Contractor must design and construct the Works to ensure they are safe and fit for their intended purposes throughout the design, construction, testing, commissioning and operational phases. The TSRs described the safety requirements and processes, including reliability, availability, maintainability and safety in design which the Contractor must comply with under the Contract.

2.4. Planning Approval

The Principal has prepared an Environmental Impact Statement (EIS) under the provisions of State Significant Infrastructure (SSI) for the Project. The scope of the EIS includes the Works as well as the construction and operation of the PLR. The EIS was placed on public exhibition on 23 August 2017 and determined by the Minister for Planning of the NSW Department of Planning and Environment (DPE) on 29 May 2018.

DPE's Standard and Model Conditions of Approval (CoA) are included in Schedule 4 of the Contract, and the EIS is included in Annexure G of the TSR. The Contractor will be required to comply with the CoA as set out in the Contract.

The EIS and the SSI Approval, is described as the Planning Approval Exhibit D of the General Conditions of Contract. The Contractor shall ensure that it has the relevant expertise and experience to mitigate the impacts of the Works and fulfil all the conditions and requirements of the Planning Approval as set out in the Contract and the Planning Approval Matrix.

2.5. Investigation and Survey

No survey control or cadastral marks including permanent survey marks, boundary marks, reference marks and bench marks as defined by the Surveying and Spatial Information Act 2002 (NSW) and Surveying and Spatial Information Regulation 2017 (NSW) are to be damaged, disturbed or destroyed without prior authorisation from the NSW Surveyor General.

The Contractor must:

- (a) comply with the RMS Specification D&C G71 for care, protection and preservation of survey control and cadastral marks;
- (b) comply with RMS Specification D&C G71 for submission of the Project Quality Plan for construction surveys;
- (c) maintain an up-to-date survey control and cadastral marks register of all survey control marks that make up the Survey Control Network and the cadastre in accordance with RMS Specification D&C G71; and

- (d) by the Date of Completion for Portion 3, submit to the Principal the final survey control marks and cadastral marks register, together with evidence that any destroyed survey control and cadastral marks have been replaced in accordance with the NSW Surveyor General's requirements and all cadastral plans, locality sketches and diagrams relating to the Survey Control Network and the cadastre have been submitted as required by NSW Surveyor General's Direction Nos. 11 and 12.

The Contractor must obtain all information necessary to perform the Contractor's Activities. If deemed necessary by the Contractor this may include undertaking further:

- (e) geotechnical investigations;
- (f) property and land surveys;
- (g) groundwater and building/infrastructure/utility condition surveys; and
- (h) investigation, including consultation with Utility Providers, to establish location of utilities which may be affected by the Contractor's Activities to determine requirements for adjustment, protection and support.

2.6. Emergency Out-of-Hours Working

If working outside of approved working hours is required the Contractor must immediately provide verbal advice to the Principal's Representative of the circumstances. Situations where this may be required include:

- (a) emergencies;
- (b) in order to protect life or property; and
- (c) where it is in the interest of safety.

The Contractor must promptly confirm such verbal advice in writing and otherwise comply with the requirements set out in the TSR.

2.7. Public Events

Where major public events are expected to generate road closures or additional rail, road or pedestrian traffic in any areas directly or indirectly affected by the Contractor's Activities, the Works or the Temporary Works, the Contractor must cooperate with the Principal and Authorities to facilitate rail, road traffic and pedestrian flows.

2.8. Construction Vehicle Loads

- (a) Subject to paragraph (b) of this section 2.8, the Contractor must comply with the requirements of the law including Commonwealth, NSW and local government legislation when operating vehicles on roads open to public.
- (b) The Contractor will be permitted to operate vehicles with axle loads in excess of the limits specified under the law within the Site, subject to the following conditions:
 - (i) the operation of the vehicles with above legal axle loads must be limited to vehicles that remain within the Site; and
 - (ii) the vehicles must not be permitted to travel along or across any existing pavement or over any structure or service unless the pavement or structure or service has been designed to carry the vehicle or has been otherwise protected from damage.

- (c) Operation of vehicles with excess axle loads, with the exception of purpose designed compaction equipment, are not be permitted on any partially or fully completed road pavement work.

2.9. Temporary Site Facilities

- (a) The Site and any other areas affected by the Contractor's Activities must be maintained in a clean and tidy manner throughout the Contractor's Activities. The extended storage of rubbish or loose items on the Site or elsewhere is not permitted.
- (b) Site sheds must be as new and must be maintained in excellent condition. Site sheds must be established at locations and positions that minimise the impact on adjoining properties. All facilities utilised for the purpose of the Contractor's Activities must be constructed and maintained to meet requirements of the Principal and relevant Authorities, including RMS General Specification G04.

2.10. Occupation of Roads Open to the Public

- (a) The Contractor must obtain a Road Occupancy Licence (ROL) prior to occupying any part of a road open to the public;
- (b) Prior to occupying any part of a road open to the public, the Contractor must provide to the Principal's Representative a copy of the Road Occupancy Licence from the relevant Authority;
- (c) For the duration of the occupation by the Contractor of any part of a road open to the public, the Contractor must maintain, repair, clean and otherwise be responsible for the condition and function of that part of the road; and
- (d) As a minimum, any part of a road open to public which is occupied by the Contractor must, prior to hand back to the relevant Authority, be reinstated to a condition at least equivalent to that existing prior to the occupation.

2.11. Use of Local Roads for Contractor's Activities

The use of local roads with residences for Site access must be kept to a minimum.

3. Design Requirements

3.1. Design Scope of Work

- (a) The Contractor must prepare the Design Documentation. The Contractor must undertake the following activities:
- (i) carrying out all design activities required to be undertaken to develop the Concept Design into design documents suitable for construction (design development);
 - (ii) finalising the Concept Design and negotiating acceptance of Approved for Construction drawings from RMS;
 - (iii) negotiating RMS approval of the RMS Concessions;
 - (iv) negotiating RMS acceptance of the Road Safety Audit;
 - (v) iterating the design to include the validated traffic model to optimise road configuration for traffic, Urban Design, and pedestrian/road safety;
 - (vi) assessing and minimising impacts on Utility Services;
 - (vii) finalising street lighting design, including lighting categories;
 - (viii) finalising Traffic Control Signal locations with respect to existing Utility Services and sight lines;
 - (ix) finalising the Urban Design to the general satisfaction of the City of Parramatta; and
 - (x) finalising associated drainage design and models so as to demonstrate immunity to 1 in 20-year flood events; and
 - (xi) any other activities required for the preparation of the Design Documentation.
- (b) The Design Documentation must include the following:
- (i) allowances for technical information relating to drainage, flooding, signage, heritage and archaeology;
 - (ii) adherence to the Planning Approvals; and
 - (iii) meets the quality standards outlined by RMS Quality Assurance requirements.
- (c) The Contractor acknowledges that:
- (i) the scope of the Contractor's Activities includes the production of all the design documents (other than the Concept Design), including in respect of the finalisation of the design documents; and
 - (ii) any work that the Contractor, or any subcontractor is required to undertake in connection with the matters referred to in subclause 3.1(c)(i), including any work arising from design development, will not constitute a Variation under the Contract.

3.2. Concept Design

- (a) The Concept Design consists of the documents contained in Annexure A and includes:
- (i) a set of design reports;

- (ii) an overview report; and
- (iii) an associated set of drawings.

(b) Table 1 below sets out the design packages included in Annexure A.

Table 1: Concept Design Package Contents

Design Package	Description	Description
Concept Design Package	Technical Advisor (TA) Detailed Design Report (23 April 2018)	<ul style="list-style-type: none"> • Executive Summary • Introduction • Basis of Design • Design • Environment and Sustainability • Constructability and Value Engineering • Risk and Health and Safety in Design • Changes from previous design • Outstanding issues
	Appendices to TA Concept Design Report (Detailed Design Report (23 April 2018))	<ul style="list-style-type: none"> • Appendix A – Design Drawings List • Appendix B – Risk and Health and Safety in Design Register • Appendix C – Departures from Standard • Appendix D – Roads and Maritime Review Register • Appendix E – Independent Certifier Comments • Appendix F – Road Safety Audit Responses • Appendix G – Geometry Calculations • Appendix H – Traffic Control Signal Design Plan Checklist • Appendix I – Road Pavement Calculations • Appendix K – Drainage Calculations • Appendix L – Construction Staging • Appendix M – Sustainability – ISCA Actions Register • Appendix N – Schedule of Quantities

	TCS Concept Design (Design Stage 2)	<ul style="list-style-type: none"> • General • Roads • Drainage • Urban Design • Concept Level TCS Designs
	Enabling Works Urban Design Requirements Concept Design Report	<ul style="list-style-type: none"> • Introduction • Design Framework • O'Connell & Church Street Corridor • George Street Corridor • Conclusion
	AUS Utilities Design Report (Rev 1.4)	<ul style="list-style-type: none"> • Utility Assets Concept Designs <ul style="list-style-type: none"> ○ Gas ○ Communications ○ Sewer ○ Electrical ○ Water • Survey Pit Reports (Part 1, 2 and 3) • Endeavour Energy As Built George Street • Jemena Isolated Mains Map_20170421 • Utilities Survey Model Files
	Geotechnical Data Report	<ul style="list-style-type: none"> • Portion 1 dated 30th May 2018
Virtual Information		<ul style="list-style-type: none"> • Topographical Survey • Road Design Model
Property Adjustment	Property Adjustment	<ul style="list-style-type: none"> • Property Adjustment Plans • Property Adjustment Plan Guide
Hazardous Material Report	Hazardous Material Report	<ul style="list-style-type: none"> • Hazardous Material Report

3.3. Design Obligations

- (a) The Contractor must prepare and complete the Design Documentation necessary for the construction, testing, commissioning, and bringing in to Operational Readiness (open to traffic) and handover of the Works.
- (b) The Contractor must prepare and complete the design of the Temporary Works. The Contractor is responsible for preparing, verifying and validating and obtaining approvals for all design in respect of Temporary Works.
- (c) The Design Documentation must be developed using a fully integrated approach, recognising the different functional requirements, statutory and regulatory requirements, Planning Approval conditions, community and stakeholder expectations and requirements of the Third Party Agreements.

- (d) The Contractor's Activities include the development of the design and production of the Design Documentation in accordance with this Works Brief (including any Concept Design), including the Traffic Control Signalling design and utilities design. The Contractor must do all things necessary to make sure the produced and Approved for Construction Design Documentation is fit for its intended purpose and is in accordance with this Works Brief (including any Concept Design) and the Contract.

3.4. Departures from the Concept Design

- (a) The Concept Design sets out the functional requirements, scope and design parameters for the Works. The Contractor must ensure that the Design Documentation prepared by the Contractor complies in all respects with the design intent of the Concept Design as set out in the design packages (design reports and associated drawings);
- (b) In the process of developing the design from the Concept Design to the Approved for Construction Design the Contractor must submit Design Documentation in accordance with clause 5.3 of the Contract;
- (c) The Contractor must demonstrate to the satisfaction of the Principal's Representative that the proposed departure from the Concept Design:
- (i) is consistent with the design intent of the Concept Design and, without limitation, does not result in a lessening of any standard, level of service, scope or requirement for any work set out in the Concept Design, including any reduction in;
 - (A) capacity;
 - (B) durability;
 - (C) aesthetics of visible features;
 - (D) whole of life cost and performance;
 - (E) functional performance;
 - (F) safety;
 - (G) security;
 - (H) community amenity;
 - (I) community benefits; and
 - (J) user benefits of any part of the Works; and
 - (ii) offers additional value whilst still meeting the specified functionality and purpose of the Works Brief (including Concept Design) and satisfies the requirements of the Contract.
- (d) The Principal in its absolute discretion may reject or approve the proposed departure from the Concept Design.

3.5. Design Coordination

The Contractor must coordinate the design of the Works with:

- (a) the Other Contractors including the Infrastructure Contractor and SOM Contractor;
and
- (b) the Utility Service asset owners for utility design (as required).

3.6. Not Used

3.7. Technical Requirements

The Works and Temporary Works must, as a minimum, be designed, constructed, tested and commissioned to comply with standards, regulations and codes identified in the Concept Design for each element of the Works.

The RMS traffic signals will be subject to the provisions of RMS specification G7.

3.8. Design Life

The required Design Life for the areas of intrusive construction of the Works is to be as set out in the RMS Supplements to Austroad Guides. Those areas requiring only surface treatments do not require works to improve the current Design Life employed for the road.

3.9. Departures from RMS Standards

A list of departures from RMS standards, together with the RMS Response Status, is provided with the Concept Design.

The Contractor must prepare the Design Documentation on the assumption that these departures are acceptable to RMS.

Should the Contractor require additional RMS Concessions in addition to those concessions listed in the Concept Design, or should the Contractor exacerbate the listed concessions then the Contractor will have no Claim against the Principal.

3.10. Quality of Materials and Workmanship

The standard of workmanship and materials must be of the quality necessary to meet the requirements of the Concept Design, this Work Brief and the TSRs.

3.11. Flood levels

- (a) The Works shall be completed to prevent flooding in a 1:20 year ARI flood, as required by the City of Parramatta Council.
- (b) The Works must be designed so that the potential for flooding (upstream or downstream) of any other property is not increased by the presence of the Works.
- (c) The Contractor will, at all times, undertake the appropriate measures to ensure a 1:20 year ARI flood immunity during the construction of the Works; and
- (d) The Works shall be completed to comply with the flooding requirements in the Planning Approval.

3.12. Water Management

- (a) The Contractor must develop and maintain drainage systems and develop design solutions (including any modifications required to existing drainage systems) to comply with the Planning Approval conditions and minimise the effect of water discharge from the Site.
- (b) The Contractor must provide a water management system that requires a minimum level of maintenance consistent with the need to ensure that the objectives of the Planning Approval conditions are met.
- (c) Drainage systems must:

- (i) manage both the quality and quantity of stormwater as close to its sources as possible;
 - (ii) be designed for ease of maintenance;
 - (iii) be structurally safe and fit for its intended purpose at all times;
 - (iv) ensure that additional runoff stormwater or spillage from the Works is not directed on to pavements of local roads;
 - (v) ensure that flood levels for any storm event are not increased by the Works and that the Works comply with the requirements in respect to flood levels in section 3.11 above; and
 - (vi) not suffer any loss of performance due to uniform and/ or differential settlement.
- (d) The Contractor must monitor the water quality and, where required treat run-off from the drainage system.
- (e) Facilities must be available to prevent environmental damage due to a spillage incident.

3.13. Authorities and Emergency Requirements

- (a) The Contractor's Activities, Works and Temporary Works must satisfy the access and other requirements of all relevant Authorities, including the emergency services.
- (b) The Contractor's Activities must include the necessary infrastructure to provide access to all part of the Works and Temporary Works for operation and maintenance.

4. The Works

4.1. Scope of Works

The Concept Design sets out the functional requirements, scope and design parameters for the Works.

The Works include all permanent new infrastructure and modifications to existing infrastructure which must be constructed to enable the Contractor to satisfy the requirements of the Contract.

The permanent new infrastructure and modifications to the existing infrastructure to be constructed include those Works described in Tables 2, 3 and 4 below but are not limited to the following:

- (a) roads, footpath, kerb realignment and intersection works to maintain capacity and other access provisions, both temporary and permanent;
- (b) Utility Services adjustments and relocations;
- (c) demolition and earthworks;
- (d) signage and line markings;
- (e) drainage modifications/construction required as part of the Works;
- (f) works to buildings and other built structures such as bridges and street furniture located within or immediately adjacent to the Site;
- (g) provision of power and other services;
- (h) testing and commissioning of the Works;
- (i) public domain modifications along the route, including strategies for access, streetscapes (paving, trees and furniture) and lighting;
- (j) construct kerbs and concrete gutters in accordance with drawing PLREW-ARU-RO-7000-DRG-20501 Detail F using salvaged sandstone kerbs and sandstone kerbs supplied by the City of Parramatta Council;
- (k) removal and disposal of spoil/Contamination;
- (l) protection of archaeological and historical sites; and
- (m) TCS installation/modification.

The Works can be divided into three sections. The scope of the Works to be carried out at each section is described in Table 2, 3 and 4 below.

Table 2: Section 1-O'Connell Street and Church Street (North of Factory Street)

O'Connell Street	Increase traffic capacity from the existing two (2) lanes to four (4) lanes by converting the existing parking lane in each direction to a travelling lane from the Factory Street Intersection to the Barney Street Intersection.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11002 to PLREW-ARU-RO-7100-DRG-11007
	Utility Services relocation/modifications, kerb, footpath and drainage modifications as designed during detailed design.	
	Removal of any vegetation as required.	
	Median on O'Connell Street and the impacted Utility Services, kerb, footpath and drainage to be as per Road Drawings: Design Stage 2 Annexure A.	<u>Road Drawings: Design Stage 2 Annexure A</u>
O'Connell and Factory Street intersection	Utility Services relocation/modifications as per the detailed design.	<u>Roads Drawing Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11007
	Kerb, footpath and drainage modifications as designed during detailed design.	
	Median on O'Connell Street and the impacted utilities, kerb, footpath and drainage to be as per Road Drawings: Design Stage 2 Annexure A.	<u>Road Drawings: Design Stage 2 Annexure A</u>
	Property adjustments to suit utilities relocation.	<u>Concept drawings related to property adjustments agreed with owners are provided in Annexure A</u>
O'Connell and Dunlop Intersection	Removal of existing roundabout and install new traffic signals.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11006 PLREW-ARU-RO-7100-DRG-11003
	Utility Services relocation/modifications, kerb, footpath and drainage modifications as designed during detailed design.	
	Median on O'Connell Street and the impacted utilities, kerb, footpath and drainage to be as per Road Drawings: Design Stage 2 Annexure A.	<u>Road Drawings: Design Stage 2 Annexure A</u>
Barney Street and Church and Barney intersection	Increase outbound traffic capacity with an additional eastbound travel lane and double left hand turn from Barney Street to Church Street.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11001, PLREW-ARU-RO-7100-DRG-11002, PLREW-ARU-RO-7100-DRG-11005
	Increase inbound traffic capacity with an additional westbound travel lane and double right hand turns from Church Street to Barney Street.	

	Utility Services relocation/modifications, kerb, footpath, and drainage modifications as designed during detailed design.	
Church Street	Re-mark road from Barney Street to Factory Street to accommodate traffic calming measures Note: Bus Lanes on Church Street are to remain and will require mastic pavement.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11002, PLREW-ARU-RO-7100-DRG-11003
	Relocate the bus stop between Board Street and Barney Street to be between Dunlop Street and Barney Street	
Dunlop and Church street intersection	Install new traffic signals.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11003
	Utility Services relocation/modifications, kerb, footpath, and drainage modifications as designed during detailed design.	
Dunlop Street	Increase inbound traffic capacity with two (2) lanes to turn right or left on to O'Connell Street or to go straight on to Dunlop Street.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7100-DRG-11003
	Line marking to allow traffic from O'Connell Street to turn left.	PLREW-ARU-RO-7100-DRG-11006

Table 3: Section 2- O'Connell Street, and Victoria Road Intersection (South of Factory Street)

Street Name/Intersection Name	Scope	Drawing Reference
O'Connell Street	Increase traffic capacity from the existing two lanes to four lanes by converting the existing parking lane in each direction to a travelling lane from Factory Street Intersection to Albert Street Intersection.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7200-DRG-11001 PLREW-ARU-RO-7200-DRG-11002 PLR-ARA-RO-2000-DRG-11012
	Utility Services relocation/modification, kerb, footpath and drainage modifications as designed during detailed design.	

Street Name/Intersection Name	Scope	Drawing Reference
	Removal of any vegetation as required.	
	Median on O'Connell Street and the impacted utilities, kerb, footpath and drainage to be as per Road Drawings: Design Stage 2 Annexure A.	Road Drawings: Design Stage 2 Annexure A
O'Connell Street and Victoria Road Intersection and Victoria Road	Increase southbound traffic capacity with two left hand turn lanes from Victoria Road to O'Connell Street.	Roads Drawings: Design Stage-2 Annexure A PLREW-ARU-RO-7200-DRG-11005
	Restrict access (to allow for emergency vehicles only) to Western Sydney Stadium from Victoria Road.	
	Introduce a right only turn from Victoria Road to O'Connell Street for North bound traffic.	
	Utility Services relocation/modification, kerb and drainage modification as designed during detailed design.	
	Reconfiguration of the existing traffic control signal.	

Table 4: Section 3- George Street between O'Connell Street and Harris Street/MacArthur Street and Smith Street

Street Name/Intersection Name	Scope	Drawing Reference
O'Connell Street and George Street Intersection	Provide one lane each for North bound and South bound traffic from George Street to O'Connell Street.	Roads Drawings: Design Stage-2 Annexure A PLREW-ARU-RO-7300-DRG-11001
	Modify existing traffic signals as designed during detailed design.	
	Utility Services relocation/modifications, kerb, footpath, and drainage modification as designed during detailed design.	
George Street	Convert to two directions between O'Connell Street and Harris Street.	Roads Drawings: Design Stage-2 Annexure A PLREW-ARU-RO-7300-
	Line marking and Wayfinding signage	

Street Name/Intersection Name	Scope	Drawing Reference
	Remove parking signage and associated sign posts.	DRG-11001 to PLREW-ARU-RO-7300-DRG-11007
George Street and Marsden Street Intersection	Modify existing traffic signals as designed during detailed design.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11002
George Street and Church Street Intersection	Modify existing traffic signals as designed during detailed design.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11002
George Street and Horwood Place	Provide entrance threshold as per City of Parramatta public domain guideline.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11003
	Removal of right hand turn into Horwood Place from George Street.	
	Introduce left in, left out into Horwood Place from George Street.	
George Street and Smith Street intersection	Modify existing traffic signals as designed during detailed design.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11004
George and Barrack Lane	Removal of right hand turn into Barrack Lane from George Street.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11004
	Provide entrance threshold as per City of Parramatta public domain guideline.	
	Introduce left out from Barrack Lane to George Street.	
	Removal of blisters as designed during detailed design.	
	Utility Services relocation/modifications, kerb, footpath, and drainage modifications as designed during detailed design.	
George Street and Charles Street Intersection	Modify existing traffic signals as designed during detailed design.	<u>Roads Drawings Design Stage-2 Annexure A</u> PLREW-ARU-RO-7300-DRG-11005
	Utility Services relocation/modification, kerb, drainage modifications as designed during detailed design.	

Street Name/Intersection Name	Scope	Drawing Reference
George Street and Argus Lane	Removal of right hand turn into Argus Lane from George Street.	Roads Drawings Design Stage-2 Annexure A PLREW-ARU-RO-7300-DRG-11006
	Left out only from Argus Lane to George Street.	
	Provide entrance threshold as per City of Parramatta public domain guideline.	
	Removal of blisters as designed during detailed design.	
George Street and Harris Street /Macarthur Street Intersection	Southern kerb adjustments to provide a lane for West bound traffic.	Roads Drawings Design Stage-2 Annexure A PLREW-ARU-RO-7300-DRG-11007
	Modify the existing two lanes to be a left only to Macarthur Street and straight and right on to Harris Street.	
	Utility Services modification/relocation, kerb, footpath drainage modifications designed during detailed design.	
	Embankment works.	

4.2. Contractor's Activities

- (a) The Contractor must undertake the Contractor's Activities in accordance with the requirements of the Contract, including this Works Brief and the Planning Approval.
- (b) The Contractor must implement a totally integrated approach to the performance of the Contractor's Activities using effective and robust systems which accommodate and address performance, stakeholder engagement, community, sustainability and environmental requirements. In particular the Contractor must:
- (i) satisfy the technical and procedural requirements of the Principal with respect to investigation, design and construction and handover of the Works;
 - (ii) demonstrate an appropriate application of whole of life considerations in the design and construction of the Works;
 - (iii) establish and maintain a positive relationship with the Principal, Interface Contractors, Other Contractors, Third Parties, utility asset owners, stakeholders and the community;
 - (iv) ensure that its planning and programming is comprehensive and provides for the concurrent delivery of the performance and environmental requirements of the Contract;
 - (v) ensure that risks are managed throughout the performance of the Contractor's Activities; and
 - (vi) proactively liaise with and satisfy the requirements of all relevant Authorities and diligently address safety, functionality, durability, sustainability, and reliability and aesthetics in all aspects of the Works, the Temporary Works and the Contractor's Activities.
- (c) Without in any way limiting the Contractor's obligations under the Contract, the Contractor's Activities include all tasks and things necessary to:
- (i) preserve and protect all existing infrastructure including structures, public transport facilities including bus driver amenities and associated facilities, cycle ways, footpaths, Utility Services, roads, railways, buildings and improvements, that are affected by the Contractor's Activities except for the existing infrastructure that is required to be demolished or modified under the Contract;
 - (ii) investigate, design, construct, test and commission the Works and any Temporary Works;
 - (iii) handover the Works to the Principal or relevant owner by the relevant Dates for Completion as required by the Contract;
 - (iv) correct all Defects during the Defects Rectification Period;
 - (v) secure, maintain, repair, reinstate and hand back, in the specified condition, areas occupied or affected by the Temporary Works;
 - (vi) prepare all Design Documentation and prepare all Contractor's programs;
 - (vii) provide quality assurance of the Contractor's Activities;
 - (viii) enable the Environmental Representative to perform its functions;
 - (ix) mitigate environmental impacts during the design and construction of the Works and the Temporary Works;

- (x) develop and implement sustainability strategies and initiatives for the Contractor's Activities, the Works and the Temporary Works;
- (xi) implement all necessary traffic and transport management methods to effectively manage traffic and transport affected by the construction of the Works and the Temporary Works;
- (xii) maintain and repair the Works until the relevant Date for Completion;
- (xiii) maintain and repair the Temporary Work; and
- (xiv) prepare and provide all asset management information in accordance with the RMS requirements.

