Volume 3 of 6

SYDNEY METRO CITY & SOUTHWEST DEMOLITION CONTRACT

Contract Number: SMCSW-132

Contract Schedules

Between

Transport for NSW

(PRINCIPAL)

ABN 18 804 239 602

and

Delta Pty Ltd

(CONTRACTOR)

ABN 67 007 069 794

22 Giffnock Avenue Macquarie Park NSW 2113

DOC ID: 243333881_4
OBJECTIVE NO: A5417502

PART D – MANAGEMENT REQUIREMENTS

Schedule D1. Sydney Metro Requirements

(Clause 1.1, 2.9, 2.10, 3.1, 3.3, 3.9, 3A, 4.2, 4.3, 4.4, 4.8, 4.7, 5.3, 7.6, 9.7, 10.2, 12.2 and 14.1)

The Sydney Metro Requirements comprises the following documents set out in this Schedule D1:

a) SMR P – Prelude (Reference A5394131);

b) SMR S – Safety Management (Reference A5391477);

c) SMR E – Environment (Reference A5394221);

d) SMR C – Stakeholder and Community Liaison (Reference A5394122);

e) SMR PA – Project Administration (Reference A5394127); and

f) SMR W – Workforce Development and Industry Participation (Reference A5391492).

NSW GOVERNMENT | Transport for NSW

Sydney Metro Requirements – Prelude – Demolition (SMR Prelude)

Document Number A5394131

Date of issue:	11 August 2016

Table of Contents

1. General

1.1. Scope

The suite of Sydney Metro Requirements (SMR) documents describe the Principal's standard requirements. The suite of SMRs must be read in conjunction with the other documents forming the Contract.

The Principal's suite of SMRs consists of the following documents:

(a) SMR Prelude (this document);

(b) SMR C: Stakeholder and Community Liaison;

(c) SMR E: Environment;

(d) SMR PA: Project Administration;

(e) SMR S: Safety Management; and

(f) SMR W: Workplace Development and Industry Participation.

1.2. Terms and Definitions

(a) All references to the term "construction" means construction type activities which includes demolition work and work associated with the Temporary Works.

(b) Unless noted otherwise, wherever used in the SMRs, words and phrases have the meaning given to them in the table 1.2 below.

Table 1.2 Definitions

Aboriginal	an Aboriginal person is defined by the Aboriginal Land Rights Act, 1983 (NSW) as a person who: • is of Aboriginal descent, • identifies as an Aboriginal person, and • is accepted by the Aboriginal community in which he/she lives.
Abridged Introduction Skills course	a training program forming a part of the Sydney Metro Industry Curriculum Program.
Accredited Renewable Energy Supplier.	a supplier or provider of renewable energy, accredited under the Australian Government's National Green Power Accreditation Program
ANZ SME	micro, small and medium size enterprises with fewer than 200 employees
Apprentices	employees undertaking a recognised Australian Apprenticeship program and related qualification holding a formal training contract with their employer. Apprentices must be directly employed or hosted via a Group Training Organisation by a Sydney Metro appointed Contractor or within the Supply Chain on specific Sydney Metro City & Southwest works, service.
Audit Working Group	a working group established by the Principal with representatives from the Principal, Contractor, and other parties that may have an interest in the project, to manage the collaborative audit program.
Australian Carbon Offset Credits.	are the credits comprising Australian Carbon Credit Units issued by the Clean Energy Regulator in accordance with the framework established by the *Carbon Credits (Carbon Farming Initiative) Act 2011*