4.3. Temporary Works

Temporary Works to be carried out by the Contractor include:

- (a) provision of all Construction Plant necessary to deliver the Works, including mobilisation and demobilisation upon Completion;
- (b) provision of all temporary Site facilities (e.g. Site sheds, facilities for the Principal, secure storage areas), including mobilisation and demobilisation upon Completion, throughout the Works;
- (c) provision of all utilities and services (e.g. power, water, phone, internet) required for the Site facilities;
- (d) provision of all safety and environmental controls necessary to deliver the Works;
- (e) provision of all Site access and security measures;
- (f) Site roads as required for the Works;
- (g) traffic management;
- (h) provision of equipment and, where required, engineering assessment for the geotechnical and structural stability of the Works, including trenches, lifting pads and excavations;
- (i) provide time lapse photography of the Works:
 - (i) supply, install, maintain, monitor and remove, upon Completion, a custom Remote Time-lapse Camera (RTC) to document the Works;
 - (ii) upon completion of capture, assemble time-lapse sequence and master to the Principal (2 x high definition hardcopies submitted with the monthly report);
 - (iii) supply a login to a secure on-line image gallery and storage for the Principal to use as a Project monitoring tool and image download; and
 - (iv) installation and removal upon Completion of two 18 Megapixel (or greater) digital cameras with wide angle lenses, equipment warranty, maintenance and replacement parts for the duration of the Works with solar, battery and wireless connection. Cameras are to be installed on individual 8m poles; and
- (j) any other Temporary Works that may be required to facilitate the Contractor's Activities.

4.4. Facilities for the Principal

The Contractor must provide the following, as a minimum, for the exclusive use of the Principal:

- (a) a weather proof 6m x 3m lockable office with 240V electrical lighting; power and fitted with air-conditioning capable of maintaining a temperature of 20 degrees celsius;
- (b) furniture and fit out including a meeting table (3m x 1.2m approximately), six stackable chairs, two desks (1.2m x 0.8m approximately), 2 adjustable chairs on rollers, a secure lockable filing cabinet, two 4 shelved book shelves, a secure cabinet for storage, a kettle and a refrigerator;
- (c) 4G internet connection (or comparable hard-wired internet connection) with wireless/Wi-Fi access;
- (d) access to a colour photocopy and printer machine (capable of printing A3 sized sheets as a minimum); and
- (e) cleaning of the Principal's facilities on a daily basis.

These facilities may also be used by the Interface Contractors from time to time. These facilities also satisfy the RMS site office requirements found in G4 of the RMS Specifications and no further space is required in that regard.

The Principal will also require access to the Contractor's amenities.

4.5. Works -Civil

4.5.1. Demolition and relocation works

- (a) The Contractor's Activities associated with demolition and relocation include:
 - (i) demolition and removal of all above ground structures on properties acquired by the Principal within the Works area affected by the Contractor's Activities. The list of acquired properties is included in Schedule 31 of the Contract. The Contractor is to refer to the Hazardous Material Report provided in Annexure A;
 - (ii) for partial acquisitions the required property adjustments are to be constructed on a like to like, new for old basis in consultation with the property owner. Utility Services and access to the properties must also be maintained;
 - (iii) removal of underground structures within Works area affected by the Contractor's Activities;
 - (iv) clearing and mulching of vegetation which is not being retained or reused by the Contractor;
 - (v) removal of redundant road infrastructure including pavements, kerbs, signage, traffic signals, fencing, line marking and driveways within the Works area;
 - (vi) removal of any known contaminated materials, including asbestos, encountered during Works. Contaminated materials must be disposed of appropriately and in accordance with the requirements of the TSR; and

- (vii) removal and disposal of excess spoil as VENM or ENM.

4.5.2. Geotechnical works

- (a) The geotechnical design of cuttings must address:
 - (i) the impacts of subsurface conditions on the design of cutting batters and benches, including considerations and measures to minimise exposure of cutting batters to weathering and the treatment of benches;
 - (ii) proposed cutting batter treatments, including the treatment of weathered and fractured zones;
 - (iii) drainage around, into, within and out of the cuttings;
 - (iv) the construction techniques and resources required to excavate cuttings and subgrades to design lines and to prevent damage to in-situ remaining materials.
- (b) The geotechnical design of embankments must address:
 - (i) batters and benches;
 - (ii) erosion and scour protection and stabilisation;
 - (iii) intervention levels for maintenance and/ or repair activities;
 - (iv) access provisions for maintenance and repair activities; and
 - (v) surface, subsurface and batter drainage, including where embankments are designed to settle, measures and methodologies proposed to maintain drainage capacities and efficiencies.

4.5.3. Road works

The Concept Design contains details of the road design. The design criteria for the Works and its classification are shown in the Table 5 below.

Street (boundary to boundary) must be designed and constructed to comply with the design criteria and Minimum Design Requirements as shown in Table 5 with the exception of the departures from design declared in the Detailed Design Report (23 April 2018).

Table 5: Minimum Design Requirements

Location	Minimum (m)	Desirable (m)
Kerbside bus lanes	3.3	3.5
Kerbside and median turn lanes	3.0	3.0
Through traffic lanes	3.5	3.5
Shoulders (sealed)/ on-road cycle lane	1.8	2.0

Bus Stops (indented)	3.0	3.0
Parallel parking (including 0.5m for door opening)	2.8	3.0
Back to back kerb / median separator	0.3	0.3
Verge width (face of kerb to edge of road reservation)	3.6	3.6

Table 6 provides information on the classification of the roads on which the Works will be undertaken.

Table 6: Road Classifications

Road Name	Classification	Road Number
Section - 1 North of Factory Street		
O'Connell Street (north of Factory Street)	Regional Road	SR2066
Barney Street	Regional Road	SR2066
Church Street	State Road	MR184
Dunlop Street	Local Road	-
Factory Street	Local Road	-
Section - 2 South of Factory Street		
O'Connell Street (south of factory street)	Regional Road	SR2066
Albert Street	Regional Road	7273
Ross Street	-	Local Road
Victoria Road	-	Local Road
Section - 3 Parramatta CBD, George Street		
George Street	Local Road	-
O'Connell Street	Regional Road	SR2066
Marsden Street	Local Road	-
Church Street	Local Road	-
Horwood Place	Local Road	-
Smith Street	Local Road	-
Barrack Lane	Local Road	-
Charles Street	Local Road	-
Harris Street	Regional Road	7874

4.5.4. Existing Pavements

Existing pavements and pavement materials must not be incorporated within the pavements constructed as part of the Works. Existing pavement materials may be utilised as select subgrade or fill material subject to their compliance with all other requirement of this Works Brief. Unsuitable material must be disposed of offsite.

4.5.5. Footpath, Shared Path and Cycle Path Pavements

Further pavements for footpath, shared path and cycle paths must comply, as a minimum, with the requirements of "RMS Pavement Standard Drawings – Rigid pavement – Bicycle Path Design – 2.5m wide, 3.0m wide drawings". Pavement thickness must be designed to accommodate maintenance vehicle access.

4.5.6. Intersection works

- (a) intersection designs must provide performance that is equal to or greater than the performance that would be provided by the intersection designs in the Concept Design;
- (b) roads in local areas and merge and diverge areas must be designed to achieve the design speeds in the Concept Design;
- (c) for the purpose of modelling at the time of opening for public, use 2026 traffic forecasts.
- (d) at intersections:
 - (i) deceleration lengths for auxiliary (if any) right turn and left turn lanes (if any) must be provided in accordance with "RMS supplements" and "Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections"; and
 - (ii) acceleration lengths must be provided in accordance with "RMS Supplements" and "Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections";
- (e) all permissible movements at intersections must be designed for a design vehicle as indicated in the Concept Design;
- (f) the design of intersections layouts must consider and address:
 - (i) the maintenance of simplicity and consistency with regard to the local road network;
 - (ii) traffic volumes and characteristics;
 - (iii) existing and future road network requirements;
 - (iv) adjacent developments;
 - (v) staging requirements;
 - (vi) costs of implementation and maintenance;
 - (vii) headlight glare; and
 - (viii) the avoidance of the potential for wrong way movements.

4.5.7. Traffic Performance for Geometric Design

- (a) The Principal has prepared a traffic model in AIMSUN for the Works. The model is included as electronic files which are provided in the Design Documents contained in Annexure A of this Works Brief.

- (b) The Principal has developed the design to ensure that the traffic performance requirements specified in the Works Brief are met. As the Contractor has responsibility to complete the detailed design to Approved for Construction status, the Contractor is responsible for satisfying the set traffic performance requirements in so far as ensuring that the existing level of service is maintained after the completion of the Works.
- (c) All auxiliary lane lengths must be designed to ensure all queued vehicles are fully contained within the lane during the maximum modelled 2026 peak period queue length, as indicated and verified by the Principal's AIMSUN model.
- (d) At intersections and for the purpose of paragraph (f) in section 4.5.6 ("Intersection works") above, lane lengths are measured between the intersection stop line and the beginning of taper.
- (e) To optimise traffic performance, signalised pedestrian crossings with more than one stage of crossing may have independent phasing for each crossing stage.
- (f) Refer to the Traffic Technical Assessment Report for Level of Service performance and requirements.

4.5.8. Drainage

The Concept Design was undertaken to ARR 1987. ARR 2016 was released after commencement of the flood model and drainage design development. The Contractor must use ARR1987 for the drainage design where applicable.

The design of drainage pipes and pipe systems must:

- (a) Comply with the requirement of specification RMS D&C R11;
- (b) Where new drainage elements abuts or adjoins existing or retained infrastructure elements, the existing structure shall be inspected, recorded and reported as to its adequacy, structural integrity and ongoing fit-for use to achieve the design standards outlined in the RMS Standards.

4.5.9. Pavement Drainage

- (a) The Pavement drainage system must be designed to collect all pavement water
- (b) Pavement drainage must be designed to prevent concentrations of water and long surface flow paths on pavements in superelevated and superelevation transition areas.
- (c) Pavement wearing surfaces on the main carriageway and other roads must be designed so that for the 50mm per hour rainfall design event:
 - (i) water depths in the through lanes at any point on the pavement must be less than 4 millimetres;
 - (ii) the water depth at any point on the pavement wearing surfaces are not greater than 4 millimetres on the travel lanes, at intersections and on auxiliary lanes on the approaches to interchanges and intersections and
 - (iii) changes in depth of the flow at any point on the pavement wearing surfaces must not increase at a rate greater than 0.4mm/m.

4.5.10. Subsurface Drainage

- (a) The drainage infrastructure must be designed and constructed to comply with the typical cross sections and standard details contained in "RMS Standard Drawings Pavements" including the RMS Typical Pavement Cross sections and Standard Subsurface Drainage (Volumes 1 to 6). The typical cross sections and standard details contained in "RMS Typical Pavement Cross Sections and Standard Subsurface Drainage Details" (volume 1 to 6) are minimum requirements.
- (b) No change is to be made by the Contractor in the development of the typical cross sections and standard details contained in "RMS Typical Pavement Cross Sections and Standard Subsurface Drainage Details" (Volume 1 to 6) to address Project specific requirements and constraints that would:
 - (i) reduce the level of subsurface drainage performance;
 - (ii) modify the drainage paths identified in the typical cross sections and standard details;
 - (iii) provide less drainage capacity than identified in the typical cross sections and standard details;
 - (iv) increase safety risks and hazards or; and
 - (v) increase the level of maintenance required for pavements during the Design Life of the pavements.

4.5.11. Flooding

- (a) The drainage works must be designed to minimise changes to existing flooding characteristics for flood events up to and including the 1:20 year ARI, and must not increase upstream/downstream inundation levels at the site boundary.
- (b) The Works and the Temporary works must be designed such that the potential for flooding of any other property is not increased by the presence of the Works of the Temporary Works at the site boundary
- (c) The sensitivity of the drainage design to rainfall intensity increase as a result of climate change is to be quantified. Rainfall intensity increases of 10% shall be assessed.
- (d) Where surcharge of a culvert is possible for a 100-year ARI event or less, the culvert inlet and surrounding inlet and outlet embankment must be designed for stability, piping failure and scour protection to accommodate the surcharge flow without damage to road embankment.
- (e) Transverse drainage must be designed to provide:
 - (i) a minimum 20-year ARI flood immunity;
 - (ii) maintain existing flood immunity to the local roads; and
 - (iii) maintain existing flood immunity to surrounding property.

4.6. Traffic Control Signalling Works

- (a) The Contractor must finalise all traffic control signals (TCS's) that are necessary for the construction and operation of the road network associated with the Works,

including the provision of new TCS's, the reconstruction of existing TCS and the provision of temporary TCS's.

- (b) All new TCS's must comply with:
- (i) RMS traffic signal guidelines – RTA publication 08.092;
 - (ii) Austroads Guide to Traffic Management Part 10: Traffic Control and Communication Devices;
 - (iii) RMS Supplement to Austroads Guide to Traffic Management Part 10: Traffic Control and Communication Devices;
 - (iv) Australian Standards AS1742 Manual of Uniform Traffic Control Devices Parts 1-15;
 - (v) RMS CADD Manual; and
 - (vi) RMS Supplement to AS1742 Manual of Uniform Traffic Control Devices.
- (c) Notwithstanding the requirements of section 4.6.1(a), the design must not locate any posts within median islands on local roads unless otherwise approved by RMS.
- (d) All existing TCS's that are reconstructed must be upgraded and constructed to comply with all current TCS design requirements stated in 4.6.1(a) and (b) above, including the replacement of all existing:
- (i) signal lanterns;
 - (ii) push buttons;
 - (iii) controllers and housings, except for existing Tyco Eclipse, Alridge ATSC4, or QTC Haadron controllers;
 - (iv) loop detector facilities with loop feeder cables to the controller housings;
 - (v) post mounted assemblies;
 - (vi) lower mounting brackets;
 - (vii) loop detectors that are unserviceable;
 - (viii) pavement junction box covers;
 - (ix) footpath pit covers, where they are damaged or not flush with the footpath;
 - (x) signal posts (including mast arms) where they are damaged unserviceable or rusted; and
 - (xi) all distributed underground ducts, pits and cables.
- (e) During construction phase:
- (i) all TCS's must be constructed in accordance with RMS Specification SI/TCS/8 - Installation and Reconstruction of Traffic Light Signals;
 - (ii) all TCS components must conform to referenced standards and specifications in RMS Specification SI/TCS/8 Installation and Reconstruction of Traffic Light Signal;
 - (iii) RMS prequalified traffic signal contractors must carry out all work on TCS's;

- (iv) the same traffic signal contractor must carry out all staged TCS works at a site. The same contractor must also carry out all resulting modifications at adjacent TCS sites, and signal modifications in each stage are completed concurrently;
- (v) interim TCS plans for staged TCS works must be prepared for each stage of the Works and submitted to Principal for review and approval; and
- (vi) RMS will check and either accept or return construction stage TCS plans for amendment within the time specified in the RMS Collaboration Agreement. Any amendments that are required by RMS must be incorporated in the TCS plans.

4.7. Utility Works

(a) The Contractor must:

- (i) comply with the Utilities Providers' requirements unless otherwise agreed to in writing by the Utility Provider and approved by the Principal;
- (ii) provide a fully coordinated Utility Services solution in accordance with the requirements of and in agreement with the Utility Providers. An indicative list of Utility Providers affected by the Works is provided in Table 7 below;

Table 7: Utility Providers

Utility Provider	Asset Types
Endeavour Energy	Electricity
Sydney Water	Potable Water, Wastewater
Jemena	Gas
Telstra	Telecommunications
Optus	Telecommunications
TPG	Telecommunications
Vocus	Telecommunications
NBN	Telecommunications
Verizon	Telecommunications
UECOMM	Telecommunications
City of Parramatta	Telecommunications, Electricity LV

Utility Provider	Asset Types
AARNet	Telecommunications
RMS	Telecommunications, Electricity

LV

- (iii) identify and consult with all Utility Providers that may be impacted by the Contractor's Activities;
- (iv) carry out (or procure, at its own cost, where a Utility Provider carries out) all work in connection with utility services necessary for the Contractor to comply with its obligations under the Contract;
- (v) investigate, adjust, protect, support, relocate, enhance or provide for all Utility Services that are affected by the Contractor's Activities or required for the Works whether or not the existence or extent of the existing utilities were known prior to the date of the Contract;
- (vi) establish the location of all Utility Services (including overland flow paths) which may be affected by the Contractor's Activities to determine requirements for adjustment, protection and support. This must be undertaken in consultation with the relevant Utility Provider;
- (vii) ensure that Utility Services damaged by the Contractor's Activities are made good and the Contractor is to minimise damage in line with the Utility Providers' protocols.
- (viii) assess risk for all Utility Services in consultation with the relevant Utility Provider;
- (ix) not cause any damage, reduction in service life or reduced maintainability or serviceability adverse impact on existing utilities as a result of the Contractor's Activities;
- (x) coordinate and integrate all Works relating to the Utility Services;
- (xi) give written monthly notice to the Principal of the status of the Utility Provider's arrangements and must provide sufficient notice to allow the Principal Representative to attend Utility Provider or Authority meetings as may be required from time to time; and
- (xii) obtain all relevant Approvals and acceptance of Works to and around any Utility Service from the relevant Utility Provider or Authority in accordance with the relevant Utility Provider's Standards and Guidelines;

- (b) if a conflict exists between Law, Australian standards, basis of design manuals, Utility Provider standards, and general guidelines the following hierarchy will apply:
- (i) Laws,
 - (ii) Australian Standards;
 - (iii) Utility Provider Standards; and
 - (iv) General Guidelines.
- (c) Design Documentation at each Design Stage regarding Utilities Services must contain sufficient detail to demonstrate effective coordination with the following items as a minimum:
- (i) drainage design;
 - (ii) pavement design;
 - (iii) road alignment design; and
 - (iv) traffic signal design.
- (d) The Contractor must produce a utilities management plan, which must include, as a minimum, the processes and procedures for:
- (i) the design and approval process, construction and inspection requirements, hand back process and access and maintenance requirements;
 - (ii) key delivery management personnel in the Utility Services treatment team, including a Utility Services interface manager and description of how they will manage the interface with the relevant Utility Provider, Principal's representatives and Authorities; and
 - (iii) lines of responsibility and communications within the Utility Services treatment team, the Principal's Representatives and to the relevant Utility Providers and Authorities.
- (e) Prior to Completion of the Works, the Contractor must provide the Principal with a copy of as-built documentation for all Utilities Services impacted, including but not limited to the following:
- (i) work as executed drawings;
 - (ii) as-Built 12d model of all Utility Services within the Site to quality level A where Works have been completed, otherwise quality level B in accordance with AS5488; and
 - (iii) completed Inspection and Test Plans for each utility relocation signed by the Utility Authority as acceptance of Works and completion of required asset information records.
- (f) The Contractor must ensure that all existing Utility Services to properties impacted by the Contractor's Activities are maintained at all times.

4.8. Urban Design and Landscaping

An Enabling Works Urban Design Requirements Concept Design report has been prepared to accommodate the Road Engineering Design.

4.8.1. Scope of Urban Design

- (a) The Urban Design scope for the Works covers:
- (i) Urban Design strategy for impact mitigation and street scape improvement - including tree offset/ replacement, verge works, roadside furniture, heritage items and built form, pedestrian access/ crossings, cycle routes, bus stop infrastructure;
 - (ii) public domain elements – including ground plane treatments (pedestrian paving) and tree/ planting areas;
- (b) The draft Urban Design concept for the Works is presented as a series of illustrated/ annotated strategies in plan and sections, supported by this Enabling Works Urban Design Requirements Concept Design report. The approach to the Urban Design of the two road corridors has five main strategies:
- (i) seek to reduce the extent of civil works in the public domain;
 - (ii) minimise and mitigate adverse physical impacts on existing street scapes;
 - (iii) highlight opportunities for enhancement of the public domain along the affected road corridors, taking into account planned urban change in adjacent precincts;
 - (iv) identify areas where accessibility along/ across the road corridors may require additional intervention to ensure safe and equitable access is maintained or provided; and
 - (v) facilitate further integration of the Concept Design with other Project movement strategies that impact on the public domain including future proofing for active transport strategies for central Parramatta.
- (c) Design Standards and Guidelines
- (i) road engineering design is in accordance with current Austroad standards. Details of road design speeds and geometry are set out in the Design Documentation.
 - (ii) Urban Design and public domain design takes account of the City of Parramatta Public Domain Guidelines (2016) as well as current practice on other NSW light rail projects.

4.8.2. Environmental Impacts

- (a) The proposed road works will have environmental impacts that are being assessed by the EIS team within the PLR Project team. These include adverse effects on property, heritage buildings and features, street trees and vegetation and other kerbside impacts in the street.
- (b) The Urban Design concept needs to be co-ordinated with ongoing EIS assessment so that proposed mitigation opportunities can be identified and validated to reduce the environmental impacts of the proposed Design.

4.8.3. Tree Planting

- (a) The Urban Design drawings noted in Appendix A of the Detailed Design Report (23 April 2018) of this document shows tree plantings along the corridor. The Contractor will make all allowances required to realise the intent of the drawings including the numbers and general locations of the noted trees.

Exhibit C – Principal’s Insurance Policies

[Redacted Commercial in Confidence provisions of a Contract]

Exhibit D – Planning Approval

<https://majorprojects.accelo.com/public/a4ad417a45f8e005c9826dab9789cb95/Parramatta%20Light%20Rail%20-%20Stage%201%20-%20Instrument%20of%20Approval.pdf>



Infrastructure approval

Section 5.19 of the *Environmental Planning & Assessment Act 1979*

I grant approval to the carrying out of the Critical State significant infrastructure (CSSI) referred to in Schedule 1, subject to the conditions in Schedule 2.



Minister for Planning

Sydney

29/5

2018

SCHEDULE 1

Application no.:	SSI 8285
Proponent:	Transport for NSW
Approval Authority:	Minister for Planning
Land:	Land in the suburbs of Westmead, North Parramatta, Parramatta, Rosehill, Camellia, Rydalmere, Dundas, Telopes, Carlingford, Granville and Clyde
Description of Critical State Significant Infrastructure:	<p>Development for the purpose of Parramatta Light Rail (Stage 1) being the construction and operation of new passenger light rail infrastructure, including new bridges:</p> <ul style="list-style-type: none">• from Westmead to Parramatta and on to Camellia, including:<ul style="list-style-type: none">o light rail tracks and associated works, ando light rail stops and facilities, and• from Camellia to Carlingford, generally along the existing rail corridor including:<ul style="list-style-type: none">o light rail tracks and associated works, ando light rail stops and facilities, ando stabling and maintenance facilities and an associated rail tumbuck.• Ancillary development including:<ul style="list-style-type: none">o rail and bus interchange facilitieso modification of bus facilities, railway stations, public amenities, pedestrian and cycle facilitieso urban design features (including fencing, landscaping, lighting and planting trees)o installation, modification and replacement of substations, utilities, amenities and signageo installation and modification of roads and bridgeso removal of heavy rail equipment including tracks, sleepers, ballast, posts, signals, trackside equipment, overhead wire structures, wires ando other equipment along the former Sandown Line and the Carlingford Line from Carlingford to Parramatta Road Level Crossing at Clyde, ando removal of the Parramatta Road Level Crossing at Clyde.
Declaration of Critical State Significant Infrastructure	The proposal is State Significant Infrastructure by virtue of Clause 16, and Schedule 5, Clause 8 of <i>State Environmental Planning Policy (State and Regional Development) 2011</i> .

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DEFINITIONS

Table 1: Definitions

Term	Definition
AA	The Acoustics Adviser for the CSSI.
Active Transport Link	An active transport link (pedestrian and cycling) connecting Carlingford to the Parramatta Valley Cycleway at Rydalmere, with bridge crossings at Parramatta River and James Ruse Drive, and ending at Alfred Street, Parramatta.
Ancillary facility	A temporary facility for construction of the project including an office and amenities compound, construction compound, material crushing and screening plant, materials storage compound, maintenance workshop, testing laboratory, material stockpile area car parking compound and truck marshalling facility.
Annoying activities	As defined in the <i>Interim Construction Noise Guideline</i> (DECC, 2009)
CEMP	Construction Environmental Management Plan
Completion of construction	The date upon which all construction works and activities described in the EIS/Submissions Report (incorporating Preferred Infrastructure Report) are completed and all requirements of the Secretary (if any) and the whole of the CSSI has been constructed to the appropriate standard for operation.
Construction	Includes all works required to construct the CSSI as described in the EIS/Submissions Report (incorporating Preferred Infrastructure Report), including commissioning trials of equipment and temporary use of part of the CSSI, but excluding the following low impact work: <ul style="list-style-type: none"> (a) survey works including carrying out general alignment survey, installing survey controls (including installation of global positioning system (GPS)), installing repeater stations, carrying out surveys of existing and future utilities and building and road dilapidation surveys; (b) investigations including investigative drilling, contamination investigations and excavation; (c) establishment of ancillary facilities in approved locations including constructing ancillary facility access roads and providing utilities to the facility; (d) operation of ancillary facilities if the ER has determined the operational activities will have minimal impact on the environment and community; (e) minor clearing and relocation of native vegetation, as identified in the EIS/Submissions Report (incorporating Preferred Infrastructure Report); (f) installation of mitigation measures including erosion and sediment controls, temporary exclusion fencing for sensitive areas and acoustic treatments; (g) property acquisition adjustment works including installation of property fencing, and relocation and adjustments of property utility connections including water supply and electricity; (h) relocation and connection of utilities where the relocation or connection has a minor impact to the environment as determined by the ER;

Term	Definition
	<p>(i) reconfiguration of Robin Thomas Reserve for the purposes of maintaining two sports playing fields;</p> <p>(j) archaeological testing under the <i>Code of practice for archaeological investigation of Aboriginal objects in NSW</i> (DECCW, 2010) or archaeological monitoring undertaken in association with [a]-[i] above to ensure that there is no impact to heritage items;</p> <p>(k) other activities determined by the ER to have minimal environmental impact which may include construction of minor access roads, temporary relocation of pedestrian and cycle paths and the provision of property access including access and egress to construction ancillary facilities; and</p> <p>(l) maintenance of existing buildings and structures required to facilitate the carrying out of the CSSI.</p> <p>However, where heritage items, or threatened species, populations or ecological communities (within the meaning of the <i>Biodiversity Conservation Act 2016</i>) are affected or potentially affected by any low impact work, that work is construction, unless otherwise determined by the Secretary in consultation with OEH or DPI Fisheries (in the case of impact upon fish, aquatic invertebrates or marine vegetation).</p> <p>Construction does not include site establishment works where such works are included as part of a Site Establishment Management Plan approved under Condition C18.</p>
CSSI	The Critical State Significant Infrastructure as described in Schedule 1 of this approval, the carrying out of which is approved under the terms of this approval.
Department	NSW Department of Planning and Environment
DECC	Former NSW Department of Environment and Climate Change
DPI	NSW Department of Primary Industries including DPI Agriculture, DPI Biosecurity and Food Safety, DPI Land and Natural Resources, DPI Water and DPI Fisheries
Eat Street	That section of Church Street between Palmer and George streets.
EIS	The Environmental Impact Statement submitted to the Secretary seeking approval to carry out the project described in it, as revised if required by the Secretary under the EP&A Act and including any additional information provided by the Proponent in support of the application for approval of the project.
EMI susceptible device	A device, equipment or system whose performance can be degraded by an electromagnetic disturbance (IEC 60050: International Electrotechnical Vocabulary 161-01-24). Other susceptible receivers may include biological resources or small animal facilities.
EMS	Environmental Management System
Environmental Representative Protocol	The document of the same title published by the Department (2017)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i> (NSW)
EPA	NSW Environment Protection Authority

Term	Definition
EPL	Environment Protection Licence under the POEO Act
ER	The Environmental Representative for the CSSI
Heritage Division	The Heritage Division of OEH
Heritage item	A place, building, work, relic, archaeological site, tree, movable object or precinct of heritage significance, that is listed under one or more of the following registers: the State Heritage Register under the <i>Heritage Act 1977 (NSW)</i> , a state agency heritage and conservation register under section 170 of the <i>Heritage Act 1977 (NSW)</i> , a Local Environmental Plan under the EP&A Act, the World, National or Commonwealth Heritage lists under the <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i> , and an "Aboriginal object" or "Aboriginal place" as defined in section 5 of the <i>National Parks and Wildlife Act 1974 (NSW)</i> .
Highly Noise Intensive Works	Rock breaking, rock hammering, sheet piling, pile driving and any similar activity
ICNG	<i>Interim Construction Noise Guideline (DECC, 2009)</i>
Incident	An occurrence or set of circumstances that causes, or threatens to cause material harm. <i>Note: "material harm" is defined in this approval.</i>
Land	Has the same meaning as the definition of the term in section 1.4 the EP&A Act
Landowner	Has the same meaning as "owner" in the <i>Local Government Act 1993</i> and in relation to a building means the owner of the building
Material harm	Is harm that: (a) involves actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial, or (b) results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000, (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment).
Minister	NSW Minister for Planning
NCA	Noise catchment area
NML	Noise management level as derived from the <i>Interim Construction Noise Guideline (DECC, 2009)</i>
Non-compliance	An occurrence, set of circumstances or development that is a breach of this approval but is not an incident.
NSW Heritage Council	Heritage Council of NSW
OEH	NSW Office of Environment and Heritage
OEMP	Operational Environmental Management Plan

Term	Definition
Operation	<p>The carrying out of the CSSI (whether in full or in part) upon the completion of construction for the applicable stage (if any), excluding the following activities:</p> <ul style="list-style-type: none"> • commissioning trials of equipment; • temporary use of any part of the CSSI; and • maintenance works. <p><i>Note: There may be overlap between the carrying out of construction and operation if the phases are staged. Commissioning trials of equipment and temporary use of any part of the CSSI are within the definition of construction.</i></p>
Parramatta Strategic Planning Framework	Planning policies developed by City of Parramatta Council (in consultation with Government Architect NSW) including the Parramatta Strategic Framework, Parramatta City Link Strategy, and Parramatta River Strategy.
PIR	The Preferred Infrastructure Report submitted to the Secretary under the EP&A Act (referred to as part of the Submissions Report (including Preferred Infrastructure Report)).
POEO Act	<i>Protection of the Environment Operations Act 1997 (NSW)</i>
Precinct	The precincts of Westmead; Parramatta North; Parramatta CBD; Rosehill and Camellia; and Carlingford as described in the EIS and illustrated in Figures 5.2a to 5.2h of Volume 1
Proponent	The person identified as such in Schedule 1 of this approval
Relevant Council(s)	Any or all as relevant: <ul style="list-style-type: none"> • City of Parramatta; and • Cumberland Council
Relevant Road Authority	The same meaning as the road authorities defined in the <i>Roads Act 1993</i> .
Relic	Has the same meaning as the definition of the term in section 4 of the <i>Heritage Act 1977 (NSW)</i>
RMS	NSW Roads and Maritime Services
Secretary	Secretary of the NSW Department of Planning and Environment (or nominee, whether nominated before or after the date on which this approval was granted)
Sensitive receiver	<p>Includes residences, temporary accommodation such as caravan parks and camping grounds, and health care facilities (including nursing homes, hospitals).</p> <p>Also includes the following, when in use: educational institutions (including preschools, schools, universities, TAFE colleges), religious facilities (including churches), child care centres, passive recreation areas, commercial premises (including film and television studios, research facilities, entertainment spaces, restaurants, office premises and retail spaces), and others as identified by the Secretary</p>
SES	NSW State Emergency Services

Term	Definition
Submissions Report	The report comprising the Proponent's response to written submissions received in relation to the application for approval for the CSSI under the EP&A Act. The Proponent has prepared a Submissions Report (incorporating the Preferred Infrastructure Report) for the CSSI
Tree	As defined in Australian Standard AS 4970-2009 <i>Protection of trees on development sites</i> .
TMC	Transport Management Centre for NSW
Unexpected heritage find	An object or place that is discovered during the carrying out of the CSSI and which may be a heritage item but was not identified in the documents referred to in Condition A1 or suspected to be present. An unexpected heritage find does not include human remains.
Work	All physical work for the purpose of the CSSI including construction

SUMMARY OF REPORTING REQUIREMENTS

Reports and notifications that must be provided to the Secretary under the terms of this approval are listed in **Table 2**. Note that under **Condition A9** of this approval the Proponent may seek the Secretary's agreement to a later timeframe for submission (other than in relation to the immediate written notification of an incident required under **Condition A44**).

Table 2: Reports and Notifications that must be submitted to the Secretary (to be updated following conditions negotiation)

Condition	Report / Notification / Appointment	Timing ¹	Purpose
Part A – Administrative			
A13	Staging Report	No later than one month before the commencement of construction (or operation) of the proposed stages of construction	Approval
A19 / A20	Environmental Representative	No later than one month before the commencement of works	Approval
A23	Environmental Representative Monthly Reports	Within seven days following the end of each month	Information
A29	Noise and Vibration Report	Within seven days following the end of each month	Information
A30 / A31	Compliance Tracking Program	At least one month before the commencement of works	Information
A34	Pre-Construction Compliance Report	No later than one month before the commencement of construction (or each stage of construction in staging report)	Information
A36	Pre-Operation Compliance Report	No later than one month before commencement of operation	Information
A40	Environmental Audit Program	No later than one month before the commencement of construction	Information
A43	Environmental Audit Reports	Within six weeks of completing the audit	Information
A44	Notification of Incidents	Immediately after the Proponent becomes aware of an incident	Notification
A45	Incident Report	Within one week of notification of an incident	Information
A47	Notification of Incident notified under POEO	Within 24 hours after notification given to EPA	Information
Part B – Communication Information and Reporting			
B1 / B3	Community Communication Strategy	No later than one month before the commencement of works	Approval
B9 / B10	Complaints	On request	Information

¹ Where a project is staged, all required approvals must be obtained before the commencement of the relevant stage.

Condition	Report / Notification / Appointment	Timing ¹	Purpose
Part C – Construction Environmental Management			
C7	Construction Environmental Management Plan	No later than one month before the commencement of construction	Approval
C16	Construction Monitoring Program	At least one month before the commencement of construction	Information
C18	Site Establishment Management Plan	One month before establishment of any construction ancillary facility	Approval
Part D – Operation Environmental Management			
D3 / D6 / D7	Operational Management Plan	No later than one month before the commencement of operation	Information
Part E – Key Issues			
Traffic and Transport			
E10	Network Management Strategy	Before works commence	Information
E11	Parking Management Strategy	Before works commence	Information
E14	Pedestrian and Cyclist Network and Facilities Strategy	Before construction of pedestrian/cyclist permanent built works	Information
E19	Operational Traffic, Transport and Access Performance Review	Within one month of completion	Information
Noise and Vibration			
E26	Out-of-Hours Work Protocol	Before commencement of any out-of-hours works	Approval
E39	Out-of-Hours Work Respite	Following consultation at three monthly intervals	Information
E48	Operational Noise and Vibration Review	Before the implementation of mitigation measures	Approval
E58	Noise and Vibration Compliance Assessment Report	Within one month of its completion	Information
E59	Noise and Vibration Compliance Assessment Report – update	Within one month of its completion	Information
Heritage			
E64	Heritage Interpretation Strategy	Before work affecting identified items	Information

Condition	Report / Notification / Appointment	Timing ¹	Purpose
E67	CHIP Hostel Options Analysis	Before commencement of construction	Approval
E75	Archaeological Excavation Report	Within 12 months of completing archaeological investigations	Information
Urban Design and Visual Amenity			
E84	Feasibility of wire-free running	Before construction commences in identified locations	Information
E85	Feasibility of grass track	Before construction commences in identified locations	Information
E87	Urban Design Requirements Report	Following review by the Design Review Panel	Approval
E93	Design Review Panel members	Before development of detailed design and before construction commences	Approval
E94	Design Review Panel Terms of Reference	Following formation of Design Review Panel	Approval
Biodiversity and Revegetation			
E102	Independent Arborist	Before works commence	Approval
E106	Tree Register	Before the removal, damage or pruning of a tree for the purposes of the CSSI	Approval
Socio-Economic, Land Use and Property			
E113	Flood Management Plan	At each design stage with potential to cause adverse flooding impacts	Information
E117	Electromagnetic Management Plan	Before commencement of operations	Information
E124	Site Audit Statement	No later than one month before commencement of operation	Information
E132	Final Hazard Analysis and Construction Safety Study	Before commencement of construction of any hazardous works or works adjacent to hazardous infrastructure	Approval
E133	Post-Startup Compliance Report	Three months after commencement of operations	Information
E137	Sustainability Strategy	Within six months of the date of approval	Information

SCHEDULE 2

PART A

ADMINISTRATIVE CONDITIONS

GENERAL

- A1 The CSSI must be carried out in accordance with the terms of this approval and generally in accordance with the description of the CSSI in the *Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Environmental Impact Statement* (dated August 2017) (the EIS) as amended by the *Parramatta Light Rail (Stage 1) Westmead to Carlingford via Parramatta CBD and Camellia Submissions Report* (incorporating Preferred Infrastructure Report) (February 2018) (the SPIR).
- A2 The CSSI must be carried out in accordance with all procedures, commitments, preventative actions, performance criteria and mitigation measures set out in the EIS as amended by the Submissions Report (incorporating Preferred Infrastructure Report) unless otherwise specified in, or required under, this approval.
- A3 In the event of an inconsistency between the EIS and the Submissions Report (incorporating Preferred Infrastructure Report) or any other document required under this approval, and a term of this approval, the term of this approval prevails to the extent of the inconsistency.

Note: For the purpose of this condition, there will be an inconsistency between a term of this approval and any document if it is not possible to comply with both the term and the document.

- A4 The Proponent must comply with all written requirements or directions of the Secretary, including in relation to:
- (a) the environmental performance of the CSSI;
 - (b) any document or correspondence in relation to the CSSI;
 - (c) any notification given to the Secretary under the terms of this approval;
 - (d) any audit of the construction or operation of the CSSI;
 - (e) the terms of this approval and compliance with the terms of this approval (including anything required to be done under this approval); and
 - (f) the carrying out of any additional monitoring or mitigation measures.
- A5 Where the terms of this approval require a document or monitoring program to be prepared or a review to be undertaken in consultation with identified parties, evidence of the consultation undertaken must be submitted to the Secretary with the document or monitoring program or review. The evidence must include:
- (a) documentation of the engagement with the party(ies) identified in the relevant condition of approval before submitting the document for approval;
 - (b) log of the points of engagement or attempted engagement with the identified party(ies) and a summary of the issues raised by the identified party(ies);
 - (c) documentation of any follow-up with the identified party(ies), where feedback has not been provided, to confirm that the identified party(ies) has none or has failed to provide feedback after repeated requests;
 - (d) outline of the issues raised by the identified party(ies) and how they have been addressed, including evidence that the party(ies) is satisfied the issues have been addressed; and
 - (e) a description of any outstanding issues raised by the identified party(ies) and the reasons why.
- A6 This approval lapses five (5) years after the date on which it is granted, unless works for the purpose of the CSSI are physically commenced on or before that date.

- A7 References in the terms of this approval to any guideline, protocol, Australian Standard or policy are to such guidelines, protocols, Standards or policies in the form they are in as at the date of this approval, unless otherwise agreed with the Secretary.
- A8 In the event that there are differing interpretations of the terms of this approval, including in relation to a condition of this approval, the Secretary's interpretation is final.
- A9 Where a condition of this approval requires the Proponent to submit a document or notification to the Secretary or obtain an approval from the Secretary within a specified time period, the Proponent may make a written request to the Secretary seeking an alternative timeframe. Any request must be made at least one (1) month before the submission timeframe stipulated in the condition of approval relating to the variation request. This condition does not apply to the immediate notification required in respect of an incident under **Condition A44**.
- A10 Where the terms of approval provide the Secretary the discretion to alter the requirements of the approval, the Proponent must provide supporting evidence so that the Secretary can consider the need, environmental impacts and consistency of any request.
- Note: Inaction and/or expedience will not be supported as justifications for need unless it can be demonstrated that there is beneficial environmental impact for the project and the affected environment.*
- A11 Without limitation, all strategies, plans, programs, reviews, audits, report recommendations, protocols and the like required by the terms of this approval must be implemented by the Proponent in accordance with all requirements issued by the Secretary from time to time in respect of them.

FLEXIBILITY PROVISIONS

- A12 The Proponent may undertake the flexibility provisions outlined in Appendix A. Flexibility provisions in Table 5.1 of the EIS do not apply.

STAGING

- A13 The CSSI may be constructed and operated in stages. Where staged construction or operation is proposed, a **Staging Report** (for either or both construction and operation as the case may be) must be prepared and submitted to the Secretary for approval. The **Staging Report** must be submitted to the Secretary no later than one month before the commencement of construction of the first of the proposed stages of construction (or if only staged operation is proposed, one month before the commencement of operation of the first of the proposed stages of operation).
- A14 The **Staging Report** must:
- if staged construction is proposed, set out how the construction of the whole of the CSSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when construction of each stage will commence and finish;
 - if staged operation is proposed, set out how the operation of the whole of the CSSI will be staged, including details of work and other activities to be carried out in each stage and the general timing of when operation of each stage will commence and finish (if relevant);
 - specify how compliance with conditions will be achieved across and between each of the stage of the CSSI; and
 - set out mechanisms for managing any cumulative impacts arising from the proposed staging.
- A15 The CSSI must be staged in accordance with the **Staging Report**, as approved by the Secretary.
- A16 Where staging is proposed, the terms of this approval that apply or are relevant to the works or activities to be carried out in a specific stage must be complied with at the relevant time identified in the Staging Report for that stage.

- A17 Where changes are proposed to the staging of construction or operation, the Staging Report must be revised and submitted to the Secretary for approval no later than one month before the proposed change in staging.
- A18 The Proponent must use best endeavours to ensure that the duration of construction in any one location or zone, as defined to the Secretary's satisfaction, is such that any receiver is impacted by construction works for the minimum, reasonably practicable time.
- The Proponent must demonstrate the principles that would be adopted to minimise the duration of construction in zones as part of the **Staging Report** required by **Condition A13**.

ENVIRONMENT REPRESENTATIVE

- A19 Works must not commence until an ER has been approved by the Secretary and engaged by the Proponent.
- A20 The Secretary's approval of an ER must be sought no later than one month before the commencement of works.
- A21 The proposed ER must be a suitably qualified and experienced person who was not involved in the preparation of the EIS or Submissions Report (incorporating Preferred Infrastructure Report), and is independent from the design and construction personnel for the CSSI and those involved in the delivery of it.
- A22 The Proponent may engage more than one ER for the CSSI, in which case the functions to be exercised by an ER under the terms of this approval may be carried out by any ER that is approved by the Secretary for the purposes of the CSSI.
- A23 For the duration of the works until after the commencement of operation, or as agreed with the Secretary, the approved ER must:
- receive and respond to communication from the Secretary in relation to the environmental performance of the CSSI;
 - consider and inform the Secretary on matters specified in the terms of this approval;
 - consider and recommend to the Proponent any improvements that may be made to work practices to avoid or minimise adverse impact to the environment and to the community;
 - review documents identified in Table 2 and any other documents that are identified by the Secretary, for consistency, in the opinion of the ER, with requirements in or under this approval and if so:
 - make a written statement to this effect before submission of such documents to the Secretary (if those documents are required to be approved by the Secretary); or
 - make a written statement to this effect before the implementation of such documents (if those documents are required to be submitted to the Secretary for information or are not required to be submitted to the Secretary);
 - regularly monitor the implementation of the documents listed in Table 2 to ensure implementation is being carried out in accordance with the document and the terms of this approval;
 - as may be requested by the Secretary, help plan, attend or undertake audits of the CSSI commissioned by the Department including scoping audits, programming audits, briefings and site visits, but not independent environmental audits required under **Condition A41** of this approval;
 - as may be requested by the Secretary, assist the Department in the resolution of community complaints;
 - assess the impacts of minor ancillary facilities comprising lunch sheds, office sheds and portable toilet facilities; and
 - prepare and submit to the Secretary and other relevant regulatory agencies, for information, an **Environmental Representative Monthly Report** providing the information set out in the Environmental Representative Protocol under the heading "Environmental Representative

Monthly Reports.* The Environmental Representative Monthly Report must be submitted within seven days following the end of each month for the duration of the ER's engagement for the CSSI.

- A24 The Proponent must provide the ER with all documentation requested by the ER in order for the ER to perform their functions specified in **Condition A23** (including preparation of the ER monthly report), as well as:
- (a) the complaints register (to be provided on a daily basis); and
 - (b) a copy of any assessment carried out by the Proponent of whether proposed work is consistent with the approval (which must be provided to the ER before the commencement of the subject work).
- A25 The Secretary may at any time commission an audit of an ER's exercise of its functions under **Condition A23**. The Proponent must:
- (a) facilitate and assist the Secretary in any such audit; and
 - (b) make it a term of their engagement of an ER that the ER facilitate and assist the Secretary in any such audit.

ACOUSTICS ADVISOR

- A26 A suitably qualified and experienced **Acoustics Advisor (AA)** must be engaged for the duration of construction and for no less than six months following completion of construction of the CSSI. The AA must provide a statutory declaration to the Secretary that they are independent of the design and construction personnel. The Proponent must cooperate with the AA by:
- (a) providing access to noise and vibration monitoring activities as they take place;
 - (b) providing for review noise and vibration plans, assessments, monitoring reports and data analyses undertaken; and
 - (c) considering any recommendations to improve practices and demonstrating, to the satisfaction of the AA, why any recommendation is not adopted.
- A27 The AA must meet the following minimum requirements:
- (a) relevant experience in the last ten years as a senior acoustic specialist on major infrastructure projects, including a fieldwork and construction management component;
 - (b) tertiary qualifications in an acoustic related discipline or equivalent experience; and
 - (c) proven understanding and application of NSW State and local legislation, relevant Australian standards, NSW environmental regulatory requirements and implementation of noise mitigation and environmental best practice.
- A28 The Proponent must notify the Department in writing on the engagement of the AA including demonstrating the requirements of **Conditions A26 and A27**.
- A29 The AA must:
- (a) receive and respond to communication from the Secretary about the performance of the CSSI in relation to noise and vibration;
 - (b) consider and inform the Secretary on matters specified in the terms of this approval relating to noise and vibration;
 - (c) consider and recommend, to the Proponent, improvements that may be made to work practices to avoid or minimise adverse noise and vibration impacts;
 - (d) consider consultation outcomes with affected receivers to determine the adequacy of noise mitigation and management measures including work hours and respite periods;
 - (e) review all noise and vibration documents required to be prepared under the terms of this approval and, should they be consistent with the terms of this approval, endorse them before submission to the Secretary (if required to be submitted to the Secretary) or before implementation (if not required to be submitted to the Secretary);

- (f) regularly monitor the implementation of all noise and vibration documents required to be prepared under the terms of this approval to ensure implementation is in accordance with what is stated in the document and the terms of this approval;
- (g) in conjunction with the ER, the AA must:
 - i) as may be requested by the Secretary, help plan, attend or undertake audits of noise and vibration management of the CSSI including briefings, and site visits;
 - ii) if conflict arises between the Proponent and the community in relation to the noise and vibration performance during construction of the CSSI, follow the procedure in the Community Communication Strategy approved under Condition B3 of this approval to attempt to resolve the conflict, and if it cannot be resolved, notify the Secretary;
 - iii) consider relevant minor amendments made to the CEMP, relevant sub-plans and noise and vibration monitoring programs that require updating or are of an administrative nature, and are consistent with the terms of this approval and the management plans and monitoring programs approved by the Secretary and, if satisfied such amendment is necessary, endorse the amendment. This does not include any modifications to the terms of this approval;
 - iv) assess the noise impacts of minor construction ancillary facilities; and
- (h) prepare and submit to the Secretary and other relevant regulatory agencies, for information, a monthly **Noise and Vibration Report** detailing the AAs actions and decisions on matters for which the AA was responsible in the preceding month (or another timeframe agreed with the Secretary). The **Noise and Vibration Report** must be submitted within seven days following the end of each month for the duration of construction of the CSSI, or as otherwise agreed with the Secretary.

COMPLIANCE TRACKING PROGRAM

- A30 A **Compliance Tracking Program** to monitor compliance with the terms of this approval must be prepared, taking into consideration any staging of the CSSI that is proposed in a **Staging Report** submitted in accordance with **Conditions A13 and A14** of this approval.
- A31 The **Compliance Tracking Program** must be endorsed by the ER and then submitted to the Secretary for information at least one (1) month before the commencement of works.
- A32 The **Compliance Tracking Program** in the form required under **Condition A30** of this approval must be implemented for the duration of works and for a minimum of one (1) year following commencement of operation, or for a longer period as determined by the Secretary based on the outcomes of independent environmental audits, **Environmental Representative Monthly Reports** and regular compliance reviews submitted through **Compliance Reports**. If staged operation is proposed, or operation is commenced of part of the CSSI, the **Compliance Tracking Program** must be implemented for the relevant period for each stage or part of the CSSI.
- A33 The Proponent must make each compliance report publicly available and notify the Department in writing when this has been done.

CONSTRUCTION COMPLIANCE REPORTING

- A34 A **Pre-Construction Compliance Report** must be prepared and submitted to the Secretary for information no later than one (1) month before the commencement of construction (or each stage of construction identified in the Staging Report).
- A35 The **Pre-Construction Compliance Report** must include:
 - (a) details of how the terms of this approval that must be addressed before the commencement of construction have been complied with; and
 - (b) the proposed commencement date for construction.
- A36 Construction must not commence until the **Pre-Construction Compliance Report** has been submitted to the Secretary.

- A37 **Construction Compliance Reports** must be prepared and submitted to the Secretary for information every six (6) months from the date of the commencement of construction for the duration of construction. The **Construction Compliance Reports** must include:
- (a) a results summary and analysis of environmental monitoring;
 - (b) the number of complaints received, including a summary of main areas of complaint, action taken, response given and proposed strategies for reducing the recurrence of such complaints;
 - (c) details of any review of, and minor amendments made to, the **CEMP** as a result of construction carried out during the reporting period;
 - (d) a register of any reviews of consistency undertaken including outcome;
 - (e) results of any independent environmental audits and details of any actions taken in response to the recommendations of an audit;
 - (f) a summary of all incidents notified in accordance with **Conditions A44** and **A46** of this approval; and
 - (g) any other matter relating to compliance with the terms of this approval or as requested by the Secretary.