Australian Qualifications Framework (AQF)	Australian Qualifications Framework, which is the national policy for regulated Qualifications in Australian education and training. AQF Qualifications ensure national recognition and consistency, as well as common understanding across Australia of what defines each qualification.
Base Building	the slab, walls, roof including the general structure and building fabric above the slab.
Calendar Quarter Date	The following dates are Calendar Quarter Dates: • 31 March; • 30 June; • 30 September; and • 31 December
Certified Aboriginal Business	a business certified as an Indigenous business by Supply Nation (formerly the Australian Indigenous Minority Supplier Council), or one which is certified as an Indigenous business by the NSW Indigenous Chamber of Commerce, or meets the definition of an Indigenous enterprise under the definition used in the Australian Government's Indigenous Procurement Policy.
Communications Management Control Group (CMCG)	a management group with representation from both the Contractors and the Principal, which provides a forum to exchange information and coordinate communication and consultation activities with Other Contractors and the Principal, to ensure a consistent approach to the community and other stakeholders is delivered.
Complete	where a Condition of Approval applies to a particular works package and no further evidence is required to demonstrate compliance.
Compliant	A temporary status assigned to a Condition of Approval which indicates a check of evidence has occurred and confirmed it is adequate to demonstrate the requirements of a condition is being met on the day it was checked
Condition of Approval	a condition of a Planning Approval
Contract	the Sydney Metro City & Southwest Demolition Contract SMCSW-131
Contract Management Plan (CMP)	unless otherwise defined in the Contract means a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA which acts as a framework for bringing together all the management requirements for the Contractor's Activities into a coordinated and integrated plan.
Construction Environmental Management Plan (CEMP)	a Management Plan to be developed by the Contractor in accordance with the requirements of SMR E which describes how the Contractor will manage the environmental related matters and issues that arise during the term of the project
Construction Traffic Management Plan	a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA which describes the procedures and processes the Contractor will implement to manage traffic.
Cultural Awareness Training	a structured program that brings employees together for cultural awareness, adding to their cultural knowledge and providing opportunities for staff to develop and apply their cultural and cross-cultural skills, and delivered by a certified Aboriginal business.
Demolition	to demolish or dismantle a structure or part of a structure that is load bearing or otherwise related to the physical integrity of the structure (including bracing, propping, falsework, etc.)
Demolition Management Plan	a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA which describes the procedures and processes that the Contractor will undertake to plan and execute the demolition works.

Disability	Disability is broadly defined in anti-discrimination/EEO laws and includes: • Physical disability • Physical illness or disease that makes, or has made, any part of the body or brain work differently • Mental or psychiatric disability, including any part of the body or brain work differently • Intellectual disability • Disfigurement or different formation of any part of the body • Any organism in the body that could cause disease or illness e.g. hepatitis or HIV with no symptoms.
Draft Community Communications Strategy	A Reference Document in SMR C produced by the Principal.
Emergency Works	unplanned work which must be undertaken immediately in order to avoid damage to property or injury to people.
Environmental Compliance Requirements (ECRs)	The all the requirements arising out of the Planning Approval and its related Conditions of Approval, for which the Contractor must comply in accordance with the Contract.
Earned Value	a method of measuring and reporting project cost performance based on integrated time, cost and scope elements
Endangered Ecological Communities	the Endangered Ecological Communities listed in the *Threatened Species and Conservation Act 1995*
Energy Star®	an accreditation scheme organised by the US EPA
Experienced Worker	any worker who has a minimum of 26 continuous weeks relevant demolition industry experience prior to commencement on Sydney Metro works or operations.
Experienced Worker course	A training program which forms a part of the Sydney Metro Industry Curriculum Program.
Final Community Communications Strategy	means the finalised version of the Draft Community Communications Strategy, created by the Principal based on information provided by the Contractor
Frequent Heavy Vehicle Drivers	• all excavated material removal vehicle drivers; • all concrete mixer vehicle drivers; and • any driver of a Heavy Vehicle over 4.5 tonnes GVM either supplying or removing equipment, plant and materials, or people from the Site who make 5 or more round trips in any 12 month period to any Sydney Metro worksites for any part of the program.
Heavy Haulage Introduction Skills course	A training program which forms a part of the Sydney Metro Industry Curriculum Program, to provide drivers with the knowledge, skills, motivation and confidence to drive heavy vehicles safely and professionally throughout congested and highly-pedestrianized metropolitan areas whilst undertaking the demolition transport task required on the project.
Hold Point	a verification point 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 nominated person.

Industry Curriculum Training Provider	Registered Training Organisation approved by Sydney Metro to deliver the Sydney Metro Industry Curriculum Program.
Introduction to Leadership course	a training program which forms a part of the Sydney Metro Industry Curriculum Program.
Introduction Skills course	a training program which forms a part of the Sydney Metro Industry Curriculum Program for New Entrants.
Local	the 38 Local Government Areas (LGA) within the Sydney region and five LGAs in the Sydney Surrounds (Wyong, Gosford, Blue Mountains, Wollondilly and Hawkesbury)
Long Term Unemployed	a duration of unemployment of 26 weeks or more.
Management Plans	means any of the Management Plans including Sub-Plans to be developed by the Contractor in accordance with the Contract which describe how the Contractor will manage related matters and issues that arise during the term of the project.
Marketing and Promotional Materials	means those documents described in SMR C, clause 11.
Mature Aged Workers	is someone who is of 50 years of age or older.
Nationally Recognised Accredited Training	Workforce training or development activity for employed individuals, undertaking one or more accredited courses of learning and development leading to Nationally Recognised Qualification, Skills Set or Units of Competency. Does not include 'training' undertaken to meet compliance requirements detailed in applicable pieces of legislation and associated regulations, standards and accreditations or in the various approvals, licenses, and permits that may be necessary for the commencement and control of work on the project.
New Entrant	a worker with less than 26 weeks relevant demolition industry experience prior to commencement on Sydney Metro works.
Non-Demolition	A prefix applied to workers who support Demolition activities on Site but do not directly participate in Demolition works.
Nominated Supervisor	a person who is licenced to carry out demolition works as defined by Work Health & Safety Regulation 2011.
Nominated Supervisor course	a training program which forms a part of the Sydney Metro Industry Curriculum Program.
Notification	notice of forthcoming activity in relation to the project, generally provided by the Principal to the public.
Non-Traditional Trade	a non-traditional occupation for women is one in which women comprise 25 percent or less of total employment.
Non Compliant	A temporary status assigned to a Condition of Approval which indicates a check of evidence has occurred and confirmed it is inadequate to demonstrate the requirements of a condition is being met on the day it was checked.
Ongoing	where a Condition of Approval applies to a particular works package which has commenced construction or non-construction activities, and the demonstration of compliance with the requirement is not yet complete.
Operator/Maintainer	an organisation that, post asset handover, will operate and maintain the assets. In some cases, this may also be an asset owner.

Pre-Employment Program	a program that provides accredited new entrant level technical skills and employability training for the long term unemployed and other under-represented groups in the workforce. Pre- Employment Programs are delivered by TfNSW and its nominated providers.
Project Work Health and Safety Management Plan	a Management Plan to be developed by the Contractor in accordance with the requirements of SMR S which describes how the Contractor will manage the safety related matters and issues that arise during the term of the project.
Property Management Plan (PMP)	a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA which describes the procedures and processes the Contractor will implement to manage property issues.
Public Communications Material	Certain communications materials produced by the Principal from information provided by the Contractor , as defined in clause 8 of SMR C
Rail Corridor	The land on which the railway is built comprising all property between property fences, or where not fences everywhere within 15m of the outermost rails
Rail Safety Work	Rail Safety Work as defined in the Rail Safety National Law (NSW).
Reference Documents	means those documents referenced in the annexures of the SMR documents with which the Contractor must comply.
Regulator	means a holder of a public office, or a public authority, of the Commonwealth, or of a State, or member of a governmental regulatory agency who or which is responsible for enforcing laws, regulations, and established rules.
Risk Management Plan	means a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA which describes the management of risks applicable to the undertaking of the Contractor's Activities on the project.
Safe Work Method Statements (SWMS)	means the documents so titled prepared in accordance with SMR S and that give specific instructions on how to safely perform a work related task, or operate a piece of plant or equipment etc.
SafeWork NSW Demolition Licence	means training requirements set by SafeWork NSW http://www.safework.nsw.gov.au/licences-and-registrations/licences/demolition-licences
Schedule Meta-Data Requirements	means the data requirement specified by the Principal
Skills Set	groupings of Units of Competency from a Training Package, which are combined to provide a clearly defined statement of skills and knowledge required by the individual to meet industry need, or a licensing or regulatory requirement
SMPCH&SS	Sydney Metro Principal Contractor Health & Safety Standard SM PS-ST-221
Sub plan	a sub-plan of a Management Plan.
Supervisor	all workers who act in a supervisory capacity on Site from level one upwards.
Supply Chain	a network of contracted suppliers, participating in the delivery and operation of Sydney Metro City & Southwest, and includes but is not limited to the Contractor, its Subcontractors and consultants and other entities engaged by them.
Sydney Metro City and Southwest Skills and Employment Advisory Group (SEAG)	an advisory group with an objective to inform, advise and support the delivery of the Sydney Metro Workforce Development & Industry Participation Strategy. Members of SEAG are pre-approved by Sydney Metro.