PRE-OPERATION COMPLIANCE REPORT

- A38 A **Pre-Operation Compliance Report** must be prepared and submitted to the Secretary for information no later than one (1) month before the commencement of operation. The **Pre-Operation Compliance Report** must include:
- (a) details of how the terms of this approval that must be addressed before the commencement of operation have been complied with; and
 - (b) the commencement date for operation.
- A39 Operation must not commence until the **Pre-Operation Compliance Report** has been submitted to the Secretary for information.

AUDITING

- A40 An **Environmental Audit Program** for annual independent environmental auditing against the terms of this approval must be prepared in accordance with *AS/NZS ISO 19011:2014 - Guidelines for Auditing Management Systems* and submitted to the Secretary for information no later than one month before the commencement of construction.
- A41 The **Environmental Audit Program**, as submitted to the Secretary, must be implemented for the duration of construction and operation.
- A42 All independent environmental audits of the CSSI must be conducted by a suitably qualified, experienced and independent auditor with, where required, a team of independent technical experts and be documented in an **Environmental Audit Report** which:
- (a) assesses the environmental performance of the CSSI, and its effects on the surrounding environment;
 - (b) assesses whether the project is complying with the terms of this approval; and
 - (c) recommends measures or actions to improve the environmental performance of the CSSI.
- A43 The Proponent must submit a copy of the **Environmental Audit Report** to the Secretary for information, with a response to any recommendations contained in the audit report within six (6) weeks of completing the audit.

INCIDENT NOTIFICATION AND REPORTING

- A44 The Department must be notified in writing to compliance@planning.nsw.gov.au immediately after the Proponent becomes aware of an incident. The notification must identify the CSSI (including the application number and the name of the CSSI if it has one), and set out the location and nature of the incident.
- A45 Within one week of notification of an incident under **Condition A44** of this approval, the Proponent must submit a report to the Department providing the time and date of the incident, details of the incident and must identify any consequent non-compliance with this approval.
- A46 All written requirements of the Secretary, which may be given at any point in time, to address the cause or impact of an incident must be complied with, within any timeframe specified by the Secretary or relevant public authority.
- A47 If an incident occurs or if statutory notification is given to the EPA as required under the *Protection of the Environment Operations Act 1997* in relation to the CSSI, such notification must also be provided to the Secretary within 24 hours after the notification was given to the EPA.

**PART B
COMMUNITY INFORMATION AND REPORTING**

COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT

- B1** A **Community Communication Strategy** must be prepared to provide mechanisms to facilitate communication between the Proponent, the community (including adjoining affected landowners and businesses, and others directly impacted by the CSSI), the ER and Council during the design, establishment and construction of the CSSI and for a minimum of 12 months following the completion of construction of the CSSI.
- B2** The **Community Communication Strategy** must:
- (a) identify people and organisations to be consulted during the design and work phases;
 - (b) set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the CSSI including use of construction hoardings to provide information regarding the progress of construction. The information to be distributed must include information regarding current site construction activities, schedules and milestones at each construction site;
 - (c) provide for the formation of issue or location-based community forums that focus on key environmental management issues of concern to the relevant communities; and
 - (d) set out procedures and mechanisms:
 - i) through which the community can discuss or provide feedback to the Proponent;
 - ii) through which the Proponent will respond to enquiries or feedback from the community; and
 - iii) to resolve any issues and mediate any disputes that may arise in relation to construction of the CSSI, including disputes regarding rectification or compensation.
- B3** The **Community Communication Strategy** must be submitted to the Secretary for approval no later than one month before commencement of any works.
- B4** Works for the purposes of the CSSI must not commence until the **Community Communication Strategy** has been approved by the Secretary.
- B5** The **Community Communication Strategy**, as approved by the Secretary, must be implemented for the duration of the works and for 12 months following the completion of construction of the CSSI.

COMPLAINTS MANAGEMENT SYSTEM

- B6** A **Complaints Management System** must be prepared before the commencement of any works in respect of the CSSI and be implemented and maintained for the duration of construction and for a minimum 12 months following completion of construction of the CSSI.
- B7** The following information must be available to facilitate community enquiries and manage complaints within one (1) month from the date of this approval and for 12 months following the completion of construction:
- (a) a 24 hour telephone number for the registration of complaints and enquiries about the CSSI;
 - (b) a postal address to which written complaints and enquires may be sent;
 - (c) an email address to which electronic complaints and enquiries may be transmitted; and
 - (d) a mediation system for complaints unable to be resolved.

This information must be accessible to all in the community regardless of age, ethnicity, disability or literacy level.

- B8 The telephone number, postal address and email address required under **Condition B7** of this approval must be published in a newspaper circulating in the local area and on-site hoarding at each construction site before commencement of construction and published in the same way again before the commencement of operation. This information must also be provided on the website required under **Condition B11** of this approval.
- B9 A **Complaints Register** must be maintained to record information on all complaints received about the CSSI during the carrying out of any works for the purposes of the CSSI and for a minimum of 12 months following the completion of construction. The **Complaints Register** must record the:
- (a) number of complaints received;
 - (b) number of people affected in relation to a complaint;
 - (c) means by which the complaint was addressed and whether resolution was reached, with or without mediation.
- B10 The **Complaints Register** must be provided to the Secretary upon request, within the timeframe stated in the request.

PROVISION OF ELECTRONIC INFORMATION

- B11 A website providing information in relation to the CSSI must be established before commencement of works and maintained for the duration of construction, and for a minimum of 24 months following the completion of construction. Up-to-date information (excluding confidential commercial information) must be published before the relevant works commence, and maintained on the website or dedicated pages including:
- (a) information on the current implementation status of the CSSI;
 - (b) a copy of the documents listed in **Condition A1** and **Condition A2** of this approval, and any documentation relating to any modifications made to the CSSI or the terms of this approval;
 - (c) a copy of this approval in its original form, a current consolidated copy of this approval (that is, including any approved modifications to its terms), and copies of any approval granted by the Minister to a modification of the terms of this approval;
 - (d) a copy of each statutory approval, licence or permit required and obtained in relation to the CSSI;
 - (e) a current copy of each approved document required under the terms of this approval and any endorsements, approvals or requirements from the ER, AA and Secretary, all of which must be published before the commencement of any works to which they relate or before their implementation as the case may be; and
 - (f) a copy of the compliance reports required under **Condition A30** of this approval.

Information relating solely to construction may be removed from the website 12 months following the completion of construction.

**PART C
CONSTRUCTION ENVIRONMENTAL MANAGEMENT**

CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- C1** A Construction Environmental Management Plan (CEMP) must be must be prepared to detail how the performance outcomes, commitments and mitigation measures specified in the documents listed in **Condition A1** will be implemented and achieved during construction.
- C2** The **CEMP** must provide:
- (a) a description of activities to be undertaken during construction (including the scheduling of construction);
 - (b) details of environmental policies, guidelines and principles to be followed in the construction of the CSSI;
 - (c) a program for ongoing analysis of the key environmental risks arising from the activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of construction of the CSSI;
 - (d) details of how the activities described in subsection (a) of this condition will be carried out to:
 - i) meet the performance outcomes stated in the documents identified in Condition A1; and
 - ii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition;
 - (e) an inspection program detailing the activities to be inspected and frequency of inspections;
 - (f) a protocol for managing and reporting any:
 - i) incidents; and
 - ii) non-compliances with this approval and with statutory requirements.
 - (g) procedures for rectifying any non-compliance with this approval identified during compliance auditing, incident management or at any time during construction;
 - (h) a list of all the **CEMP Sub-plans** required in respect of construction, as set out in **Condition C3**. Where staged construction of the CSSI is proposed, the **CEMP** must also identify which **CEMP Sub-plan** applies to each of the proposed stages of construction;
 - (i) a description of the roles and environmental responsibilities for relevant employees and their relationship with the ER;
 - (j) for training and induction for employees, including contractors and sub-contractors, in relation to environmental and compliance obligations under the terms of this approval;
 - (k) for periodic review and update of the **CEMP** and all associated plans and programs.
- C3** The following **CEMP Sub-plans** must be prepared in consultation with the relevant government agencies identified for each **CEMP Sub-plan** and be consistent with the **CEMP** referred to in **Condition C1**:

	Required CEMP Sub-plan	Relevant government agencies to be consulted for each CEMP Sub-plan	Secretary Approval/ Information
(a)	Traffic, transport and access	Relevant Council(s), Roads and Maritime Services, Emergency Services	Information
(b)	Noise and vibration	Relevant Council(s), EPA, NSW Health	Approval
(c)	Flood Management	Relevant Council(s), OEH, Sydney Water	Information
(d)	Heritage	Relevant Council(s), OEH	Approval
(e)	Flora and Fauna Biodiversity	Relevant Council(s), OEH	Information

- C4 The **CEMP Sub-plans** must state how:
- (a) the environmental performance outcomes identified in the documents listed in **Condition A1** will be achieved;
 - (b) the mitigation measures identified in the documents listed in **Condition A1** will be implemented;
 - (c) the relevant terms of this approval will be complied with; and
 - (d) issues requiring management during construction, as identified through ongoing environmental risk analysis, will be managed.
- C5 The **CEMP Sub-plans** must be developed in consultation with relevant government agencies (including Relevant Council(s)). Details of all information requested by an agency to be included in a **CEMP Sub-plan** as a result of consultation, including all copies of correspondence from those agencies, must be provided to the Secretary with the relevant **CEMP Sub-plan**.
- C6 Any of the **CEMP Sub-plans** may be submitted along with, or subsequent to, the submission of the **CEMP** but in any event, no later than one month before construction.
- C7 The **CEMP** must be endorsed by the ER and then submitted to the Secretary for approval no later than one month before the commencement of construction.
- C8 Construction must not commence until the **CEMP** and any **CEMP Sub-plan** specified in **Condition C3** have been approved by the Secretary. The **CEMP** and **CEMP Sub-plans**, as approved by the Secretary, including any minor amendments approved by the ER must be implemented for the duration of construction. Where construction of the CSSI is staged, construction of a stage must not commence until the **CEMP** and **Sub-plans** for that stage have been approved by the Secretary.

CONSTRUCTION MONITORING PROGRAMS

- C9 The following **Construction Monitoring Programs** must be prepared in consultation with the relevant government agencies for each to compare actual performance of construction of the CSSI against performance predicted in the documents listed in **Condition A1** or in the **CEMP**:

	Required Construction Monitoring Programs	Relevant government agencies to be consulted for each Construction Monitoring Program
(a)	Water Quality (Turbidity) Monitoring	DoI Water, EPA, Relevant Council(s)
(b)	Noise and Vibration Monitoring	Relevant Council(s), EPA, NSW Health (as relevant)
(c)	Grey-headed flying fox Monitoring	OEH

- C10 Each **Construction Monitoring Program** must provide:
- (a) details of baseline data available;
 - (b) details of baseline data to be obtained and when;
 - (c) details of all monitoring of the project to be undertaken;
 - (d) the parameters of the project to be monitored;
 - (e) the frequency of monitoring to be undertaken;
 - (f) the location of monitoring;
 - (g) the reporting of monitoring results against relevant criteria;
 - (h) procedures to identify and implement additional mitigation measures where results of monitoring are unsatisfactory; and
 - (i) any consultation to be undertaken in relation to the monitoring programs.

- C11 The noise and vibration monitoring data collected during monitoring required by **Condition C9** must be available to the Proponent, ER, AA, Relevant Council(s) and the community to inform construction scheduling, the level of impacts and whether additional mitigation is required. The Department must also be provided access to this data if specifically requested.
- C12 The **Construction Monitoring Programs** must be developed in consultation with relevant government agencies and Relevant Council(s) as identified in **Condition C9** of this approval and must include, information requested by an agency to be included in a **Construction Monitoring Programs** during such consultation. Details of all information requested by an agency, including copies of all correspondence from those agencies, must be provided with the relevant **Construction Monitoring Program**.
- C13 The **Construction Monitoring Programs** must be endorsed by the ER and submitted to the Secretary for information at least one month before the commencement of construction.
- C14 Construction must not commence until the Secretary has received all of the required **Construction Monitoring Programs**, and all relevant baseline data for the specific construction activity has been collected.
- C15 The **Construction Monitoring Programs**, as submitted to the Secretary including any minor amendments approved by the ER must be implemented for the duration of construction and for any longer period set out in the monitoring program or specified by the Secretary, whichever is the greater.
- C16 The results of the **Construction Monitoring Programs** must be submitted to the Secretary, and relevant regulatory agencies, for information in the form of a **Construction Monitoring Report** at the frequency identified in the relevant **Construction Monitoring Program**.
- C17 Where a relevant **CEMP Sub-plan** exists, the relevant **Construction Monitoring Program** may be incorporated into that **CEMP Sub-plan**.

SITE ESTABLISHMENT WORKS

Site Establishment Management Plan

- C18 Before establishment of any construction ancillary facility as identified in the EIS and SPIR (and excluding minor construction ancillary facilities), the Proponent must prepare a **Site Establishment Management Plan** which outlines the environmental management practices and procedures to be implemented for the establishment of the construction ancillary facilities. The **Site Establishment Management Plan** must be prepared in consultation with the relevant council(s) and relevant government authorities. The Plan must be submitted to the Secretary for approval one (1) month before establishment of any construction ancillary facilities. The **Site Establishment Management Plan** must detail the management of the construction ancillary facilities and include:
- a description of activities to be undertaken during establishment of the construction ancillary facility (including scheduling and duration of works to be undertaken at the site);
 - figures illustrating the proposed operational site layout(s);
 - a program for ongoing analysis of the key environmental risks arising from the site establishment activities described in subsection (a) of this condition, including an initial risk assessment undertaken before the commencement of site establishment works;

- (d) details of how the site establishment activities described in subsection (a) of this condition will be carried out to:
 - i) meet the performance outcomes stated in the documents listed in the documents identified Condition A1,
 - ii) to address traffic, pedestrian access and amenity around each site, and
 - iii) manage the risks identified in the risk analysis undertaken in subsection (c) of this condition; and
- (e) a program for monitoring the performance outcomes, including a program for construction noise monitoring consistent with the requirements of **Conditions C9 and C11**.

Nothing in this condition prevents the Proponent from preparing individual **Site Establishment Management Plans** for each construction ancillary facility.

Boundary Screening

- C19 Boundary fencing that incorporates screening must be erected around all construction ancillary facilities that are adjacent to sensitive receivers for the duration of site establishment and construction of the CSSI unless otherwise agreed with Relevant Council(s), affected residents, business operators and/or landowners and in accordance with **Condition B2(b)**.
- C20 Boundary screening required under **Condition C19** of this approval must reduce visual, noise and air quality impacts on adjacent sensitive receivers.

IDENTIFICATION OF WORKFORCE AND PLANT

- C21 All construction spoil haulage vehicles, and construction plant must be clearly marked as being for the CSSI in such a manner to enable immediate identification within at least 50 metres of the vehicles and plant.

PART D
OPERATIONAL ENVIRONMENTAL MANAGEMENT

OPERATIONAL ENVIRONMENTAL MANAGEMENT

- D1. An **Operational Environmental Management Plan (OEMP)** must be prepared to detail how the performance outcomes, commitments and mitigation measures made and identified in the documents listed in **Condition A1** will be implemented and achieved during CSSI operation. This condition does not apply if **Condition D2** of this approval applies.
- D2. An **OEMP** is not required for the CSSI if the Proponent has an **Environmental Management System (EMS)** or equivalent as agreed with the Secretary, and can demonstrate, to the written satisfaction of the Secretary, that through the **EMS**:
- (a) the performance outcomes, commitments and mitigation measures made and identified in the documents listed in **Condition A1** and these conditions of approval can be achieved;
 - (b) issues identified through ongoing risk analysis can be managed; and
 - (c) procedures are in place for rectifying any non-compliance with this approval identified during compliance auditing, incident management or any other time during operation.
- D3. Where an OEMP is required, the Proponent must include the following **OEMP Sub-plans** in the **OEMP**.

	Required OEMP Sub-plan	Relevant government agencies to be consulted for each OEMP Sub-plan	Secretary Approval/ Information
(a)	Light rail Operations during Special Events (including access)	Relevant Council(s), RMS, Police, Western Sydney Stadium, Rosehill Racecourse and Parramatta Park Trust	Information

- D4. Each of the OEMP Sub-plans must include the information set out in **Condition D2** of this approval.
- D5. The **OEMP Sub-plans** must be developed in consultation with relevant government agencies as identified in **Condition D3** and must include information requested by an agency. Details of all information requested by an agency or Council(s) to be included in an **OEMP Sub-plan** as a result of consultation, including copies of all correspondence from those agencies, must be provided with the relevant **OEMP Sub-Plan**.
- D6. The **OEMP Sub-plans** must be submitted to the Secretary as part of the **OEMP**.
- D7. The **OEMP** or **EMS** or equivalent as agreed with the Secretary, must be submitted to the Secretary for information no later than one month before the commencement of operation.
- D8. The **OEMP** or **EMS** or equivalent as agreed with the Secretary, as submitted to the Secretary and amended from time to time, must be implemented for the duration of CSSI operation and the **OEMP** must be made publicly available before the commencement of operation.

PART E
KEY ISSUE CONDITIONS

TRAFFIC AND TRANSPORT

- E1 The CSSI must be designed, constructed and operated so that it does not adversely impact network connectivity, or the safety and efficiency of the transport system near the CSSI in a manner which is consistent with the impacts predicted in the documents referred to in **Condition A1**.
- E2 In relation to new or modified road, parking, pedestrian and cycle infrastructure, the CSSI must be designed:
- (a) in consultation with the relevant road authority;
 - (b) in consideration of existing and future demand, road safety and traffic network impacts;
 - (c) to meet relevant design, engineering and safety guidelines, including Austroads Guides; and
 - (d) is certified by an appropriately qualified and experienced person that the above matters have been appropriately considered.
- E3 An independent **Road Safety Audit(s)** must be undertaken by an appropriately qualified and experienced person in accordance with *Guidelines for Road Safety Audit Practices* (RTA, 2011), to assess the safety performance of any new or modified local road, parking, pedestrian and cycle infrastructure provided as part of the CSSI (including ancillary facilities) to ensure that the requirements of **Condition E2** are met. Audit findings and recommendations must be actioned and must be made available to the Secretary on request.
- E4 Where bus stops are required to be temporarily closed or relocated, such closure must not occur until bus stops of equivalent capacity, of comparable stop type and which meet accessibility standards (where practicable), are relocated within 400 metres walking distance of the existing bus stop and are operating, unless agreed otherwise with the Relevant Council(s) and bus services provider(s). Closure and relocation of bus stops during construction must be undertaken in consultation with the relevant bus service providers and relevant council(s). Wayfinding signage must be provided to direct commuters to relocated bus stops.

Construction Traffic and Access

- E5 Construction vehicles (including staff vehicles) associated with the CSSI must:
- (a) minimise parking or queuing on public roads and utilise the light rail corridor for construction vehicle and staff movements to the greatest extent practicable;
 - (b) not idle or queue in local residential streets;
 - (c) minimise use of routes on local roads that directly pass schools or childcare centres, or where no alternative route is available, restrict heavy vehicle movements between 8:00am and 9:30am and between 2:30pm and 4:00pm Monday to Friday, during the school term;
 - (d) not use local roads (including residential streets) to gain access to construction sites and compounds unless no alternatives are available. Construction sites must be accessed from arterial roads and the rail corridor used for transportation of construction materials and the like to work sites to the greatest extent practicable; and
 - (e) adhere to the nominated haulage routes identified in the **Construction Traffic, Transport and Access Management Plan** required under **Condition C3**.

Condition Reports

- E6 Existing condition reports for all roads and all property and infrastructure in the road reserve likely to be used or affected by works must be prepared before commencement of such works. The report must state the current condition of the asset. A copy of the report must be provided to the asset owner no later than one month before the commencement of construction of the CSSI.
- E7 If damage occurs to any item outlined in **Condition E6** resulting from the works, aside from that resulting from normal wear and tear, the Proponent must either (at the asset owner's discretion):
- (a) compensate the asset owner for the damage so caused. The amount of compensation may be agreed with the asset owner, but compensation must be paid even if no agreement is reached; or
 - (b) rectify the damage so as to restore the item to at least the condition it was in pre-works. Any repairs must be completed before the commencement of CSSI operations.

Property Access

- E8 The Proponent must maintain access to all properties during construction and operation, unless otherwise agreed by the relevant property owner or occupier, and reinstate any access physically affected by the CSSI to at least an equivalent standard at no cost to the property owner, unless otherwise agreed with the property owner. The Proponent must provide copies of plans to the Secretary on request.
- E9 Access plans must be prepared and implemented for individual properties and accesses that will be impacted by construction and operation of the CSSI. The access plans must be developed in consultation with affected parties (property owner and/or occupier, as relevant) and the Proponent must make reasonable endeavours to obtain agreement from the relevant affected parties, and evidence of consultation demonstrating this must be provided to the Secretary on request. The access plans must establish:
- (a) road and access closures and provision of alternative routes;
 - (b) provision for pedestrian and cyclist access;
 - (c) special event strategies;
 - (d) provision of servicing and delivery requirements for loading zones and waste disposal;
 - (e) access periods or alternative access arrangements for businesses, landowners or tenants affected by the CSSI;
 - (f) strategies to maintain emergency and incident response access at all times;
 - (g) potential future access strategies for the Westmead Hospital and Westmead Railway Station; and
 - (h) access to taxi ranks and loading zones.

If access is not deemed to be adequate by the property owner and/or occupier and a dispute ensues, procedures and mechanisms must be followed in accordance with **Condition B2**.

Traffic Network Management

- E10 The Proponent must prepare and implement a **Network Management Strategy** for construction of the CSSI, in consultation with RMS, Sydney Coordination Office and Relevant Council(s) before impacts on the road network (including intersections) occur. The Strategy must determine appropriate measures to manage impacts to traffic identified in the documents listed in **Condition A1**, and must include:
- (a) details of impacts to the network from road closures, directional changes, night works and traffic diversions;
 - (b) details of further appropriate network/intersection modelling and analysis undertaken since the EIS and/or Submissions Report was prepared;
 - (c) consideration of cumulative impacts from other construction projects;

- (d) details of the required intersection upgrades and traffic management measures by precinct to minimise the impacts identified above;
- (e) vehicular access changes;
- (f) special event management; and
- (g) changes to bus services.

The Strategy must focus on the management of construction related traffic impacts and be provided to the Secretary for information before works commence.

Parking Management Strategy

E11 A Parking Management Strategy must be prepared before works commence and implemented in consultation with the relevant road authority and Relevant Council(s) to manage car parking impacts and kerbside parking access, particularly for the Westmead, Parramatta North, and Parramatta CBD precincts, as a result of the CSSI. The **Parking Management Strategy** must include, but not be limited to:

- (a) confirmation of the timing of the removal of on and off-street parking associated with the construction of the CSSI;
- (b) comprehensive parking surveys of all parking spaces to be removed to determine current demand during peak, off-peak, school drop-off and pick-up, and weekend periods;
- (c) assessment of the impacts of changes to on and off-street parking taking into consideration outcomes of consultation with affected stakeholders;
- (d) identification of measures to manage any reduction in parking including staged removal, resident parking schemes, managed staff parking arrangements, and provision of alternative parking arrangements for accessible and service spaces;
- (e) replacement parking for specific impacted kerbside uses (e.g. accessible parking and loading zones) within the local vicinity with consideration of the *Disability Discrimination Act 1992 (DDA) Public Transport Standards and the DDA Access Code (2010)*; and
- (f) monitoring on the efficacy of these measures, including potential unintended traffic impacts and contingencies in the event that the measures implemented are not adequate.

The **Parking Management Strategy** must be submitted to the Secretary for information and the results of monitoring reported in the **Operational Traffic, Transport and Access Performance Review** required by **Condition E18**.

Pedestrian and Cyclist Access

E12 Safe pedestrian and cyclist access must be maintained around work sites during construction. In circumstances where pedestrian and cyclist access is restricted or removed due to construction activities, an alternate equivalent route which complies with the relevant standards must be provided and signposted.

E13 Bicycle parking/rack facilities are required to be installed at all light rail stops within the Carlingford precinct, unless these facilities already exist.

Pedestrian and Cyclist Network and Facilities Strategy

E14 A Pedestrian and Cyclist Network and Facilities Strategy must be prepared in consultation with Relevant Council(s), RMS, Pedestrian Council of Australia and Bicycle NSW. The Strategy must identify safe and accessible pedestrian and cycle paths, during construction and operation, including facilitation of future cycle paths and dedicated cycleways as identified in the documents listed in **Condition A1**, state and local government plans, with the objective of providing seamless, coherent, visible, and safe pedestrian and cycle access throughout and adjacent to the CSSI corridor. The Strategy must consider:

- (a) existing and proposed local and regional pedestrian and cycle facilities and strategies;
- (b) safety for pedestrians in pedestrianised zones;

- (c) alternative cycle routes during construction, based on safety and efficiency, and contingencies in the event that relocated routes are found to be inadequate;
- (d) pedestrian and cycle access, including local and regional pedestrian and bicycle connections;
- (e) demand for pedestrian and cycle facilities with consideration of measures to encourage an increased pedestrian and cycle mode share;
- (f) signage and way finding;
- (g) cycle storage facilities on light rail vehicles; and
- (h) the requirements of relevant design standards, including Austroads and NSW bicycle guidelines.

The **Pedestrian and Cyclist Network and Facilities Strategy** must be submitted to the Secretary before construction of pedestrian/cyclist permanent built works (including the Active Transport Link) commences and implemented to ensure that all works are operational no later than the commencement of CSSI operations.

Emergency Vehicle Access

- E15 The Proponent must maintain emergency vehicle access, in consultation with emergency services and NSW Health, to Westmead Hospital (along Hawkesbury Road) and between the two parts of the Cumberland Hospital site as long as patients continue to be located at each facility at all times throughout the life of the CSSI. Measures must be outlined in the relevant access plan required under **Condition E9**.

Access to Businesses

- E16 During works, the Proponent must ensure all practicable measures are implemented to maintain pedestrian and vehicular access to, and parking near, businesses and affected properties.
- E17 Alternative pedestrian and vehicular access, and servicing arrangements must be developed in consultation with affected businesses and implemented before the disruption. Adequate wayfinding to businesses must be provided before, and for the duration of, any disruption in consultation with the Relevant Council(s) and/or road authority and as outlined in the Business Activation Plan required by **Condition E110**. The Proponent must make reasonable endeavours to obtain agreement from the relevant affected parties, and evidence of consultation demonstrating this must be provided to the Secretary on request.

If access is not deemed to be adequate by the affected business and a dispute ensues, procedures and mechanisms must be followed in accordance with **Condition B2**.

Operational Traffic, Transport and Access Performance Review

- E18 The Proponent must prepare an **Operational Traffic, Transport and Access Performance Review** in consultation with RMS and Relevant Council(s). The monitoring and review shall be undertaken outside a school holiday period one month and twelve months after the commencement of CSSI operations. The review shall include, but not necessarily be limited to:
- (a) collection of traffic count data from key signalised intersections;
 - (b) monitoring of changes to traffic flows, pedestrian flows, bus network changes and infrastructure associated with the CSSI;
 - (c) results of monitoring and performance of traffic flows, pedestrian flows, bus network changes and infrastructure associated with the CSSI;
 - (d) details of any complaints received relating to traffic, transport and access impacts; and
 - (e) an assessment of the performance and effectiveness of the traffic, transport and access management and mitigation measures comparing actual network performance against modelled network performance.

- E19 The **Operational Traffic, Transport and Access Performance Review** must be submitted to the Secretary, for information, and the relevant road authorities within one month of its completion. If the assessment indicates ongoing traffic, transport and access issues attributable to the CSSI (such as from intersection level of service, queue lengths, road safety, and other relevant parameters of performance), which are not consistent with the outcomes predicted in the documents listed in **Condition A1**, the Proponent must implement additional measures to mitigate these impacts in consultation with the relevant road authority.

NOISE AND VIBRATION

Land Use Survey

- E20 A detailed land use survey must be undertaken to confirm sensitive receivers (including critical working areas such as operating theatres, precision laboratories housing sensitive equipment and drama theatres) potentially exposed to construction noise and vibration, construction ground-borne noise and operational noise and vibration. The survey may be undertaken on a progressive basis but must be undertaken in any one area before the commencement of works which generate construction or operational noise, vibration or ground-borne noise in that area. The results of the survey must be used to develop the **Noise and Vibration Management Sub-Plan** required by **Condition C3** and **Construction Noise and Vibration Impact Statements** required by **Condition E42**.

Hours of Works

- E21 Works must be undertaken during the following hours:
- (a) 7:00am to 6:00pm Mondays to Fridays, inclusive;
 - (b) 8:00am to 12:00pm Saturdays; and
 - (c) at no time on Sundays or public holidays.
- E22 Notwithstanding **Condition E21**, and with the exception of 'Eat Street', works may be undertaken during the following hours:
- (a) 6:00pm to 7:00pm Mondays to Fridays, inclusive; and
 - (b) 12:00pm to 6:00pm Saturdays.
- E23 Notwithstanding **Condition E21**, works may be undertaken in the Camellia and Rosehill precincts (east of James Ruse Drive) and the Carlingford precinct (from Parramatta River to Victoria Road) 24 hours a day, seven days a week provided that sensitive receivers are not affected by noise levels of greater than 5 dBA above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), between 10.00pm and 7.00am.
- E24 Construction outside the hours identified in **Condition E21** along 'Eat Street' must be established through consultation with affected businesses as outlined in the **Business Activation Plan** required by **Condition E110**.
- E25 Works may be undertaken outside of the hours defined in **Conditions E21 to E22**, as applicable, but only if one or more of the following applies:
- (a) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; or
 - (b) where it is required in an emergency to avoid injury or the loss of life, to avoid damage or loss of property or to prevent environmental harm; or
 - (c) where different hours of works are permitted or required under an EPL in force in respect of the CSSI; or
 - (d) works approved under an **Out-of-Hours Work Protocol** for works not subject to an EPL; or

- (e) construction that causes $L_{Aeq}(15\text{-minute})$ noise levels:
- i) no more than 5 dB(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009), and
 - ii) no more than the 'Noise affected' noise management levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other sensitive land uses, and
 - iii) no more than 15dBA above the night-time rating background level at any residence during the night time period, when measured using the LA1(1 minute) noise descriptor, and
 - iv) continuous or impulsive vibration values, measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.2 of *Assessing Vibration: a technical guideline* (DEC, 2006), and
 - v) intermittent vibration values measured at the most affected residence are no more than the maximum values for human exposure to vibration, specified in Table 2.4 of *Assessing Vibration: a technical guideline* (DEC, 2006).

Emergency Works

- E26 On becoming aware of the need for emergency construction works, the Proponent must notify the ER of the need for those activities or works. The Proponent must also use best endeavours to notify all affected sensitive receivers of the likely impact and duration of those works.

Highly Noise Intensive Works

- E27 Except as permitted by an EPL, Highly Noise Intensive Works that result in an exceedance of the applicable NML at the same receiver must only be undertaken:
- (a) between the hours of 8:00 am to 6:00 pm Monday to Friday;
 - (b) between the hours of 8:00 am to 1:00 pm Saturday; and
 - (c) in continuous blocks not exceeding three (3) hours each with a minimum respite from those activities and works of not less than one (1) hour between each block.

For the purposes of this condition, 'continuous' includes any period during which there is less than a one (1) hour respite between ceasing and recommencing any of the work that are the subject of this condition.

Out of Hours Works Protocol

- E28 An **Out-of-Hours Work Protocol** must be prepared to identify a process for the consideration, management and approval of works which are outside the permitted hours defined in **Conditions E21 to E22**, where an EPL does not apply. The Protocol must be approved by the Secretary before commencement of out-of-hours works. The Protocol must be prepared and implemented in consultation with AA. The Protocol must:
- (a) provide a process for the consideration of out-of-hours works against the relevant noise and vibration criteria;
 - (b) provide a process for the identification and implementation of mitigation and management measures for residual impacts, in consultation with the community at each affected location, consistent with the requirements of **Condition E39**;
 - (c) identify an approval process that considers the risk level of activities (in accordance with AS/NZS ISO 31000:2009 "Risk Management"), proposed mitigation, management, and coordination, including where:
 - i) low and moderate risk activities can be approved by the ER in consultation with the AA, and
 - ii) high risk activities that are approved by the Secretary, and
 - (d) identify Department and community notification arrangements for approved out of hours works, which will be detailed in the Communication Strategy.
- E29 Out-of-hours works that may be regulated through an EPL or the **Out of Hours Work Protocol** as per **Condition E28** include, but are not limited to:

- (a) carrying out works that during standard hours would result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZS ISO 31000:2009 "Risk Management"; or
- (b) the relevant road authority has advised the Proponent in writing that carrying out the works and activities during standard hours would result in a high risk to road network operational performance and a road occupancy licence will not be issued; or
- (c) the relevant utility service operator has advised the Proponent in writing that carrying out the works and activities during standard hours would result in a high risk to the operation and integrity of the utility network; or
- (d) where the TfNSW Transport Management Centre (or other road authority) has advised the Proponent in writing that a road occupancy licence is required and will not be issued for the works or activities during the hours specified in Condition E21 and Condition E22; or
- (e) where Sydney Trains (or other rail authority) has advised the Proponent in writing that a Rail Possession is required.

Construction Noise Mitigation Measures

- E30 Mitigation measures must be applied to construction activities that are predicted to result in the following residential ground-borne noise levels being exceeded as a result of the CSSI:
- (a) Evening (6.00pm to 10.00pm) – internal $L_{Aeq(15\text{ minute})}$: 40 dBA; and
 - (b) Night (10.00pm to 7.00am) – internal $L_{Aeq(15\text{ minute})}$: 35 dBA.

The mitigation measures must be outlined in the **Construction Noise and Vibration Management Sub-Plan** and the **Out of Hours Works Protocol**.

- E31 Noise generating works near places of worship, educational institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories, operating theatres, and mental health services and accommodation) must not be timetabled within sensitive periods, unless otherwise agreed with the affected institutions, and at no cost to the affected institution. This must be determined through ongoing consultation with the community during construction.
- E32 The Proponent must consult with proponents or applicants of other State Significant development and infrastructure works near the CSSI and take reasonable steps to coordinate works to minimise cumulative impacts of noise and vibration and maximise respite for affected sensitive receivers.
- E33 Construction noise mitigation measures must be implemented in accordance with Tables 4, 5, 6 and 7 of TfNSW's *Construction Noise and Vibration Strategy* (2018), regardless of the number of sensitive receivers impacted.
- E34 Piling activities that affect sensitive receivers must be undertaken using quieter alternative methods than impact or percussion piling, such as bored piles or vibrated piles, where practicable.
- E35 Nothing in this approval permits blasting for construction of the CSSI.

Construction Noise Mitigation – Respite

- E36 The Proponent must provide respite periods for sensitive receivers where any construction activity during the hours specified in **Condition E21** results in noise levels that exceed the Highly Noise Affected Level of 75 dB ($L_{Aeq(15\text{ minute})}$).
- E37 Where works are undertaken outside hours specific in **Condition E21 and E22** and construction noise levels exceed 65 dB(A) $L_{Aeq(15\text{ minute})}$ at the façade of the building of a residential receiver, the Proponent must only work 4 nights in any 7 day period. The 4 nights worked must be informed by community consultation referenced in **Condition E39**.

Outcomes of the community consultation, the identified works and respite periods and the scheduling of the likely out-of-hour works must be provided to the AA, ER and the Secretary for information.

Relocation of work following 4 nights of works in any 7 day period must be sufficiently removed so as to provide clear respite of 3 days. Works in areas of respite must be subject to noise levels of no more than 5 dB(A) above the rating background level at any residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009).

The requirements of this condition may be varied with the approval of the Secretary following the Secretary's review of community consultation outcomes, construction noise and vibration impacts and the implementation of noise management and mitigation measures.

- E38 All works undertaken for the delivery of the CSSI, including those undertaken by third parties (such as those undertaken by utility contractors), must be coordinated to ensure respite, including the respite required by **Condition E37**. The Proponent must:
- schedule any works to provide respite to impacted noise sensitive receivers so that all respite periods are achieved; or
 - consider the provision of alternative mitigation, including the provision of at receiver treatments and alternative accommodation to impacted noise sensitive receivers; and
 - provide documentary evidence to the AA in support of any decision made by the Proponent in relation to respite or mitigation.
- E39 In order to undertake out-of-hours work described in **Condition E25(c) and (d)**, the Proponent must identify appropriate work and respite periods for the works in consultation with the community at each affected precinct at three monthly intervals. This consultation must be ongoing and include (but not be limited to) providing the community with:
- a schedule of likely out-of-hours work for a period of no less than three (3) months;
 - the potential works, location and duration;
 - the noise characteristics and likely noise levels of the works; and
 - likely mitigation and management measures.

The Proponent shall consider and respond to the affected community's preference for alternative hours and/or durations.

The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour works must be provided to the AA, ER and the Secretary.

- E40 The provision of respite periods does not preclude the application of other construction noise management measures, including the provision of at receiver treatments and or alternate accommodation.

Workplace Health and Safety for Nearby Workers

- E41 At no time can noise generated by construction exceed the National Standard for exposure to noise in the occupational environment of an eight-hour equivalent continuous A-weighted sound pressure level of $L_{Aeq,8h}$ of 85dB(A) for any employee working at a location near the CSSI.

Construction Noise and Vibration Impact Statements

- E42 **Construction Noise and Vibration Impact Statements** must be prepared and implemented for each construction site before construction noise and vibration impacts commence and include specific mitigation measures identified through consultation with affected sensitive receivers. Each **Construction Noise and Vibration Impact Statement** will supplement the **Noise and Vibration Management Sub-Plan** and must specifically address each of the major construction sites and must include but not be limited to:
- a description of the proposed activities;
 - predicted noise and vibration levels based on background noise levels;

- (c) examination of alternative methods of construction that would potentially reduce noise and vibration if the potential noise and vibration exceeds the relevant criteria;
- (d) description and commitment to work practices which limit noise and vibration;
- (e) description of specific noise and vibration mitigation treatments and time restrictions, including respite periods, duration, and frequency;
- (f) justification for any activities to be undertaken outside the specified construction hours defined in **Conditions E21 and E22**;
- (g) internal noise audit systems including recording of daily hours of construction, progressive impact assessments as work proceeds, conducting informal checks by the ER, providing active and communication links to Council and surrounding residents and sensitive receivers;
- (h) assessment of potential noise from the proposed construction methods including noise from construction vehicles and noise impacts from required traffic diversions;
- (i) community consultation and notification;
- (j) all reasonable and feasible measures including adopting the least noisy available construction methods, systems and equipment;
- (k) additional noise and vibration mitigation measures as negotiated with affected residents and other sensitive receivers.

Note: Existing noise levels, pre-construction noise levels, or the like for the purposes of identifying rating background noise levels, noise management levels and construction noise impacts are noise levels that do not include any other construction related noise.

Vibration

- E43 The Proponent must conduct vibration testing before and during vibration generating activities that have the potential to impact on heritage items to identify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and monitoring shows that the preferred dose values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures.
- E44 The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring of heritage-listed structures.

Building Condition Survey

- E45 Before commencement of any works and with the agreement of the landowner, a structural engineer must undertake building condition surveys of all buildings identified in the documents listed in **Condition A1** as being at risk of damage. The results of the surveys must be documented in a **Building Condition Survey Report** for each building surveyed. Copies of **Building Condition Survey Reports** must be provided to the landowners of the buildings surveyed, and if agreed by the landowner, the relevant Council within three weeks of completing the surveys and no later than one month before the commencement of construction.
- E46 After completion of construction and with the agreement of the landowner, **Building Condition Surveys** of all buildings for which building condition surveys were undertaken in accordance with **Condition E45** of this approval must be undertaken by a structural engineer. The results of the surveys must be documented in a **Building Condition Survey Report** for each building surveyed. Copies of **Building Condition Survey Reports** must be provided to the landowners of the buildings surveyed, and if agreed by the landowner, the relevant Council within three weeks of completing the surveys and no later than three (3) months following the completion of construction.
- E47 Any physical damage caused to a property as a result of the CSSI shall be rectified or the property owner compensated, within a timeframe agreed to by the property owner with the

costs borne by the Proponent. This condition is not intended to limit any claims that the property owner may have against the Proponent.

Operational Noise Mitigation Measures

Noise Mitigation - Operational Noise Mitigation Measures

E48 The Proponent must prepare an **Operational Noise and Vibration Review (ONVR)** to confirm noise and vibration mitigation measures that would be implemented for the operation of the CSSI. The ONVR must be prepared in consultation with the Department, relevant council(s), other relevant stakeholders and the community and must:

- (a) identify specific noise and vibration criteria applicable to each component of the CSSI;
- (b) predict the operational noise and vibration levels at affected receivers;
- (c) identify the proposed mitigation measures to be used to meet the applicable noise and vibration criteria;
- (d) ensure uncertainties in the design process (e.g. engineering performance tolerances, modelling assumptions, transmission path assumptions etc) are identified and conservatively quantified; and
- (e) include a consultation strategy with directly affected receivers on mitigation measures.

Where the noise and vibration criteria cannot be achieved, the assessment shall present an analysis of reasonable and feasible noise and vibration mitigation measures, and the 'best practice' achievable noise and vibration outcome for each component of the CSSI.

The **ONVR** is to be verified by a suitably qualified and experienced noise and vibration expert. The **ONVR** is to be undertaken at the Proponent's expense and submitted to the Secretary for approval before the implementation of mitigation measures.

The Proponent must implement the identified noise and vibration control measures and make the **ONVR** publicly available.

E49 Noise mitigation measures as identified in **Condition E48** that will not be physically affected by works must be implemented within eighteen (18) months of the commencement of construction in the vicinity of the impacted receiver to minimise construction noise impacts, and detailed in the **Construction Noise and Vibration Management Sub-plan** for the CSSI.

Operational Noise from Light Rail Services

E50 The CSSI must be designed and operated with the objective of not exceeding the air-borne and ground-borne noise trigger levels as defined in the *Rail Infrastructure Noise Guideline* (EPA, 2012) and the vibration levels defined in the *Assessing Vibration: A Technical Guideline* (DEC, 2006).

E51 The Proponent must reassess operational noise impacts from the CSSI in accordance with the *Rail Infrastructure Noise Guideline* (EPA, 2012) and in addition, if light rail service frequencies increase as part of normal operations (i.e. excluding special events) within the first 10 years of operation. More frequent services are defined as:

- (a) a light rail service more frequent than one every 10 minutes between 5.00am and 7.00am Monday to Friday; or
- (b) a light rail service more frequent than one every 7.5 minutes between 7.00am and 7.00pm Monday to Friday; or
- (c) a light rail service more frequent than one every 15 minutes between 11.00pm and 1.00am Monday to Friday; or
- (d) a light rail service more frequent than one every 15 minutes between 5.00am and 7.00am and 11.00pm and 1.00am on weekends and public holidays; or
- (e) a light rail service more frequent than one every 10 minutes between 7.00am and 11.00pm on weekends and public holidays.

If the reassessment shows that the trigger levels are exceeded, reasonable and feasible mitigation measures shall be identified in consultation with the affected property owner. Any required mitigation measures shall be implemented before the change to service frequency.

Operational Noise from Stationary Sources

E52 Noise emanating from stationary sources must comply with the noise limits at the nearest sensitive receivers in accordance with the *Noise Policy for Industry (2017)* or as specified in **Table E1** and **Table E2**. Noise generated from these facilities must also include associated traffic movements.

Table E1: Operational Noise Limits for the Camellia Stabling and Maintenance Facility at Sensitive Receivers (dBA)

Day L _{Aeq} (15 min)	Evening L _{Aeq} (15 min)	Night L _{Aeq} (15 min)	Night (sleep disturbance) L _{Amax}
52	48	46	56

Table E2: Operational Noise Limits for Substations at Sensitive Receivers (dBA)

Location	L _{Aeq} (15 min) at all Times	Receiver Description
TPS1 – Westmead Station Stop	65	Commercial
	47	Residential
TPS2 – Factory Street Stop	65	Commercial
	42	Residential
TPS3 – Barrack Lane	65	Commercial
TPS4 – Camellia Stop	65	Commercial
TPS5 – Dundas Stop	65	Commercial
	40	Residential
TPS6 – Adderton Road	36	Residential
TPS7 – Carlingford Stop	65	Commercial
	44	Residential
TPS8 – Colquhoun Street	65	Commercial

Note: The design of the Camellia Stabling and Maintenance Facility must demonstrate consideration of the relevant criteria for the future land use proposed under the Camellia Masterplan, where sufficient detail is available at the time of design.

E53 Where practicable, audible alarm systems at the stabling facility are required to be non-tonal, and any permanent vehicles on site are required to be fitted with non-tonal reversing alarms.

Operational Noise from Rail Traffic (adjacent to existing T6 Carlingford rail corridor – Carlingford to Camellia)

E54 Ground-borne noise from rail traffic must not result in increases in existing noise levels by 3 dBA or more and exceedances of the criteria outlined in **Table E3** at the nearest receiver. If exceedances are identified, the Proponent must implement mitigation measures which may include at-receiver property treatments:

Table E3: Operational Noise Trigger Levels for Sensitive Receivers adjacent to the Carlingford Corridor (dBA)

Receiver type	Time of day	Internal Noise Trigger Level (dBA)
Residential	Daytime 7.00am to 10.00pm	40 L_{A50max}^1
	Night time 10.00pm to 7.00am	35 L_{A50max}
Schools, educational institutions, places of worship	When in use	40-45 L_{A50max}^2
Medical	When in use	35 L_{A50max}^1
Public buildings	When in use	40 L_{A50max}^1
Theatres	When in use	NR 25 ³

General Note: Ground-borne noise level values are relevant only where they are higher than the airborne noise from railways and where the ground-borne noise levels are expected to be, or are, audible within habitable rooms (RING, EPA 2013).

Note 1: L_{A50max} refers to the maximum noise level not exceeded for 95 percent of rail pass-by events and is measured using the 'slow' response setting on a sound level meter.

Note 2: The lower value of the range is applicable where low internal noise levels are expected, such as in areas assigned to studying, listening and praying.

Note 3: NR curves are used for rating noise levels and are a set of octave band curves which provide limiting sound pressure level values. NR 15 is equivalent to approximately 20 dBA and NR 25 is approximately 30 dBA.

Operational Noise from Rail Traffic (outside existing T6 Carlingford rail corridor – Camellia to Westmead)

E55 Ground-borne noise from rail traffic must not exceed the criteria outlined in Table E4 as measured at the nearest receiver. If exceedances are identified, the Proponent must implement mitigation measures which may include at-receiver property treatments:

Table E4: Operational Noise Trigger Levels for Sensitive Receivers between Camellia and Westmead (dBA)

Receiver type	Time of day	Internal Noise Trigger Level (dBA)
Residential	Daytime 7.00am to 10.00pm	40 L_{A50max}^1
	Night time 10.00pm to 7.00am	35 L_{A50max}
Schools, educational institutions, places of worship	When in use	40-45 L_{A50max}^2
Medical	When in use	35 L_{A50max}^1
Public buildings	When in use	40 L_{A50max}^1
Theatres	When in use	NR 25 ³

General Note: Ground-borne noise level values are relevant only where they are higher than the airborne noise from railways and where the ground-borne noise levels are expected to be, or are, audible within habitable rooms (RING, EPA 2013).

Note 1: L_{A50max} refers to the maximum noise level not exceeded for 95 percent of rail pass-by events and is measured using the 'slow' response setting on a sound level meter.

Note 2: The lower value of the range is applicable where low internal noise levels are expected, such as in areas assigned to studying, listening and praying.

Note 3: NR curves are used for rating noise levels and are a set of octave band curves which provide limiting sound pressure level values. NR 15 is equivalent to approximately 20 dBA and NR 25 is approximately 30 dBA.

Operational Noise from Ancillary Systems

- E56 The Proponent must ensure that, unless they are required for safety reasons, no public-address system is to be used as part of normal operations of the CSSI. Any emergency public address system must be designed to minimise noise spillage from the site. Speakers must be installed with their pointing axis directed away from residential buildings and sensitive receivers unless otherwise specified in the **Operational Noise and Vibration Management Sub-Plan**.
- E57 Testing of warning bells in the stabling and maintenance facility must be undertaken in an enclosed space or with all doors of the facility closed. No testing of warning bells is permitted to take place at the stabling facility unless it meets the noise goals (including for sleep disturbance) outlined in the *Noise Policy for Industry* (2017) at the nearest residential receiver as outlined in **Condition E52**.

Operational Noise and Vibration Compliance Monitoring

- E58 The Proponent must undertake noise and vibration monitoring to assess noise from the light rail, ancillary facilities and stationary sources and the adequacy of noise mitigation measures to demonstrate compliance with the noise and vibration limits and/or goals specified in this approval. This must be developed in consultation with the EPA and Relevant Council(s) and be undertaken within six months of the commencement of operation of the CSSI. A **Noise and Vibration Compliance Assessment Report** providing the results of the monitoring must be submitted to the Secretary and Relevant Council(s), for information, within one month of its completion. The report must also detail any complaints received relating to operational noise and vibration impacts in the preceding six months. If the report indicates an exceedance of the limits and/or goals specified in this approval, the Proponent must implement additional measures to mitigate these exceedances in consultation with affected property owners and/or occupiers.
- E59 In the event of a change to the frequency of services outlined in **Condition E51**, the Proponent must monitor noise and vibration to assess the adequacy of implemented mitigation measures against the limits and/or goals specified in this approval and present these in an updated **Noise and Vibration Compliance Assessment Report**. If the monitoring indicates an exceedance of the noise and vibration limits and/or goals specified, the Proponent must implement further measures to mitigate these exceedances in consultation with affected property owners and/or occupiers. A copy of the updated **Noise and Vibration Compliance Assessment Report** must be submitted to the Secretary, for information, within one month of its completion.