Sydney Metro Industry Curriculum Program (SMIC)	a range of mandatory pre-commencement training programs that will deliver defined minimum levels of competency within identified critical skills areas for Sydney Metro City & Southwest with the objective of establishing new industry benchmarks, improve work health and safety, and increase quality and productivity outcomes. The SMIC identifies critical skills as: • Demolition • Tunnelling • General Civils • Brownfield Rail • Heavy Haulage • Supervisory skills across all industry disciplines. Training providers delivering these courses will be pre-approved Sydney Metro providers.
Sydney Metro Orientation Training	Sydney Metro mandatory pre commencement training for all workers. This is integrated within the Sydney Metro Industry Curriculum Training Program. It will be provided as standalone training for individuals that hold required Units of Competency within Sydney Metro Industry Curriculum, or whose occupations do not fall in scope for Sydney Metro Industry Curriculum.
Sydney Metro Workforce Development Programs	means the Workforce Development Programs delivered by TfNSW and its Nominated Providers to support the delivery of the Sydney Metro City & Southwest Workforce Development & Industry Participation Strategy. They include – • Sydney Metro Apprenticeship & Trainee Scheme • Sydney Metro Careers Program • Sydney Metro Diversity & Inclusion Programs • Sydney Metro Pre-Employment Program • Aboriginal Participation Programs • Women in Non-Traditional Trades Program • Sydney Metro Upskilling programs: • General Upskilling programs • Sydney Metro Industry Curriculum Program • Sydney Metro Job Brokerage • Sydney Metro Industry Participation Program
Trainees	an employee registered as a trainee, holding a formal training contract with their employer Trainees must be directly employed or hosted via a Group Training Organisation (GTO) by a Sydney Metro appointed Contractor or Supply Chain on specific Sydney Metro City & Southwest works, services.
Training Package	a set of nationally endorsed standards, qualifications and guidelines used to assess the skills and knowledge people need to perform effectively in the workplace.
Units of Competency	an AQF recognised specification of knowledge and skill, and the application of that knowledge and skill, to the standard of performance expected in the workplace.
Upskilling	Workforce training or development activity for employed individuals, undertaking one or more accredited courses of learning and development leading to Nationally Recognised Qualification, Skills Set or Units of Competency. Does not included 'training' undertaken to meet compliance requirements detailed in applicable pieces of legislation and associated regulations, standards and accreditations or in the various approvals, licenses, and permits that may be necessary for the commencement and control of work on the project.

Vacancies	specific positions offered for paid, ongoing workers, for work of 15 hours or more per week and at least three months duration.
Witness Point	a point where the Principal's Representative, or the relevant person nominated, may review, witness, inspect, or undertake tests on any component, method, or process of the Contractor's Activities.
Workforce	All workers employed directly or contracted by the Contractor, Subcontractors and the broader Supply Chain inclusive of management and professional, technical and trade.
Workplace Relations Management Plan	means a Management Plan to be developed by the Contractor in accordance with the requirements of SMR PA and the "NSW Code of Practice for Procurement: Building and Construction" and its Guidelines.

Sydney Metro Requirement – Safety Management – Demolition (SMR S)

DOCUMENT NUMBER A5391477

Date of issue:	9th August 2016

Table of Contents

1. Introduction

1.1. Purpose

This Sydney Metro Requirement – Safety Management - Demolition (SMR S) describes requirements and processes the Contractor must comply with in relation to safety. This SMR S must be read in conjunction with the Contract.

1.2. Interpretation

Unless noted otherwise, wherever used in this SMR S, words and phrases have the meaning given to them in the General Conditions or the SMR Prelude.

2. Contractor's Obligations

The Contractor must comply with the Sydney Metro Principal Contractor Health & Safety Standard SM PS-ST-221, to the extent required in Annexure A.