HERITAGE

- E60 The Proponent must not destroy, modify or otherwise physically affect heritage items (including Aboriginal objects), outside of the CSSI footprint.
- E61 Nothing in this approval permits the Proponent to harm, modify, or otherwise impact human remains uncovered during the construction and operation of the CSSI.
- E62 An **Unexpected Heritage Finds Procedure** must be prepared:
- to manage unexpected heritage finds in accordance with any guidelines and standards prepared by the Heritage Council of NSW or OEH; and
 - by a suitably qualified and experienced archaeologist or heritage specialist.

The Procedure must be included in the **Heritage Management Sub-plan** required by **Condition C3**.

Note: Human remains that are found unexpectedly during works are under the jurisdiction of the NSW State Coroner and must be reported to the NSW Police immediately.

- E63 The **Unexpected Heritage Finds Procedure**, as submitted to the Secretary, must be implemented for the duration of construction and during operational maintenance works.
- E64 The Proponent must prepare a **Heritage Interpretation Strategy** before works which impact on the items identified below commence which identifies and interprets the heritage values and stories of Aboriginal and non-Aboriginal heritage items, archaeology and heritage conservation areas associated with the CSSI. The Heritage Interpretation Strategy must be prepared and implemented in consultation with OEH and the Heritage Council of NSW (or its delegate). The Heritage Interpretation Strategy must be submitted to the Secretary for information and include, but not be limited to:
- (a) a discussion of the key interpretive themes, stories, archaeological results, and messages proposed to interpret the history and significance of affected heritage items and heritage conservation areas including:
 - i) Parramatta Female Factory and Institutions Precinct within the Cumberland District Hospital Group
 - ii) Lennox Bridge;
 - iii) St Patrick's Roman Catholic Cemetery;
 - iv) The Convict Lumberyard (Arthur Phillip High School site)
 - v) Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve);
 - vi) Queen's Wharf Reserve and stone wall and potential archaeological site;
 - vii) Dundas Railway Station Group;
 - viii) Prince Alfred Square (and potential archaeological site);
 - ix) Royal Oak Hotel and stables (and potential archaeological site);
 - x) Clyde Carlingford Rail Bridge abutments (Northern); and
 - xi) Clyde Carlingford Rail Bridge abutments (Southern)
 - (b) Consider the information compiled in development of the **Heritage Archival Recording and Salvage Report** required in **Condition E70**.
- E65 Identified impacts to heritage items and heritage conservation areas must be minimised through both detailed design and construction in consultation with the Heritage Council (or its delegate). The measures to manage this must be detailed in the **Heritage Management Sub-Plan** required by **Condition C3**.

Non-Aboriginal Heritage

- E66 The Proponent must not destroy, modify or otherwise physically affect any structures within the Cumberland District Hospital Group or the curtilage of the Parramatta Female Factory and Institutions Precinct, except as identified in the documents listed in **Condition A1**.
- E67 The proponent must prepare an analysis of alternatives to demolition of CHIP Hostel No. 1 before the commencement of construction. The analysis must be submitted to the Secretary stating a preferred option for approval. If demolition of the CHIP Hostel No. 1 is proposed, justification must be provided which considers the following guidelines included in the *Parramatta North Urban Transformation Consolidated Conservation Management Plan* (UrbanGrowth NSW, 2017):
- (a) that there is no prudent or feasible alternative;
 - (b) demolition would result in no or minimal impacts on the heritage significance of the place or the wider Parramatta North Historic Sites; and
 - (c) demolition would be of an overall benefit to the heritage significance of the place and the wider Parramatta North Historic Sites.

Nothing in this approval permits the demolition of the CHIP Hostel No. 1 without the written approval of the Secretary.

- E68 The detailed design of the CSSI must have regard to the following heritage items to ensure that the design respects and responds to the heritage value of the items:
- (a) Lennox Bridge;

- (b) Cumberland District Hospital Group;
- (c) St Patrick's Roman Catholic Cemetery;
- (d) Prince Alfred Square (and potential archaeological site);
- (e) Ancient Aboriginal and Early Colonial Landscape (Robin Thomas Reserve);
- (f) Queen's Wharf Reserve and stone wall and potential archaeological site and
- (g) Dundas Railway Station Group.

E69 Before installing acoustic treatment at any heritage item identified in the documents listed in **Condition A1** the advice of a suitably qualified heritage architect or heritage engineer with specific experience in built heritage must be obtained and implemented to ensure any such work does not have an adverse impact on the heritage significance of the item.

Heritage Archival Recording and Salvage

E70 The Proponent must prepare a **Heritage Archival Recording and Salvage Report**, including photographic recording of heritage items which have been identified for demolition in the documents referred to in **Condition A1** and outline the salvage to be undertaken from these items.

Archival recording must be undertaken by a suitably qualified heritage specialist and prepared in accordance with NSW Heritage Office's *How to Prepare Archival Records of Heritage Items* (1998) and *Photographic Recording of Heritage Items Using Film or Digital Capture* (2006).

Within 12 months of completing the archival recording, or as otherwise agreed with the Secretary, the Proponent must submit the **Heritage Archival Recording and Salvage Report** to the Department, the OEH, Heritage Council of NSW, Relevant Council(s), relevant local libraries and local historical societies in the local government area.

E71 Following archival recording as required by **Condition E70**, and before demolition, the Proponent must salvage from heritage items to be demolished, identify options for sympathetic reuse of salvaged material (including integrated heritage displays) on the project or for other options for repository, reuse and display. Suitable repository location(s) must be established in consultation with Relevant Council(s). For any State Heritage-listed items or elements suitable for salvage, suitable repository location(s) must be determined in consultation with the Heritage Division of the OEH.

Any residual items and materials are to be made available, through a process to be developed by the Proponent in consultation with the relevant council(s), to landowners within the locality from where the material originated.

Historical Archaeology

E72 Before works within a Historical Archaeological Management Unit (HAMU), the Proponent must engage a suitably qualified archaeologist whose experience complies with the NSW Heritage Council's *Criteria for Assessment of Excavation Directors* (July, 2011) (referred to as the Excavation Director) to oversee and advise on matters associated with historical archaeology and to prepare a **Historical Archaeological Research Design and Excavation Methodology**.

E73 The **Historical Archaeological Research Design and Excavation Methodology** must to be submitted to the Heritage Council of NSW (or its delegate) for review and comment before finalisation. The **Historical Archaeological Research Design and Excavation Methodology** must:

- (a) be consistent with NSW Heritage Council Guidelines including:
 - i) Archaeological Assessments (1996);
 - ii) Assessing Significance for Historical Archaeological Sites and Relics (2009),
 - iii) Skeletal Remains (1998), and
 - iv) Historical Archaeological Code of Practice (2009);

- (b) include provision for early physical investigation of areas of impact identified as likely to contain State significant archaeology in the research design to inform detailed design in these areas to avoid State significant archaeology. This shall include, but not be limited to:
 - i) St Patrick's Roman Catholic Cemetery;
 - ii) Ancient Aboriginal and Early Colonial Landscape / Robin Thomas Reserve; and
 - iii) The Parramatta Town Drains (where these alignments are unclear);
 - (c) provide for the detailed analysis of any archaeological relics discovered during the investigations;
 - (d) include management options for discovered archaeological relics (including options for avoidance, salvage, and display or interpretation);
 - (e) include procedures for notifying the Heritage Council of NSW (or its delegate) and Secretary of any relic as required under s146 of the *Heritage Act 1977*; and
 - (f) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation strategy.
- E74 Where excavation works are required in the vicinity of potential archaeological sites, the Excavation Director must be present to advise on archaeological issues and oversee excavation works. The Excavation Director must be given the authority to advise on the duration and extent of oversight required during excavation.
- E75 In the event that archaeological relics are discovered, the Proponent must prepare an **Archaeological Excavation Report** containing the findings of any excavations, including artefact analysis and the identification of a final repository of any relics. The report must be submitted to the Secretary, for information, within 12 months of completing all archaeological investigations, unless otherwise agreed with the Secretary. The **Archaeological Excavation Report** must also be submitted to the NSW Heritage Council, the local library and the local Historical Society in the local government area. A copy of the **Archaeological Excavation Report** must be provided with the relics.
- Aboriginal Heritage**
- E76 The Proponent must not harm, modify or otherwise impact Aboriginal objects associated with the CSSI except as authorised by this approval.
- E77 Where previously unidentified Aboriginal objects are discovered during construction of the CSSI, all work should stop in the affected area and a suitably qualified and experienced Aboriginal heritage expert should be contacted to provide specialist heritage advice. The measures to consider and manage this process must be specified in the **Heritage Management Sub-Plan** required by **Condition C3** and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS) register.
- E78 Works impacting on the following Aboriginal archaeological sites, and any mitigation and salvage measures required, must be specified in the **Heritage Management Sub-Plan** required by **Condition C3**:
- (a) Cumberland Hospital East;
 - (b) Harris Street Footpath / Robin Thomas Reserve;
 - (c) PLR AFT 2; and
 - (d) Sydney Turf Club Carpark.
- E79 Any Aboriginal objects discovered must be identified in the **Heritage Interpretation Strategy** required by **Condition E65** and, where relevant, include registration in the OEH's Aboriginal Heritage Information Management System (AHIMS) register.

URBAN DESIGN AND VISUAL AMENITY

- E80 The Proponent must design and construct the CSSI in a manner that reduces visual and heritage setting impacts and ensures consolidation and rationalisation of kerbside infrastructure to avoid visual clutter.
- E81 Operational safety requirements must form an integral part of the design process and be considered throughout the detailed design to avoid the need for later additions that unduly compromise the urban design objectives as set out in the **Urban Design Requirements Report** specified in **Condition E87**.
- E82 Nothing in this approval permits advertising on any element of the CSSI.
- E83 The Proponent must design and construct the CSSI in a manner that minimises opportunities for graffiti.
- E84 The Proponent must investigate the feasibility of wire-free running along 'Eat Street', across Lennox Bridge, past Riverside Theatres and Prince Alfred Park and through the Parramatta North precinct with the objective of minimising visual impacts to the heritage values and physical impacts to the heritage fabric of these items. The Proponent must provide the results of the feasibility investigation to the Secretary, for information, before construction commences in these locations. If a decision is made not to provide wire-free running in the identified locations, supporting evidence must be provided in the feasibility assessment.
- E85 The Proponent must investigate the feasibility of grass track treatment running through the Parramatta North precinct and Ancient Aboriginal and Early Colonial Landscape/Robin Thomas Reserve with the objective of minimising visual impacts to the heritage values and physical impacts to the heritage fabric of these items. The Proponent must provide the results of the feasibility investigation to the Secretary, for information, before construction commences in these locations. If a decision is made not to provide grass track treatment in the identified locations, supporting evidence must be provided in the feasibility assessment.
- E86 The CSSI must be constructed in a manner that minimises visual impacts resulting from construction sites, including protecting and retaining existing vegetation around the perimeter of compound sites, providing temporary landscaping and screening where appropriate to soften views of the construction sites and minimising light spill to adjacent residential areas.

Urban Design Requirements Report

- E87 The Proponent must prepare and implement an **Urban Design Requirements Report** for public domain, architecture, landscape architecture, identity and place making with a specific focus on stop access and design. The **Urban Design Requirements Report** must consider crime prevention through environmental design principles and relevant design standards such as:
- Better Placed* (NSW Government Architect, 2017);
 - Greener Places* (NSW Government Architect, 2018);
 - Guidelines for the Development of Public Transport Interchange Facilities* (Ministry of Transport, 2008);
 - Water Sensitive Urban Design, NSW Sustainable Design Guidelines Version 4* (TINSW, 2017);
 - AS4282-1997 Control of the obtrusive effects of outdoor lighting*; and
 - relevant agency and Council design standards including those set out in the Parramatta Strategic Planning Framework.

The Urban Design and Requirements Report must incorporate:

- design principles and objectives;
- identification of relevant land use changes, masterplans and initiatives;
- analysis and mapping of local context and character; and

- (j) analysis and mapping of transport and land use integration and system functionality in the context of precincts.

- E88 The **Urban Design Requirements Report** must inform the detailed design of the CSSI to:
- (a) demonstrate responsiveness to local streetscape and landscape character;
 - (b) integrate with, or allow for, known land use changes, masterplans and developments;
 - (c) contribute to the character and identity of the local area;
 - (d) respond to the character, setting and fabric of heritage elements and landscapes;
 - (e) demonstrate material selection and detailing (including consideration of anti-graffiti measures);
 - (f) achieve a safe, secure, functional and efficient transport network for all street users;
 - (g) maintain community amenity and privacy;
 - (h) maintain local access and circulation for residents, business and road users;
 - (i) address sensitive receivers to minimise noise, vibration, electromagnetic interference, light spill and nuisance;
 - (j) minimise the loss of existing trees, maximise urban tree canopy, including street trees and soft landscaping;
 - (k) address flooding and drainage issues;
 - (l) contribute to the activation of precincts;
 - (m) maximise local connectivity and minimise barriers;
 - (n) maximise walk-in catchments and offer legible, direct pedestrian connections;
 - (o) demonstrate clear wayfinding;
 - (p) maximise user safety, crime prevention and comfort; and
 - (q) consider the Camellia Town Centre Masterplan and the Telopea Masterplan, and Westmead Alliance master planning.

The **Urban Design Requirements Report** must be submitted to the Secretary for approval, following review by the **Design Review Panel** required by **Condition E90**, including recommendations provided by the **Design Review Panel** and the way these have been addressed.

- E89 Construction of light rail stops, tracks and associated facilities must not commence before the **Urban Design Requirements Report** has been approved by the Secretary. The detailed design development of light rail stops and associated light rail infrastructure within or in proximity to Heritage listed items must be undertaken in consultation with the Heritage Council (or its delegate).

Design Review Panel

- E90 The Proponent must establish an independent **Design Review Panel** before development of the detailed design and before construction commences.
- E91 During design development of the CSSI, the **Design Review Panel** must provide advice and recommendations on the detailed design. The responsibilities of the Design Review Panel include:
- (a) review the design to assess whether it is consistent with the commitments and outcomes made in the documents listed in **Condition A1**, as amended by the terms of this approval including the **Urban Design Requirements Report** required by **Condition E87**; and
 - (b) provide advice on the application of the objectives to key design elements in relation to place making, architecture, heritage, urban and landscape design and artistic aspects of the CSSI.
- E92 The **Design Review Panel** must be chaired by the NSW Government Architect (or its nominee), and must be comprised of, where relevant, a suitably qualified, experienced and independent professional in each of the fields of:
- (a) architecture;
 - (b) urban design and place making;

- (c) landscape design;
- (d) Aboriginal cultural heritage; and
- (e) non-Aboriginal heritage.

The Chair is to invite Relevant Councils, technical experts, key stakeholders, and NSW government agencies to observe **Design Review Panel** meetings and to provide advice on local issues, context, and city outcomes. This includes the Heritage Council (or its delegate). The Proponent and its contractor(s) may be invited onto the Panel as observers only and to provide technical advice.

Observers or advisors should not be present while the Panel is deciding upon its recommendations.

The Proponent must provide independent secretarial resources to the Panel.

- E93 The **Design Review Panel** members must be nominated by the Proponent and approved by the Secretary in accordance with the timeframes in **Condition E90**.
- E94 Nomination and appointments of the **Design Review Panel** must comply with the Public Service Commission's *Appointment Standards: Boards and Committees in the NSW Public Sector* guideline.
- E95 Once the **Design Review Panel** is formed a **Design Review Panel Terms of Reference** must be developed and endorsed by all panel members and then approved by the Secretary. The Terms of Reference must be submitted to the Secretary for information and:
 - (a) establish best practice governance and protocols for the operation of the **Design Review Panel**;
 - (b) include a Code of Conduct;
 - (c) outline the agreed frequency of **Design Review Panel** meetings;
 - (d) outline secretarial functions and administration including the recording and storing of meeting agenda, minutes and actions; and
 - (e) identify cessation arrangements
- E96 The **Design Review Panel** must be operated and managed in accordance with the approved **Design Review Panel Terms of Reference** and in accordance with the NSW Government *Boards and Committees Guidelines* (Department of Premier and Cabinet, September 2015).

Lighting and CCTV

- E97 All lighting to be implemented as part of the CSSI must have regard to the location of nearby residential dwellings. Lighting impacts must be minimised to the extent possible including the use of shields to reduce light spill and annoyance to adjacent residences.
- E98 The Proponent must ensure that all external lighting associated with the operation of the CSSI (excluding light rail vehicles) is mounted, screened and directed in such a manner so as not to create nuisance to residences. The lighting must be the minimum level of illumination necessary and shall comply with *AS 4282:1997 – Control of the Obtrusive Effects of Outdoor Lighting* and relevant Australian Standards in the series *AS/NZ 1158 – Lighting for Roads and Public Spaces*.
- E99 The placement, obstruction and removal of CCTV cameras must be undertaken in consultation with the relevant public authority and Relevant Council(s).

BIODIVERSITY AND REVEGETATION

- E100 The Proponent must avoid and/or minimise the removal of native vegetation or other bushland that provides habitat for native fauna with the objective of reducing impacts to threatened species, populations and ecological communities. Impacted vegetation must be rehabilitated in proximity to the area of disturbance with a diversity of endemic species (in the first instance) and locally native tree, shrub and groundcover species to the greatest extent practicable or offset in accordance with the Proponent's Biodiversity Offset Strategy and the Flora and Fauna Management Sub-Plan required by Condition C3, in consultation with OEH, DPI Fisheries, and the Biodiversity Conservation Trust.
- E101 During construction near the Parramatta River and Cumberland Hospital East and West, the Proponent must engage a suitably qualified and experienced fauna specialist to monitor the behaviour of the Grey-headed Flying-fox camp that resides in Parramatta Park in accordance with the Grey-headed Flying Fox Monitoring Program required by **Condition C9** and implement mitigation measures, as required to minimise potential impacts to the camp. Monitoring must commence at least 12 months before the commencement of construction within 300 metres, unless otherwise agreed with the Secretary, of the camp to establish baseline behaviour. Monitoring must be undertaken regularly during construction (in consultation with OEH) with the results compiled in a monitoring report submitted to OEH each month. Monitoring should include species present, numbers, a map of the extent of the camp, breeding status, and condition of animals. If monitoring suggests that construction associated with the CSSI is changing the behaviour of the camp, the Proponent must consult with OEH to determine whether additional mitigation measures are required.

Streetscape Trees

- E102 The Proponent must commission a suitably qualified and experienced Arborist with a minimum AQF Level 5 qualification in Arboriculture, that is independent of the design and construction personnel for the duration of construction. The Arborist must be approved by the Secretary before works commence and commissioned for the duration of construction.
- E103 The Arborist must:
- be the principal point of advice in relation to the assessment and management of CSSI impacts on trees;
 - prepare a **Tree Register** of all trees within the CSSI footprint (either for the entire CSSI or separate areas where tree removal and/or pruning is proposed) before the removal of any trees;
 - identify those trees within the footprint that must be removed for construction to proceed or for CSSI operations; and
 - identify those trees where their fate is uncertain and may be retained or may be pruned (either for construction or for ongoing maintenance during operation).
- E104 The **Tree Register** must include:
- the georeferenced location of each tree;
 - those attributes as defined in AS 4970-2009 Protection of trees on development sites;
 - the tree retention value;
 - the outcomes of a visual assessment of the condition of the tree;
 - where a tree requires removal, whether, in the opinion of the Arborist, it can be successfully transplanted;
 - the extent of the proposed impact (complete removal or extent of pruning);
 - measures for the management, protection and monitoring of compensatory vegetation, for a minimum of two years from being planted; and
 - timing and responsibilities for the implementation of compensatory vegetation.
- E105 For those trees identified as requiring removal in the **Tree Register**, the Proponent must demonstrate consideration of options to avoid or minimise impacts on trees through the

detailed design and construction planning process. The options considered must include, but not be limited to:

- (a) consideration of operational requirements with existing tree locations;
- (b) consideration of the health of each tree, including its vigour and likely ability to survive *in situ* pruning or transplanting;
- (c) review of the construction methodology and layout to identify any options to avoid or minimise impacts on trees;
- (d) considering opportunities to narrow/move footpaths;
- (e) modification of the design to reduce impact to the tree (e.g. use of porous pavement);
- (f) reduction in the standard offsets required for underground services; and
- (g) where fencing, other ancillary infrastructure or services affect tree retention, relocation or alternative construction methods are considered to reduce impacts (e.g. from strip footings to pier footings for posts).

E106 The **Tree Register** and any evidence required by **Condition E105** must be submitted to the Secretary before the removal, damage or pruning of a tree for the purposes of the CSSI. The recommendations of the Arborist must be outlined in the Tree Register and implemented by the Proponent, unless otherwise agreed by the Secretary.

Tree Offset Package

E107 The Proponent must prepare and implement a **Tree Offset Package** for the CSSI in consultation with the independent Arborist required by **Condition E102**, and Relevant Council(s). The Package must consider the objectives and opportunities identified in *Sydney Green Grid West Central District* (Department of Planning and Environment, 2017), *Greener Places* (NSW Government Architect, 2017), and *Parramatta Ways (Implementing Sydney's Green Grid)* (City of Parramatta, 2017). The package must:

- (a) identify how impacts on trees and vegetation will be mitigated, managed, and compensated;
- (b) ensure that where trees are removed they are replaced at the following ratios regardless of their value, near the impact or, where this is not practicable, within other areas of the LGA or surrounding LGAs, in consultation with the relevant authority(s):
 - i) large trees (DBH greater than 60cm) – plant minimum of eight trees;
 - ii) medium trees (DBH greater than 15 cm, but less than 60 cm) – plant minimum of four trees; and
 - iii) small young trees (DBH less than 15cm) – plant minimum of two trees.
- (c) ensure a mix of species and a range of mature heights to provide visual diversity and benefits, in consultation with the Relevant Council(s);
- (d) street tree plantings are to have a minimum pot size of:
 - i) 200 litres in the Parramatta CBD precinct; and
 - ii) 75 litres in other streets;
- (e) tree planting in parks, open space, bushland, and within the Carlingford Line corridor, should be sized to suit the location, species and planting style, in consultation with the relevant authority(s); and
- (f) ensure at least 80% offset works must be completed before CSSI operations commence.

Where the requirements of this condition cannot be met, the Proponent must provide documented evidence demonstrating how the matters in (a) to (f) were considered and provide information and justification for an alternative offset option for the Secretary's approval.

Operational Maintenance

- E108 The ongoing maintenance and operation costs of urban design and landscaping items (including tree offsets) and works implemented as part of this approval remain the Proponent's responsibility until satisfactory arrangements have been put in place for transfer to the relevant authority. Before the transfer, the Proponent must maintain items and works to the design standards established by the **Urban Design Requirements Report**, and the **Tree Offset Package**.

SOCIO-ECONOMIC, LAND USE AND PROPERTY

- E109 The Proponent must design and construct the CSSI with the objective of minimising impacts to, and interference with third party property and infrastructure, and that such infrastructure and property is protected during construction.

Business Activation Plan

- E110 The Proponent must prepare and implement a **Business Activation Plan** to manage impacts to businesses on streets affected by construction of the CSSI, including those where access is altered. The Plan must be prepared before construction and must include but not necessarily be limited to:
- (a) measures to address amenity, vehicular and pedestrian access during business hours and visibility of the business appropriate to its reliance on such, and other reasonable matters raised in consultation with affected business;
 - (b) Business Management Strategies for each stage of construction (and/or activity), identifying affected businesses and associated management strategies, including the employment of place managers and specific measures to assist small business owners adversely impacted by the construction of the CSSI;
 - (c) Business Support Services Program to assist small business owners adversely impacted by construction of the CSSI. The Program must assist local businesses to develop proactive business strategies including:
 - i) marketing and promotion;
 - ii) business diversification and business planning; and
 - iii) engagement of specialists to run workshops both before and during construction.
 - (d) establishment of business reference groups to provide, but not be limited to, the following services:
 - i) provide information on the CSSI;
 - ii) discuss mitigation measures to minimise impacts; and
 - iii) consult on out of hours works ('Eat Street' only) where required by **Condition Error**.
Reference source not found.
 - (e) a monitoring program to assess the effectiveness of the measures including business feedback against which effectiveness of the measures will be measured; and
 - (f) provision for reporting of monitoring results to the Secretary, as part of the **Compliance Monitoring and Reporting Program** required in **Condition A30**.

WATER QUALITY AND FLOODING

Water Quality

- E111 Before undertaking any works and during maintenance or construction activities, erosion and sediment controls must be implemented and maintained to prevent water pollution consistent with LandCom's *Managing Urban Stormwater* series (The Blue Book).
- E112 The CSSI must be designed, constructed and operated so as to maintain the *NSW Water Quality Objectives* where they are being achieved as at the date of this approval, and contribute towards achievement of the *NSW Water Quality Objectives* over time where they

are not being achieved as at the date of this approval, unless an EPL in force in respect of the CSSI contains different requirements in relation to the *NSW Water Quality Objectives*, in which case those requirements must be complied with.