Annexure A: Extent to Which Annexure B Documents Apply

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
1.0 Purpose & Scope	***Yes***	
2.0 Definitions	***Yes***	
3.0 Accountabilities Identification of responsibilities and accountabilities for PHSMP	***Yes***	
4.0 Management Plan Requirements Demonstration on how compliance will be met will requirement from (a)-(h)	***Yes***	
4.1.1 PHSMP Operational Readiness Review Completion of operations readiness review	***Yes***	
4.1.2 PHSMP Annual Review Process for the periodic review the of PHSMP	***Yes***	
5.1 Company Officers Process for the identification of all company officers (incl. sub-contractors)	***Yes***	
5.2 Leadership and Culture Strategy for the Safety Culture program that meets all the requirements of (a)-(j)	***Yes***	
5.3 Resources Development of a resources plan	***Yesd***	

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
6.Safety Planning – Objectives, KPIs & Targets Development of a safety action plan and participation in HSPI	*Yes*	
7. Safety Risk Management Development of a Risk Management procedure	*Yes*	
8. Training and Competence Development training and competence management processes in accordance with requirements	*Yes*	
9. Communication and Consultation Development of procedures related to communication and consultation with the workforce and stakeholders.	*Yes*	
10. Health & Safety Reporting Process to support monthly reporting requirements and regulatory reporting	*Yes*	
11.1 Work at Heights Development of a procedure to manage Work at Heights	*Yes*	
11.2 Temporary Works Development of a procedure to manage temporary works	*Yes*	
11.3 Scaffolding Process to ensure scaffolds are fit-for-purpose	*Yes*	
11.4 Formwork and Falsework Process to ensure Formwork and Falsework is fit-for-purpose	*Yes*	
11.5 Cranes and Loading Shifting Development of a procedure and permit system for lifting operations	*Yes*	
11.5.1 Tower Cranes Process to ensure Tower Cranes meet all Sydney Metro requirements	*Yes*	
11.6 Piling Process to support the management of piling activities	*Yes*	
11.7 Demolition Work Process to support the management of demolition works	*Yes*	

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
11.8 Explosives Development of an Explosives Management Plan	No	TfNSW understands that WorkCover will not allow the use of explosives for the purpose of demolition in Sydney's urban environment.
11.9 Excavation Work and Tunnelling Development of a permitting process and procedure to manage Excavation Work and Tunnelling	***Yes***	
11.10 Electrical Safety Development of a procedure and permitting system to manage Electrical work.	***Yes***	
11.11 Confined Spaces Development of procedure to identify and mange confined space entry	***Yes***	
11.12 Hot Work Development of procedure for managing risks of hot work	***Yes***	
11.13 Chemical Management Development of process to manage Hazardous Chemicals	***Yes***	
11.14 Occupational Health, Hygiene and Wellbeing Development of an OHHWP	***Yes***	
11.15 Hazardous Manual Tasks Development of a process to manage hazardous manual tasks	***Yes***	
11.16 Driving and Vehicle Safety Development of process to manage the use of vehicles and vehicle safety	***Yes***	
11.17 Heavy Vehicles (CoR) Development of a CoR Management Plan	***Yes***	
11.18 Construction Traffic and Vulnerable Road Users Development of process to ensure compliance with requirements	***Yes***	
11.19 Work In and Around Live Traffic Process to manage risks related to working in and around live traffic	***Yes***	
11.20 Plant and Equipment Development of procedures to manage the risks of plant and equipment	***Yes***	

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
11.21 Working In and Around Water Development of processes to support the management of risk relating to working near / in a body of water	***Yes***	
11.22 Remote or Isolated Work Development of procedure to manage remote and isolated work	***Yes***	
11.23 Night Work Process to manage the risks of working at night	***Yes***	
11.24 Welfare Facilities Provision of suitable and sufficient welfare facilities	***Yes***	
11.25 Lock-out/Tag-out (LOTO) Development of a procedure for LOTO	***Yes***	
11.26 Permits to Work Development of procedures and processes for activities requiring a permit to work	***Yes***	
11.27 Permit to Work – Tunnelling Development a Permit to Work system applicable to Tunnelling works	***Yes***	
11.28 Safety Signage Process to ensure Safety Signage complies with AS 1319:1994	***Yes***	
12.1 Rail Safety Risks Identification and assessment of rail safety risks captured in project risk register	***Yes***	
12.2 Rail Safety Worker Requirements Development of a matrix to identify all RSW roles and training requirements	***No***	The demolition work will not involve rail safety work, as per the definitions in Rail Safety National Law
12.3 Project Work Notification and Work Activity Advice Process to ensure all Rail Transport Operators are notified regarding upcoming works	***No***	No works in the rail corridor or requiring Sydney Trains approvals are anticipated as part of this contract