Flooding

E113 A Flood Management Plan must be prepared and implemented in respect of the flood prone land and overland flow paths for the waterways and catchments in the CSSI's vicinity. The Plan must be prepared during detailed design to identify the potential adverse impacts of the operation of the CSSI on existing flooding characteristics for a full range of flood events up to and including the probable maximum flood (PMF). The Plan must include but not be limited to:

- (a) the results of further modelling to identify the potential impacts of the CSSI on flood behaviour including consideration of increased rainfall intensity and sea level rise under climate change conditions, consistent with the requirements of the *Floodplain Development Manual (2005)* and *Practical Consideration of Climate Change (2007)*;
- (b) the identification of design measures that would be implemented to manage the impacts of flooding on the operation of the CSSI and not worsen the existing flood characteristics. Design of mitigation measures must consider the full range of design events up to the 1% AEP;
- (c) demonstration of constructability of proposed management measures;
- (d) sensitivity analyses to assess the risk that additional properties or infrastructure could be subject to changes in existing flood behaviour as a result of the CSSI (i.e. beyond those identified as being impacted in point a) above), for design events up to and including the 1% AEP flood event, namely:
 - i) assessment of 100% blockage of pits for the pre-development (existing) and post-development (with the CSSI) scenarios;
 - ii) assessment of the impact of local and regional coincident flood peaks; and
 - iii) assessment of cumulative impacts of the CSSI and other state significant developments and/or infrastructure in the CBD being constructed or that have received approval (and for which sufficient design detail is available at the time).
- (e) the identification of measures to be implemented to minimise scour and dissipate energy at locations where flood velocities are predicted to increase as a result of the CSSI;
- (f) identification of stormwater drainage system upgrades including those upgrades considered as mitigation measures; and
- (g) identification of the timing and maintenance responsibility of any necessary works.

Not worsen existing flooding characteristics within and in the vicinity of the CSSI means the following:

- (a) a material increase in the duration of inundation for all design events up to and including a 1% AEP flood event;
- (b) an increase in flood levels of more than 10 mm at properties for all design events up to and including the 1% AEP flood event; and
- (c) no increase in high hazard flooding as defined in Appendix L of the NSW Government's *Floodplain Development Manual (2005)*.

The **Flood Management Plan** must be prepared by a suitably qualified and experienced person in consultation with directly affected landowners, Sydney Water, OEH, NSW State Emergency Services and the Relevant Council(s). The Plan must be independently peer reviewed by a suitably qualified and experienced hydrological engineer to confirm that the management of and response to flood events is appropriate.

The Plan and results of the peer review must be submitted to the Secretary, for information, and Relevant Council(s) at each design stage associated with the CSSI where there is potential to cause adverse flooding impacts.

- E114 An **Operational Flood Management Plan** must be prepared and implemented before the commencement of CSSI operations. The Operational Flood Management Plan must identify measures to be implemented during the operational phase to minimise risks and maximise safety during flooding events, particularly for passengers and staff. The **Operational Flood Management Plan** must be prepared by a suitably qualified and experienced person in consultation with OEH, NSW State Emergency Service and the Relevant Council(s). It should take into account the outcomes of the sensitivity analyses undertaken in the **Flood Management Plan** required by **Condition E113**.
- E115 All relevant flooding information must be provided to the Relevant Council(s), DPE (Urban Renewal), OEH and the NSW State Emergency Service, to assist in the preparation of any new or necessary update(s) to the relevant plans and documents relating to flooding, to reflect changes in flooding levels, flows and characteristics as a result of the CSSI. The Council, OEH and SES must be notified in writing that the information is available no later than one month following the completion of construction. Information requested by the Council, OEH or the SES must be provided no later than six months following the completion of construction or within another timeframe agreed with the relevant Council, OEH and the SES.

ELECTROMAGNETIC INTERFERENCE (EMI)

- E116 Before the commencement of detailed design of light rail infrastructure, the Proponent must identify EMI susceptible devices that may potentially be affected by CSSI operations and establish baseline electromagnetic field levels at the relevant EMI susceptible devices near the CSSI. Targeted consultation must be carried out with the owners/operators of the identified EMI susceptible devices. The outcomes of these consultations must be documented as part of the **Electromagnetic Management Plan** required by **Condition E117**.
- E117 Before commencement of CSSI operations, the Proponent must prepare an **Electromagnetic Management Plan** in consultation with NSW Health and other owner/operators of potentially EMI susceptible devices and submit it to the Secretary for information. The Plan must identify how operational electromagnetic fields attributable to the CSSI could affect the operation of NSW Health or other existing EMI susceptible devices near the CSSI. The Plan must include, but not be limited to:
- identification of existing EMI susceptible devices;
 - established baseline electromagnetic field levels at existing EMI susceptible devices;
 - predicted operational electromagnetic field levels at existing EMI susceptible devices potentially affected by CSSI operations;
 - identification of electromagnetic field reduction strategies, technologies, design and operational measures that will be implemented to manage potential impacts;
 - identification of appropriate limits/criteria to minimise operational interference to existing EMI susceptible devices within the operational tolerance of the device;
 - internal audits of compliance of electromagnetic field levels; and
 - details of an electromagnetic field monitoring program to be completed within 18 months from commencement of CSSI operations, unless otherwise agreed with the owners/operators of the EMI susceptible device(s).

CONTAMINATION

- E118 Notification must be provided and, where relevant, approvals must be sought directly from the EPA before commencement of any works which will intersect or disturb the surface of sites which are regulated by the EPA under the *Contaminated Land Management Act 1997*.
- E119 Before commencement of any activities that would result in the disturbance of land and/or soil in Areas of Environmental Interest (AEI) identified as having a high risk of contamination, or identified as medium risk subject to further desktop assessment as specified in the documents listed in **Condition A1**, a **Site Contamination Report** must be prepared by a suitably qualified person(s) in accordance with the requirements of the *Contaminated Land Management Act 1997* and associated guidelines. The **Site Contamination Report** must outline the potential contamination risks from the AEIs to human health and receiving waterways and detail, where relevant, whether the land is suitable (for the intended land use) or can be made suitable through remediation. For AEIs where there is insufficient information and data available to draw such conclusions, the **Site Contamination Report** must also detail the outcomes of Phase 2 site contamination investigations within those AEIs.
- E120 For those AEIs where a **Site Contamination Report** is to be prepared in accordance with **Condition E119**, where the investigations identify that the site is suitable for the intended operations and that there is no need for a specific remediation strategy, measures to identify, handle and manage potential contaminated soils, materials and groundwater must be identified in the **Site Contamination Report** and incorporated into the **CEMP** or relevant sub-plan.
- E121 For those AEIs where a **Site Contamination Report** concludes the site can be made suitable for its intended land use subject to remediation, the **Site Contamination Report** must include a **Remediation Action Plan** to address disturbed areas, and how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil or groundwater.
- E122 For those AEIs where remediation is required, the **Site Contamination Report** and **Remediation Action Plan** must be accompanied by a **Site Audit Statement(s)**, prepared by a NSW EPA Accredited Site Auditor under the *Contaminated Land Management Act 1997*, verifying that the disturbed area has been or can be remediated to a standard consistent with the intended land use. Where land is remediated, a final **Site Audit Statement(s)** must be prepared by an accredited Site Auditor, certifying that the contaminated and disturbed areas have been remediated to a standard consistent with the intended land use.
- Note: Terms used in Condition E121 and E122 have the same meaning as in the Contaminated Land Management Act 1997.*
- E123 For those AEIs where remediation is required, the land must not be used for the purpose approved under the terms of this approval until a **Site Audit Statement** determines that the land is suitable for that purpose and any conditions on the **Site Audit Statement** have been complied with.
- E124 A copy of the final **Site Audit Statement** must be submitted to the Secretary and Relevant Council no later than one month before the commencement of CSSI operations.
- E125 An **Unexpected Contaminated Land and Asbestos Finds Procedure** must be prepared and must be implemented should unexpected contaminated land or asbestos be excavated or otherwise discovered during construction. This can be provided as part of the **CEMP** or relevant sub-plan.
- E126 The **Unexpected Contaminated Land and Asbestos Finds Procedure** must be implemented throughout construction.

WASTE MANAGEMENT

- E127 Waste generated during construction and operation must be managed in accordance with the following priorities:
- waste generation must be avoided and where avoidance is not reasonably practicable, waste generation must be reduced;
 - where avoiding or reducing waste is not possible, waste must be re-used, recycled, or recovered; and
 - where re-using, recycling or recovering waste is not possible, waste must be treated or disposed of.
- E128 The importation of waste and the storage, treatment, processing, reprocessing or disposal of such waste must comply with the conditions of a current EPL for the CSSI (if applicable), or be done in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, as the case may be.
- E129 Waste must only be exported to a site licensed by the EPA for the storage, treatment, processing, reprocessing or disposal of the subject waste, or in accordance with a Resource Recovery Exemption or Order issued under the *Protection of the Environment Operations (Waste) Regulation 2014*, or to any other place that can lawfully accept such waste. Disposal of waste at these facilities must include GPS tracking of waste vehicles, audits of waste facility receipts and cross verification with the facility. All asbestos waste over 10m³ must be tracked through EPA's WasteLocate service.
- E130 All waste must be classified in accordance with the EPA's Waste Classification Guidelines, with appropriate records and disposal dockets retained for audit purposes.
- E131 Asbestos or asbestos-contaminated materials be uncovered during demolition and construction activities of the CSSI must be strictly managed in accordance with the requirements under the *Protection of the Environment Operations (Waste) Regulation 2014* and any guidelines or requirements in force at the date of this approval and issued by the EPA in relation to those materials.

HAZARDS

- E132 At least one month before the commencement of construction of any hazardous works or works adjacent to hazardous infrastructure, the Proponent must prepare and submit for the approval of the Secretary, the following:
- A **Final Hazard Analysis** of the development consistent with the Department's *Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis'*. The study must be prepared based on the final detailed design of the development and include:
 - a quantitative risk assessment;
 - details of all safeguards to be implemented, in particular those at the locations of pipeline crossing;
 - findings and recommendations from the Safety Management Study undertaken in consultation with the relevant dangerous goods pipeline operators and pipeline licensees;
 - demonstrate that the risks from the development satisfy relevant NSW Risk Criteria as set out in HIPAP 10.
 - A **Construction Safety Study**, prepared consistent with *Hazardous Industry Planning Advisory Paper No. 7 'Construction Safety'*. The **Construction Safety Study** must be prepared in consultation with the relevant dangerous goods pipeline operators and licensees and include details of the proposed safety measures to ensure the relevant underground pipelines will not be impacted by the construction of the development.

- E133 One month before the commencement of CSSI operations, the Proponent must submit to the Secretary for information, a **Pre-Startup Compliance Report** detailing compliance with **Condition E132**, including:
- (a) dates of study/plan/system submission, approval, commencement of construction and commissioning;
 - (b) actions taken or proposed, to implement recommendations made in the studies/plans/systems; and
 - (c) responses to any requirement imposed by the Secretary.
- E134 Three (3) months after the commencement of CSSI operations, the Proponent must submit to the Secretary, for information, a **Post-Startup Compliance Report**, which reports on the implementation of all recommendations raised in the **Construction Safety Study** required under **Condition E132**.

INFRASTRUCTURE PROPERTY AND UTILITIES

- E135 The Proponent must identify utilities, services and other infrastructure and property potentially affected by construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the CSSI must be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The Proponent must ensure that any disruption to any service is minimised and shall be responsible for advising impact to service recipients before any planned disruption of service. The cost of any such arrangements must be borne by the Proponent, unless otherwise agreed with the utility/service provider.

SUSTAINABILITY

- E136 A **Sustainability Strategy** must be prepared to achieve a minimum project score of 65 for 'Design' and 'As built' rating under the Infrastructure Sustainability Council of Australia infrastructure rating tool.
- E137 The **Sustainability Strategy** must be submitted to the Secretary, for information, within six months of the date of this approval, or within another timeframe agreed with the Secretary, and must be implemented throughout the design, construction and operation of the CSSI.
- E138 Opportunities to reduce operational greenhouse gas emissions must be investigated during detailed design. The sustainability initiatives identified in the documents identified in **Condition A1** must be regularly reviewed, updated and implemented throughout the design development and construction, and annually during operation of the CSSI.

Appendix A – Flexibility Provisions

Project Element	Flexibility Provisions
Stop length	Minor changes (+/- 10 metres) to a stop length permitted where determined to have no more than a minor impact.
Stop arrangement (side or island platform)	Changes to stop arrangement (side or island platform) permitted where determined to have no more than a minor impact.
Stop location	Minor relocation (+/- 10 metres) to stop location permitted where determined to have no more than a minor impact and the new location does not have a material impact on new receivers compared with the impact(s) assessed in the documents listed in Condition A1 .
Utility and lighting works	These works are permitted within 1 km of the project footprint where determined by the ER to have a minor impact.
Minor road network changes including off-corridor works and public transport network changes, such as line marking, car parking adjustments, signal changes, footpath or kerb adjustments and bus stops.	<p>Minor changes are permitted to those activities identified in Sections 5.8 and 5.9 of the EIS.</p> <p>Minor road network changes in the vicinity of the CSSI footprint are permitted to address potential traffic impacts associated with light rail.</p> <p>In order to be considered minor, these changes must meet the following parameters:</p> <ul style="list-style-type: none"> • Environmental impacts are manageable through the implementation of environmental measures as detailed in the CEMP and/or the OEMP as relevant. • No acquisition (temporary or permanent) of property where a negotiated purchase from the property owner is not possible. • Does not involve the removal of a tree or other vegetation which is listed as a threatened species or ecological community in the <i>Biodiversity Conservation Act 2016</i> and/or <i>Environment Protection and Biodiversity Conservation Act 1999</i>; • No direct impact and no more than a minor indirect impact on a listed heritage item. • Access arrangements are provided for any impacted road intersection and, where relevant, for property access in consultation with the affected party(ies). • Does not result in operational impacts that would have more than a minor adverse traffic impact (including on intersection performance, road way capacity, bus operations and active transport network) as assessed in the documents listed in Condition A1.

Exhibit E – Not Used

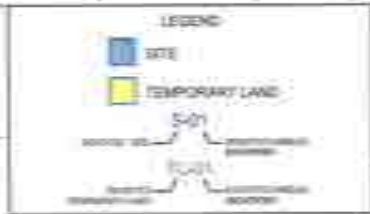
Exhibit F – Utilities Model

[Redacted Commercial in Confidence provisions of a Contract]

Exhibit G – List of Warranties Required from Subcontractors

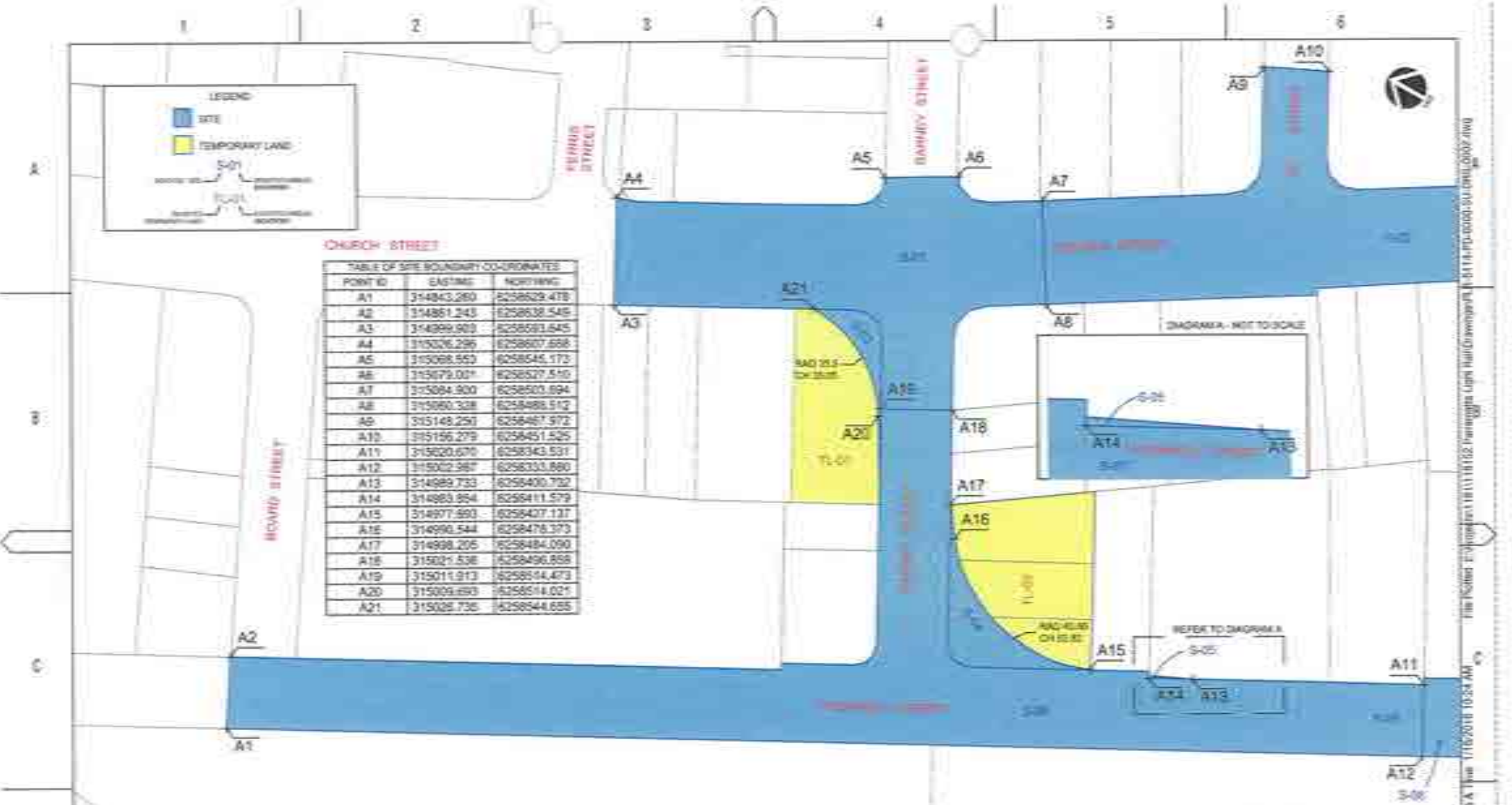
None.

Exhibit H – Site Drawings



CHURCH STREET

POINT ID	EASTING	NORTHING
A1	314843.260	6258629.478
A2	314881.243	6258638.549
A3	314999.900	6258683.645
A4	315026.296	6258607.688
A5	315068.550	6258645.173
A6	315079.001	6258527.510
A7	315084.900	6258500.894
A8	315060.308	6258488.512
A9	315148.290	6258467.972
A10	315156.279	6258451.525
A11	315020.670	6258343.531
A12	315002.987	6258300.880
A13	314989.733	6258400.792
A14	314983.854	6258411.579
A15	314977.893	6258407.137
A16	314990.544	6258478.373
A17	314998.205	6258484.090
A18	315021.536	6258496.898
A19	315011.913	6258514.473
A20	315009.690	6258514.021
A21	315025.736	6258544.685



NO.	DESCRIPTION	DESIGNER SIGN/DATE	VERIFIED SIGN/DATE	APPROVED SIGN/DATE
06	REFER TO REVISION TABLE SHEET 11	NA	9-02-2018	9-02-2018
05	REFER TO REVISION TABLE SHEET 13	NA	15-01-2018	15-01-2018
04	REFER TO REVISION TABLE SHEET 13	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 13	NA	08-12-2017	08-12-2017

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Transport for NSW

Caroline

DRAWN: [REDACTED] 15-01-2018
 DESIGNER: NA
 DRG CHECK: [REDACTED] 15-01-2018
 DESIGN CHECK: NA
 APPROVED: [REDACTED] 15-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No. - SHEET: 04 OF 13 A3
 STATUS: -
 DRG No. PLS-011410-0000-SU-DRG-0000
 EDMS No. [REDACTED]

File Name: P:\Projects\181110_P2_Parramatta Light Rail\Drawings\PLS-011410-0000-SU-DRG-0000.DWG
 Plot Date: 1/10/2018 10:24 AM
 Plot User: [REDACTED]

1 2 3 4 5 6

LEGEND

- SITE
- TEMPORARY LAND

TABLE OF SITE BOUNDARY CO-ORDINATES		
POINT ID	EASTING	NORTHING
B1	315182.626	6258371.728
B2	315182.355	6258354.132
B3	315194.910	6258325.709
B4	315291.310	6258228.924
B5	315300.527	6258211.667
B6	315283.266	6258169.325
B7	315257.130	6258156.538
B8	315225.709	6258172.422
B9	315216.468	6258190.370
B10	315170.310	6258512.424
B11	315113.658	6258311.688
B12	315104.010	6258329.267

A
B
C
D



05	REFER TO REVISION TABLE SHEET 13	NA	9-02-2018	9-02-2018
05	REFER TO REVISION TABLE SHEET 13	NA	16-01-2018	16-01-2018
04	REFER TO REVISION TABLE SHEET 13	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 13	NA	08-12-2017	08-12-2017
AMC	DESCRIPTION	DESIGNER SIGN/DATE	VERIFIED SIGN/DATE	APPROVED SIGN/DATE
COORD: MGA	HEIGHT DATUM: AHD	SCALE: 1:2000		

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DRAWN: [REDACTED] 15-01-2018
 DESIGNED: NA
 DRG CHECK: [REDACTED] 16-01-2018
 DESIGN CHECK NA
 APPROVED: [REDACTED] 16-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No: - SHEET: 05 OF 13 | A3
 STATUS: -
 DRG No: PLS114-PD-0008-SU-DRG-0002 | EDMS No:

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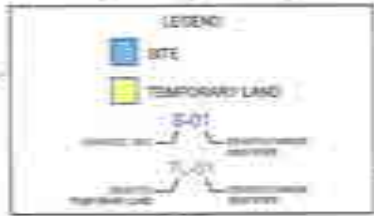


TABLE OF SITE BOUNDARY CO-ORDINATES

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D01	315186.167	6257945.621
D02	315207.519	6257873.747
D03	315204.301	6257853.746
D04	315158.300	6257811.087
D05	315173.733	6257782.899
D06	315169.541	6257744.836
D07	315137.551	6257655.200
D08	315133.520	6257637.307
D09	315081.148	6257644.771
D10	315085.325	6257662.653
D11	315136.903	6257815.083
D12	315114.147	6257869.128
D13	315117.251	6257887.152
D14	315143.883	6257945.439



NO	DESCRIPTION	DESIGNER SIGN DATE	VERIFIER SIGN DATE	APPROVED SIGN DATE
06	REFER TO REVISION TABLE SHEET 13	NA	9-02-2018	9-02-2018
05	REFER TO REVISION TABLE SHEET 13	NA	16-01-2018	16-01-2018
04	REFER TO REVISION TABLE SHEET 13	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 13	NA	08-12-2017	08-12-2017

COORD: MSA HEIGHT DATUM: AHD SCALE: 1:2000

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NSW Transport for NSW

Cardno
Sustainable Infrastructure

DRAWN: [REDACTED] 15-01-2018
 DESIGNED: NA
 DRG CHECK: [REDACTED] 15-01-2018
 DESIGN CHECK: NA
 APPROVED: [REDACTED] 15-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

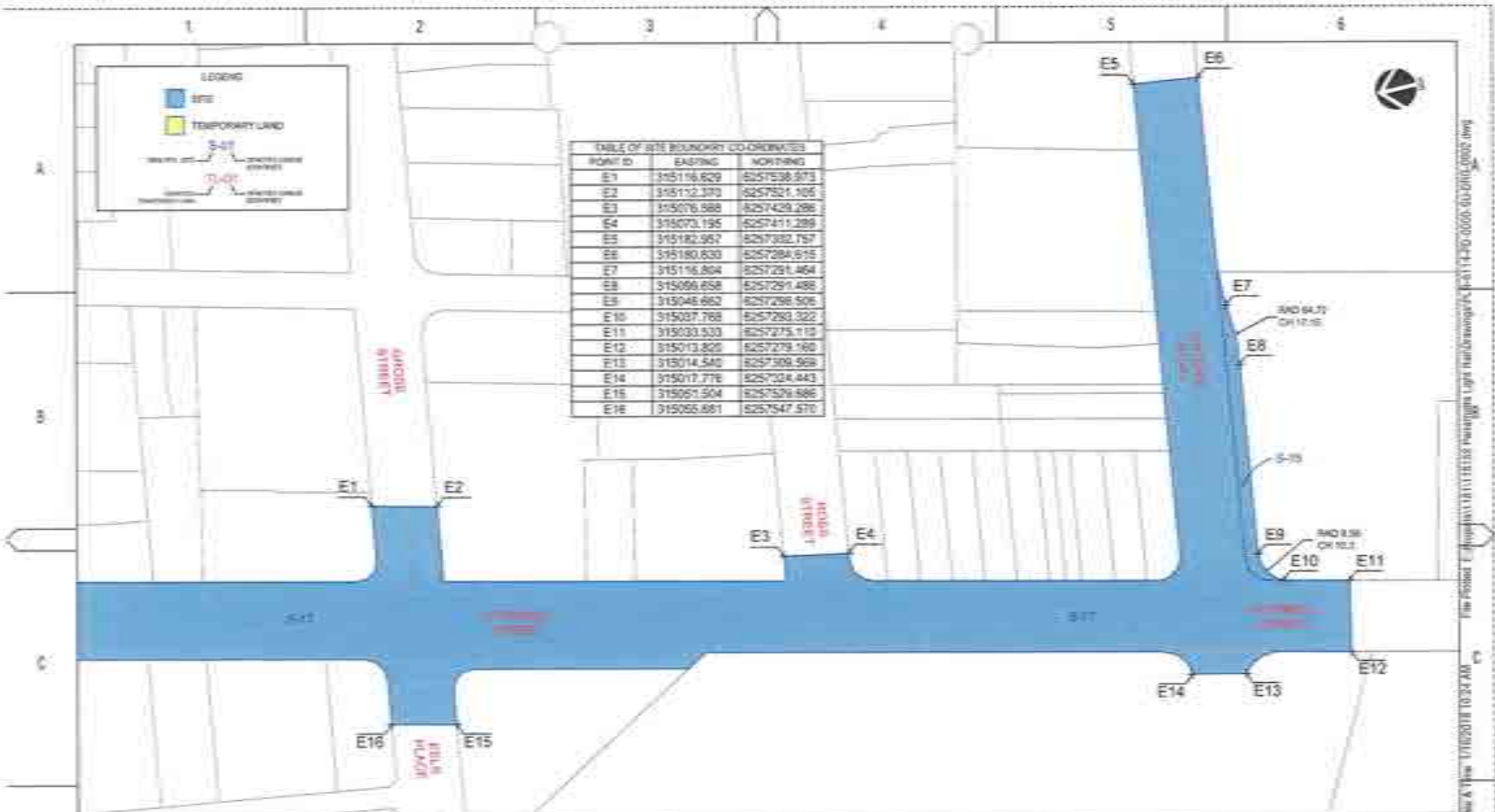
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STATUS: -

DRG No: PLS-0114-00-0000-SU-DRG-0000 6 EGM No:

Drawn by: [REDACTED]

File Name: C:\ppl\1111811812 Parramatta Light Rail\Drawings\PL-0114-00-0000-SU-DRG-0000.dwg
 File Date & Time: 17/02/2018 10:24 AM
 Plotted by: [REDACTED]



POINT ID	EASTING	NORTHING
E1	315116.629	6257536.973
E2	315112.370	6257521.105
E3	315076.988	6257429.296
E4	315073.195	6257411.289
E5	315182.952	6257382.757
E6	315180.630	6257284.615
E7	315116.804	6257291.464
E8	315096.658	6257291.486
E9	315046.662	6257296.506
E10	315037.768	6257293.322
E11	315030.530	6257275.119
E12	315013.820	6257279.160
E13	315014.540	6257169.969
E14	315017.776	6257324.443
E15	315051.904	6257329.886
E16	315065.681	6257547.570

NO	DESCRIPTION	DESIGNER	VERIFIED	APPROVED
NO	DESCRIPTION	DATE	DATE	DATE
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05	REFER TO REVISION TABLE SHEET 13	NA	16-01-2018	16-01-2018
04	REFER TO REVISION TABLE SHEET 13	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 13	NA	08-12-2017	08-12-2017
MJD	DESCRIPTION	DESIGNER	VERIFIED	APPROVED
COORD: MSA	HEIGHT DATUM: AHD	SCALE: 1:2000		

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NSW Transport for NSW

Cardno Survey Services
Toll-free 1800 737 737

DRAWN: [REDACTED] 16-01-2018
 DESIGNER: NA
 DRG CHECK: [REDACTED] 16-01-2018
 DESIGN CHECK: NA
 APPROVED: [REDACTED] 16-01-2018

PARRAMATTA

PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No: - SHEET: 08 OF 13 A3
 STATUS: -
 DRG No: PLS-5114-P0-0000-S0-DRG-0002 6
 EDMS No:

Project by [REDACTED]
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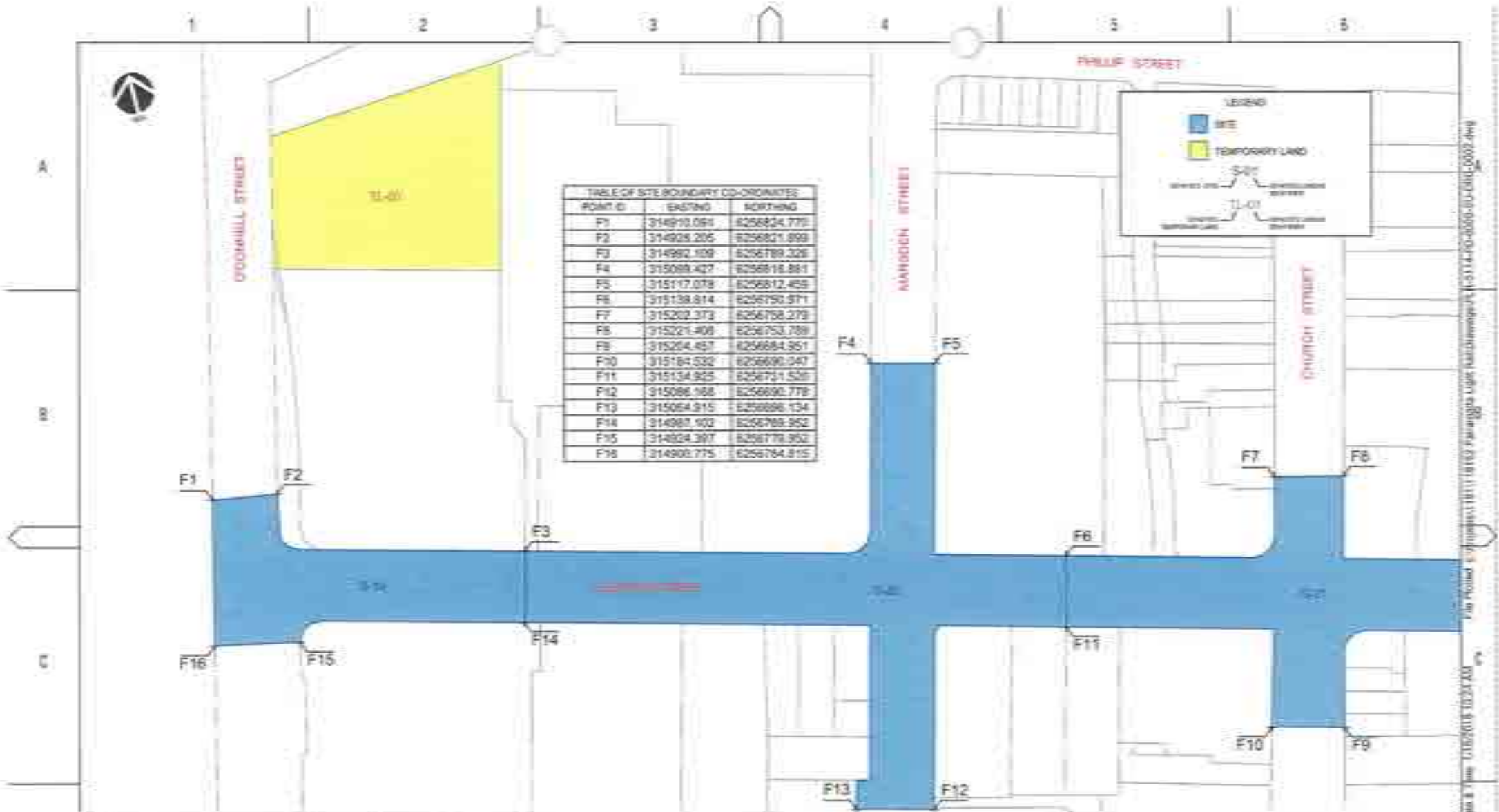


TABLE OF SITE BOUNDARY CO-ORDINATES		
POINT ID	EASTING	NORTHING
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F2	314928.205	6256821.999
F3	314992.109	6256789.325
F4	315089.427	6256818.881
F5	315117.078	6256812.458
F6	315138.814	6256750.971
F7	315202.373	6256758.279
F8	315221.408	6256753.788
F9	315294.457	6256684.351
F10	315184.532	6256690.047
F11	315134.925	6256721.520
F12	315086.168	6256690.778
F13	315064.915	6256696.134
F14	314987.102	6256769.952
F15	314924.397	6256778.952
F16	314908.775	6256764.815

NO	DESCRIPTION	DESIGNED SIGN DATE	VERIFIED SIGN DATE	APPROVED SIGN DATE
06	REFER TO REVISION TABLE SHEET 13	NA	9-02-2018	9-02-2018
05	REFER TO REVISION TABLE SHEET 13	NA	15-01-2018	15-01-2018
04	REFER TO REVISION TABLE SHEET 13	NA	15-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 13	NA	08-12-2017	08-12-2017

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Transport for NSW
 Carrizo
 DRAWN: [REDACTED] 15-01-2018
 DESIGNED: NA
 DRG CHECK: [REDACTED] 15-01-2018
 DESIGN CHECK: NA
 APPROVED: [REDACTED] 15-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No: - SHEET: 09 OF 13 | A3
 STATUS: -
 DRG No: PRR-5114-PL-0000-SU-DRG-0002 | 6
 SCHE No:

Project No: PRR-5114-PL-0000-SU-DRG-0002.dwg
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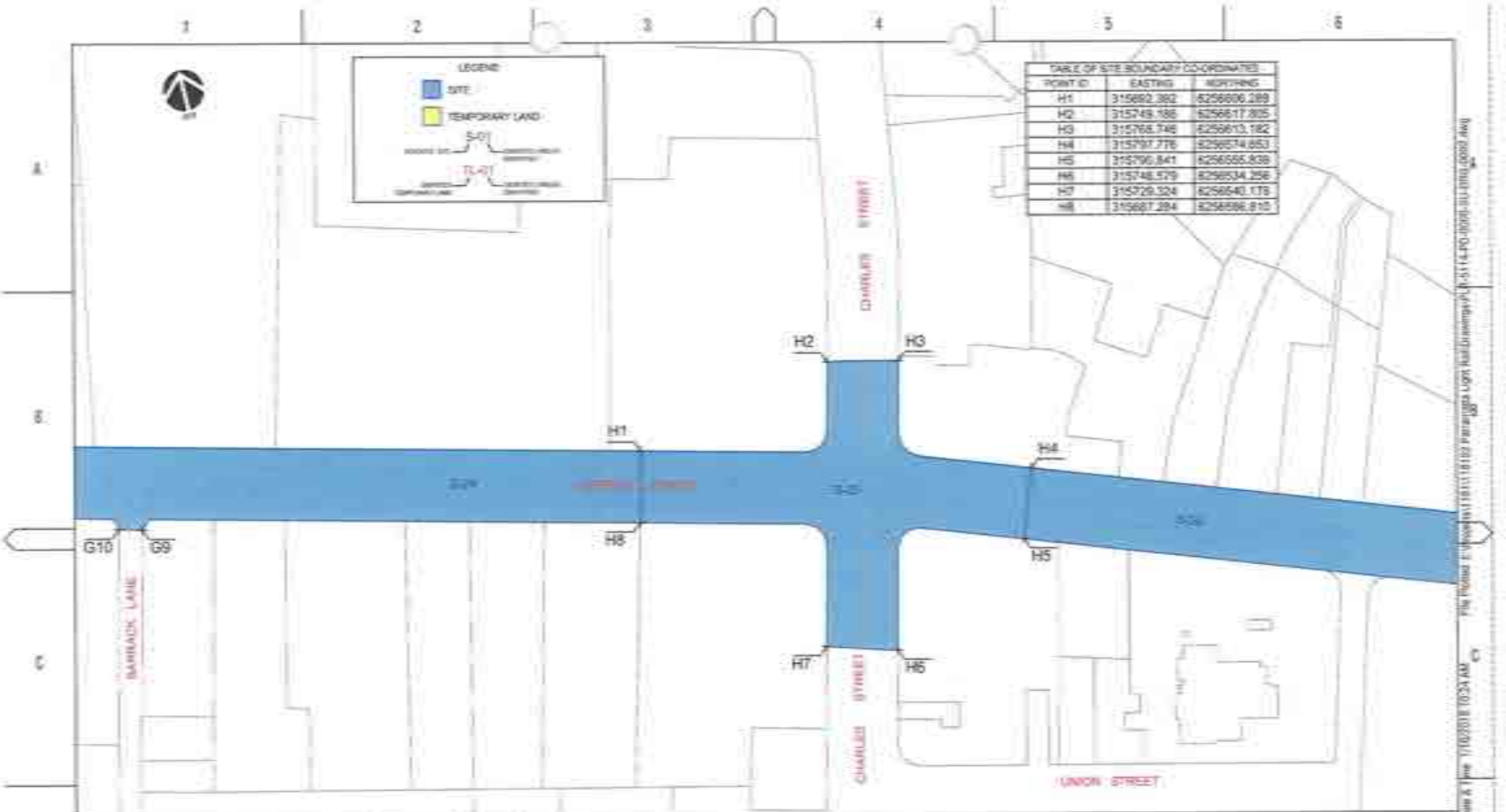
LEGEND

- SITE
- TEMPORARY LAND

5.0%
 7.5%
 10.0%

TABLE OF SITE BOUNDARY COORDINATES

POINT ID	EASTING	NORTHING
H1	315662.392	6256606.289
H2	315749.186	6256617.805
H3	315766.746	6256613.182
H4	315797.776	6256574.653
H5	315796.841	6256555.939
H6	315748.579	6256534.256
H7	315729.324	6256540.178
H8	315667.294	6256586.810



NO	DESCRIPTION	DESIGNER	VERIFIED	APPROVED
NO	DATE	NO	DATE	DATE
06	REFER TO REVISION TABLE SHEET L3	NA	19-02-2018	19-02-2018
05	REFER TO REVISION TABLE SHEET L3	NA	16-01-2018	16-01-2018
04	REFER TO REVISION TABLE SHEET L3	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET L3	NA	08-12-2017	08-12-2017

CODE: MGA HEIGHT DATUM: AHD SCALE: 1:2000

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Transport for NSW
Carahero
 Core (R&A) Pty Ltd

DRAWN: [REDACTED] 16-01-2018
 DESIGNED: NA
 DRG CHECK: [REDACTED] 16-01-2018
 DESIGN CHECK: MF
 APPROVED: [REDACTED] 16-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No: - SHEET: 11 OF 13 A3
 STATUS: -
 DRG No: PLS-5114-PS-0000-SU-DRG-0002 E ERMS No:

Plot Date & Time: 17/02/2018 10:34 AM File Path: C:\Users\1111111111\Documents\Parramatta Light Rail Drawings\PLR-5114-PS-0000-SU-DRG-0002.dwg

1 2 3 4 5 6



LEGEND

- SITE
- TEMPORARY LAND

5-01
 5-02
 5-03
 5-04
 5-05
 5-06
 5-07
 5-08

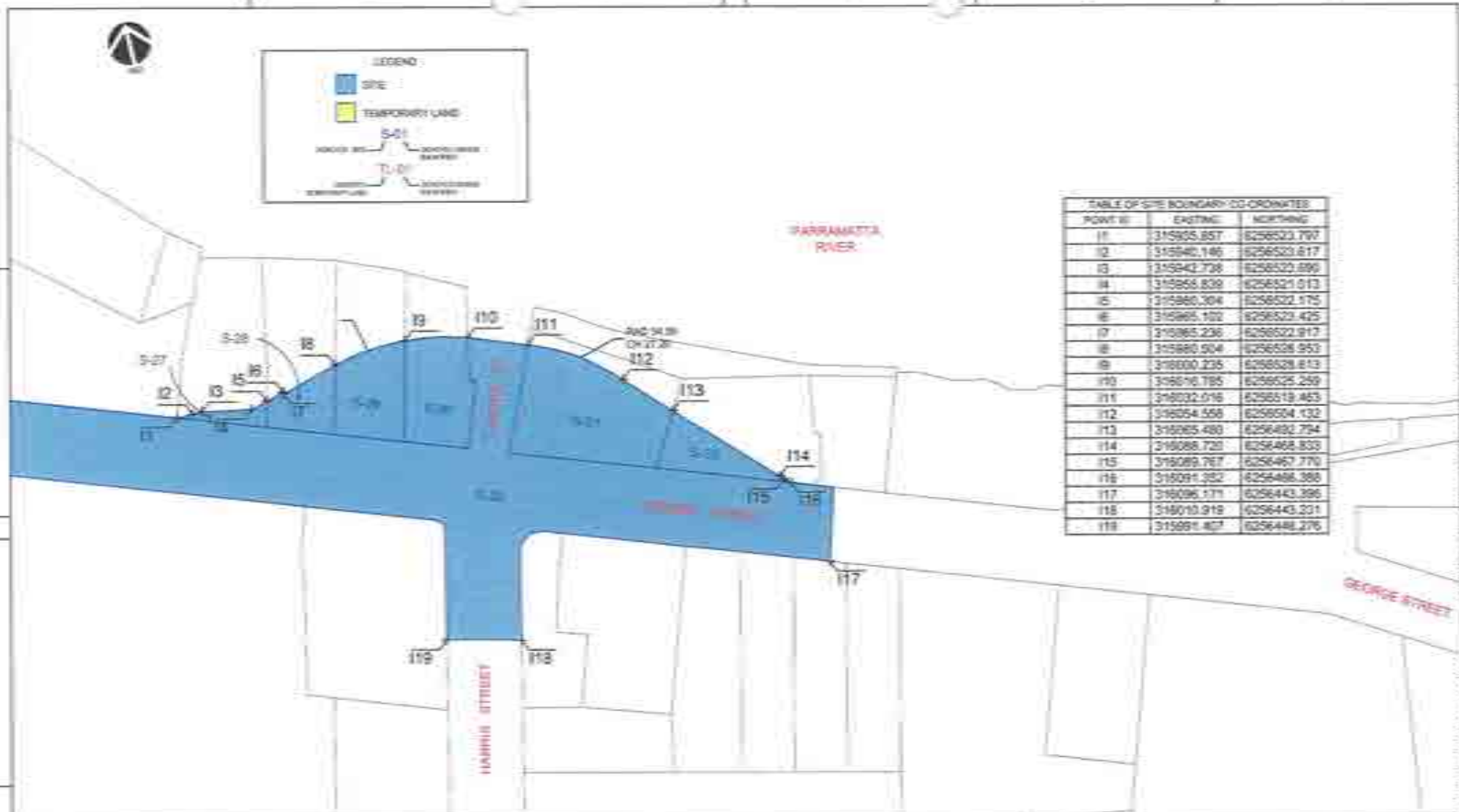


TABLE OF SITE BOUNDARY CO-ORDINATES

POINT NO	EASTING	NORTHING
11	315905.857	6256523.797
12	315940.146	6256523.617
13	315942.738	6256523.690
14	315955.839	6256521.013
15	315980.304	6256522.175
16	315985.102	6256523.425
17	315985.236	6256522.917
18	315980.904	6256528.953
19	316000.235	6256528.613
110	316016.785	6256525.299
111	316032.016	6256519.463
112	316054.556	6256504.132
113	316065.499	6256492.794
114	316088.720	6256468.833
115	316089.767	6256467.770
116	316091.352	6256466.388
117	316096.171	6256443.396
118	316010.919	6256443.231
119	315991.407	6256448.276

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06	REFER TO REVISION TABLE SHEET 13	NA	9-02-2018	9-02-2018
05	REFER TO REVISION TABLE SHEET 12	NA	16-01-2018	16-01-2018
04	REFER TO REVISION TABLE SHEET 12	NA	10-01-2018	10-01-2018
03	REFER TO REVISION TABLE SHEET 12	NA	08-12-2017	08-12-2017
AMD	DESCRIPTION	DESIGNER SIGN DATE	VERIFIED SIGN DATE	APPROVED SIGN DATE
COORD: MGA	HEIGHT DATUM: AFD	SCALE: 1:2000		

NSW Transport for NSW
 Caradco
 Data 2018/07/19/18

DRAWN: [REDACTED] 15-01-2018
 DESIGNED: NA
 DRG CHECK: [REDACTED] 15-01-2018
 DESIGN CHECK: NA
 APPROVED: [REDACTED] 15-01-2018

PARRAMATTA
 PROJECT SITE IDENTIFICATION
 PARRAMATTA LIGHT RAIL
 ENABLING WORKS
 SITE & TEMPORARY LANDS

FILE No. -	SHEET: 12 OF 13	A3
STATUS: -	©	
DRG No. RLS-0114-PS-2000-SU-DRG-0000	5	EDM No.

File Date & Time: 17/02/2018 10:34 AM
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Schedules - Enabling Works Contract

Exhibit I – Third Party Agreements

[Redacted Commercial in Confidence provisions of a Contract]

REDACTION REGISTER
CONTRACT AWARD DISCLOSURE for the ISD-17-6763 – Enabling Works Contract – Redaction Version

Summary of Confidential Information NOT to be disclosed

Deed REFERENCE	Page Number	Description	Details of Confidential Information	Reason for non Disclosure	TfNSW Position	Diona Ward Joint Venture Agreement
CONTRACT/DEED						
General Terms	Pages 21-22	Definitions Unknown Utilities Services Event	Definition	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Security	Pages 36-37	2.7 Security	Security	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Latent Conditions	Page 63	3.6 Latent Conditions	Latent Conditions	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Execution Page	Page 164	Execution Page	Signed Execution	Commercial in Confidence provisions of a Contract	Redact Signatures	Agreed
Enabling Works Contract SCHEDULES						
Schedule 1	Page 6 Item 15	Amount for approval of Subcontracts: (Clause 2.2(b))	Price figure	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 7 Item 19	Minimum amount of Professional Indemnity Insurance Required:	Insurance Level	Commercial in Confidence provisions of a	Commercial in Confidence provisions of a Contract	Agreed

Deed REFERENCE	Page Number	Description	Details of Confidential Information	Reason for non Disclosure	TfNSW Position	Diona Ward Joint Venture Agreement
		(Clause 2.2(e))		Contract		
Schedule 1	Page 8 Item 25	Parent Company Guarantors: (Clause 2.10)	Name of the Parent Company Guarantor	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 8 Item 25	Rates for determining increase in Contract Sum for failure to give access: (Clause 3.1(e)(ii))	Rate Figure	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 8-9 Item 31	Percentages to be applied to Variation and daywork costs: (Clauses 6.4 and 6.7)	Percentage	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 9 Item 35	Provisional Sum Work: (Clauses 1.1 and 7.3)	Price figure	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 9 Item 36	Percentage for Overhead Costs and profit (clause 7.3(b)(ii)(B)(2))	Percentage	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Pages 9 – 10 Item 39	Contractor's Personnel (Clauses 2.1(f), 9.4(a) and 9.4(b)(i))	Contractor's key personnel names	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 11 Item 44	Rates to be used in determining delay damages: (Clause 10.13)	Price figure	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Pages 11-12 Item 45	Liquidated damages: (Clause 12.7(a))	Rates	Commercial-in-Confidence provisions of a	Commercial in Confidence provisions of a Contract	Agreed

Deed REFERENCE	Page Number	Description	Details of Confidential Information	Reason for non Disclosure	TfNSW Position	Diona Ward Joint Venture Agreement
				contract		
Schedule 1	Page 12 Item 46	Limit of liability for liquidated damages for delay: (Clause 12.7(f))	Percentage	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 12 Item 48	Insurance Policies required to be effected by the Contractor (Clause 13.5)	Insurance Level	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 12 Item 49	Person in Insolvency Event (Clause 14.4(a)(i)(C))	Parent Company name for the Insolvency Event	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 13 Item 50	Amount for termination for convenience (Clause 14.10(a)(v))	Percentage	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 13 Item 52	Executive Negotiators: (Clauses 1.1 and 15.5)	Names	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 1	Page 13 Item 53	Addresses (Clause 16.1(b)(i))	Name	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 4	Payment Breakdown Schedule – Original Contract Price	Costs	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 5	Payment Breakdown Schedule – Original Contract Price table	Costs	Commercial in Confidence provisions of a	Commercial in Confidence provisions of a Contract	Agreed

Deed REFERENCE	Page Number	Description	Details of Confidential Information	Reason for non Disclosure	TfNSW Position	Diona Ward Joint Venture Agreement
				Contract		
Schedule 2	Pages 6-12	Part 1 Enabling Works Lump Sum	Breakdown cost	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 13 - 16	Part 2 Utilities Target Cost – 2.2 Utilities Target Cost (a)	Cost	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 15	Part 2 Utilities Target Cost – 2.6 Utilities Margin (i) and (ii)	Percentages	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 15	Part 2 Utilities Target Cost – 2.6 Utilities Margin (b)	Percentage	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Page 15	Part 2 Utilities Target Cost – 2.7 Utilities Share of Savings (a)	Percentages	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 2	Pages 16-17	Part 3 Calculation of costs for disposal of Non-VENM Material for the purposes of clauses 3.8 and 3.10	Price	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 8	Page 61	Form of Unconditional Undertakings Part 1 clause 2.7(c)(i)	Unconditional Undertaking	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Schedule 10	Pages 66-68	Schedule 10 Prices and Rates for valuation of	Price table	Commercial in Confidence	Commercial in Confidence provisions of a Contract	Agreed

Deed REFERENCE	Page Number	Description	Details of Confidential Information	Reason for non Disclosure	TfNSW Position	Diona Ward Joint Venture Agreement
		Variations and Overhead Costs		provisions of a Contract		
Schedule 16	Page 90	Performance and Compliance Incentive Payment Schedule	Whole Schedule due to negotiation with the Contractor	Commercial in Confidence provisions of a Contract	Commercial in Confidence provisions of a Contract	Agreed
Exhibits						
Exhibit C		Principal's Insurance Policies	Principal's Insurance Policies	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Exhibit F		Utilities Model	Utilities Model	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed
Exhibit I		Third Party Agreements	Third Party Agreements	Commercial-in-Confidence provisions of a contract	Commercial in Confidence provisions of a Contract	Agreed