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
12.4 Arrangements for Track Possession Process to support the coordination of activities during a track possession	***No***	No work in the rail corridor is anticipated as part of this contract
12.5 Track Worker Protection Process to support delineation of workgroup from danger zone for long term worksites	***No***	No work in the rail corridor is anticipated as part of this contract
12.6 Worksite Protection Process to support the implementation by a competent Protection Officer	***No***	No work in the rail corridor is anticipated as part of this contract
12.7 Mobile Plant in the Rail Corridor Process that ensures compliance with requirements for using mobile plant in rail corridor	***No***	No work in the rail corridor is anticipated as part of this contract
12.8 Working around Electrical Infrastructure Process that ensures compliance with requirements for working around electrical infrastructure in and around rail corridor	***Yes***	
12.9 Underground Services Process that ensures risks are managed when excavating or ground penetration in the rail corridor	***No***	No work in the rail corridor is anticipated as part of this contract
12.10 Protection of Infrastructure from Damage Process that ensures safety critical assets are protected / undamaged when working in and around rail corridor	***Yes***	
12.11 Emergency / Incident Planning, Response and Reporting Inclusion of emergency and incident protocols in plans and SWMS for works in and around rail corridor	***Yes***	
13. Fitness for Work Procedures to support compliance with Fitness for Work requirements	***Yes***	
14. Personal Protective Equipment Process to ensure the use of appropriate PPE	***Yes***	
15. Site Security and Access Control Development of Security Management Plan	***Yes***	

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
16 Interface Management Development of an Interface management Plan	***Yes***	
17. Management of Change Development of Manage of Change procedure	No	There will not be a requirement for the Contractor to develop a Management of Change as per ONRSRs requirements, as part of the Contractor's Activities. However, WHS management of change is a standard requirement of the PHSMP as per OFSC audit criteria guidelines.
18. Change Control Board Development of process that complies with Sydney Metro Configuration Management requirements	No	There will not be a requirement for the Contractor to make submissions to the Configuration Change Board as part of the Contractor's Activities.
19. Asset Management Development of an Asset Management Plan	No	There will be no assets created as part of the Contractor's Activities.
20. Safety in Procurement Development of process that addresses H&S risks during procurement (incl. subcontractor management)	***Yes***	
21.1 Systems Engineering Development of a process to support the verification and validation of all engineering design	No	There will be no engineering design of rail systems required as part of the Contractor's Activities.
21.2 Reliability, Availability and Maintainability (RAM) Development of RAM management process	No	There will be no assets created as part of the Contractor's Activities.
22. Safety Assurance Development of a process to support and ensure compliance with all safety assurance activities	No, except to the extent a process is required to be developed for the Contractor's structural engineer.	
23. Human Factors Development of a process to support the consideration of Human Factors issues during safety assurance activities	***Yes***	
24. Incident, Emergency and Crisis Management	***Yes***	

Part of Principal H&S Contractor Standard Section	Applicable (Yes/No)	Reasons Why Not Applicable
Development of management plans and procedures for incidents and emergencies		
25. Incident Reporting & Investigation Development of processes and procedures for incident reporting and investigation	***Yes***	
26. Corrective Action Management Development of a procedure to manage corrective and preventative actions	***Yes***	
27. Injury Management and Return to Work Development of a processes for Injury Management and Return to Work	***Yes***	
28.1 Inspections Development of a procedure for regular H&S inspections	***Yes***	
28.2 Audits Develop process to allow for audits by the Principal Representative	***Yes***	
28.3 Compliance Work Group Dedication of resources for the Compliance Work Group	***Yes***	
28.4 Performance Management Processes to ensure compliance with the tiered performance management process.	***Yes***	

Annexure B Reference Documents

- Sydney Metro Principal Contractor Health & Safety Standard SM PS-ST-221

Integrated Management System

Sydney Metro Principal Contractor Health & Safety Standard

SM PS-ST-221

Sydney Metro Integrated Management System (IMS)

Applicable to:	Sydney Metro
Document Owner:	Principal Manager, Safety
System owner:	Executive Director, Safety, Sustainability & Environment
Status:	FINAL
Version:	1.1
Date of issue:	12 September 2016
Review date:	12 September 2017
Security classification:	Open Access

Table of Contents

1. Purpose and Scope

This standard sets out the minimum Work, Health & Safety (WHS), Rail Safety and associated requirements for entities that TfNSW engages under the WHS Regulation as Principal Contractors (PCs) for one or more Construction Projects that form part of the Sydney Metro program. This standard has been developed as part of the Sydney Metro Program Safety Management Plan (PSMP). The PSMP sets out requirements for compliance with WHS and Rail Safety legislation as well as good management systems practice that collectively contribute to the delivery of the Sydney Metro program in Sydney.

2. Definitions

All terminology in this Standard is taken to mean the generally accepted or dictionary definition. Definitions specific to this document are listed below.

	Definitions
Acceptable Workplace Exposure Standards	Those Workplace Exposure Standards that at all times are equal or lower to those listed in this PC Standard; as published on the Safe Work Australia Hazardous Substances Information System (HSIS).
Accountability	The process for making sure safety responsibilities occur.
ASA	Assets Standards Authority.
Assurance Documentation	Any documentation required for the design, risk management, construction, handover, maintenance, and operation of the Sydney Metro program as required by any of the Sydney Metro Safety Assurance, Systems Assurance, Engineering Assurance and/or Quality Assurance process.
Authority	The allocation of responsibility which allows you to act.
CENELEC Standards	Includes EN50126/ EN50128/ EN50129 that are used in System Safety Engineering of railways
Chain of Responsibility (CoR)	The legal requirement under the HVNL for every responsible person in the supply chain to take reasonable steps to prevent mass, load restraint, dimension, and fatigue and speed offences.
COH	A person who holds Certification with the Australian Institute of Occupational Hygienists (AIOH), along with experience in the assessment and control of occupational health hazards, relevant to the activities and processes inherent to Sydney Metro Contract Packages.
Construction Project	Has the same meaning as in clause 292 of the WHS Regulation.
Construction Work	Has the same meaning as in clause 289 of the WHS Regulation.
Critical Control	A control that is crucial to preventing the event or mitigating the consequences of the event. The absence or failure of a critical control would significantly increase the risk despite the existence of the other controls. In addition, a control that prevents more than 1 unwanted event or mitigates more than 1 consequence is a critical control
Due Diligence	Has the same meaning as in section 27 of the WHS Act
Governance	The management framework within which decisions are made in an organisation, including rules, processes, or standards.
Hazard	Occurrence or circumstance that is a potential source of harm, physical injury or damage to health of people, or damage to property or the environment.
Heavy Vehicle	Any vehicle over 4.5 tonnes gross vehicle mass (GVM) required to operate on public roads.
HRA	Health Risk Assessment
HSPI	Health & Safety Performance Index.
HVNL	Heavy Vehicle National Law (NSW) No.42a and associated regulations.

	Definitions
Independent Certified Occupational Hygienist (COH)	A person who holds Certification with the Australian Institute of Occupational Hygienists (AIOH), along with experience in the assessment and control of occupational health hazards, relevant to the activities and processes inherent to the Contract Package.
Individual Risk	The probability of fatality per year to which an individual is exposed.
Level 1 HRA	Formal qualitative HRA conducted by a *COH* during the Contract Tender Phase to identify, evaluate, and prioritise baseline occupational health risks associated with all activities likely to be performed under each Contract Package.
Level 2 HRA	Formal qualitative HRA conducted by a *COH* following project commencement to document the exposure characteristics for each Similarly Exposed Group (SEG) to verify *Level 1 HRA* exposure estimates and make recommendations for further exposure control.
Level 3 HRA	Formal quantitative HRA conducted by a *COH* to measure person's exposure to occupational health hazards for purposes of compliance, characterisation, evaluation of the effectiveness of exposure controls, and make recommendations for further exposure control.
Occupational Hygienist	A person who holds Full (MAIOH) or Fellow (FAIOH) Membership with the Australian Institute of Occupational Hygienists (AIOH), along with experience in the assessment and control of occupational health hazards, relevant to the activities and processes inherent to the Contract Package.
Officer (as defined in WHS Act)	Has the same meaning as in the WHS Act and includes (by reference to s9 of the Corporations Act 2001) a person who makes, or participates in making decisions that affect the whole or a substantial part, of the business or undertaking of the entity.
OFSC	Office of the Federal Safety Commissioner
OHHW	Occupational Health, Hygiene and Wellbeing
OHHWMP	Occupational Health, Hygiene & Wellbeing Management Plan
ONRSR	Office of the National Rail Safety Regulator
PC	Principal Contractor
PCBU	Person conducting a business or undertaking as defined under section 5 of the WHS Act
PHSMP	Project Health & Safety Management Plan.
PSMP	Sydney Metro Program Safety Management Plan, as amended from time to time.
Principal Contractor (Also referred to as Head Contractor)	For the purposes of this Standard, 'Principal Contractor' means an entity engaged under the WHS Regulation as the principal contractor in relation to a Construction Project that forms part of Sydney Metro's program of works. An entity may be a joint venture or alliance that work together as one.
RAMS	Reliability, Availability, Maintainability and Safety.
Rail Safety National Law	(RSNL) Rail Safety National Law (NSW) No.82a and associated Regulations.
Rail Safety Worker	Has the same meaning as per section 4 of the Rail Safety National Law (NSW) No.82a
Rail Site	A rail site is defined as a site within the rail corridor or a construction site where rail has been laid.
Residual Risk	Risk remaining after risk treatment.
Responsibility	The performance of a safety action which needs to be done.
RIM	Rail Infrastructure Manager
Risk	Effect of uncertainty on objectives
Risk Analysis	Process to comprehend the nature of risk and to determine the level of risk.
Risk Assessment	Overall process of risk identification, risk analysis, and risk evaluation.
Risk Control	A physical, procedural or administrative measure intended to reduce risk.
Risk Criteria	Terms of reference against which the significance of risk is evaluated.
Risk Evaluation	Process of comparing the results of risk analysis with risk criteria to determine whether the risk and/or magnitude are acceptable or tolerable.
Risk Identification	Process of finding, recognising and describing risks.
Risk Management	Coordinated activities to direct and control an organisation with regard to risk

	Definitions
Risk Register	Risk Registers are a mechanism for recording and managing risks. For safety risks, the term 'Hazard Log' is also commonly used.
RSW	Refer to Rail Safety Worker.
Safety Assurance	Demonstration that all safety risks have been assessed and managed/mitigated SFAIRP and satisfy Sydney Metro's risk tolerability criteria.
Safety Culture (from the National Rail Safety Guidelines)	Safety Culture is described as a culture that involves: Keeping people informed, Maintaining vigilance, Promoting a just culture, Promoting organisational flexibility, Encouraging willingness to learn.
SDS	Safety Data Sheet.
SEG	Similar Exposed Group, as defined in publication, "Occupational Hygiene Monitoring & Compliance Strategies" (AIOH, 2014).
SFAIRP	So Far As Is Reasonably Practicable. Guidance on the meaning of this is discussed in the National Transport Commission's document 'Meaning of So Far As Is Reasonably Practicable (SFAIRP)' and the National Rail Safety Regulator Guideline 'Meaning of Duty to Ensure Safety So Far As Is Reasonably Practicable'.
Significant Incidents	Incidents with an actual or potential consequence of C1-C3 as per the Sydney Metro Consequence Definitions (included in Appendix D (i)), or those notifiable to regulatory authorities
Significant Risk to Health	As defined in Safe Work Australia's Health Monitoring for Exposure to Hazardous Chemicals or where an occupational health risk has been assigned a Risk Rating of High (Class B) or Very High (Class A), without regard for the protection afforded through the use of PPE.
SMDO	Sydney Metro Delivery Office
STEL-WES	A 15 minute time weighted average Short Term Exposure Limit (STEL) workplace exposure standard (WES) which must not be exceeded at any time during a working day even if the 8 hour TWA is within the *TWA-WES*. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than 4 times a day. There should be at least 60 minutes between successive exposures at the STEL.
SWI	Safe Working Instruction.
SWMS	Safe Work Method Statement.
Systems Engineering	As defined by INCOSE (International Council of Systems Engineering): *"Systems Engineering is an interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem. Systems Engineering integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation. Systems Engineering considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs."*
TfNSW	Transport for NSW.
TWA-WES	Eight hour time-weighted average (TWA) workplace exposure standards (WES) are the average airborne concentration of a particular substance that is permitted over an eight-hour working day, and a 5 day working week. *TWA-WES*s must be adjusted by a suitable factor in circumstances where persons work greater than 8 hours per day or greater than 40 hours per week.
WHS	Work Health & Safety
WHS Act	Work Health and Safety Act 2011 (NSW)
WHS Regulation	Work Health and Safety Regulation 2011 (NSW)
Worker	Has the same meaning as in the WHS Act.

3. Accountabilities

The Principal Contractor (PC) must define responsibilities and accountabilities within their Project Health & Safety Management Plan (PHSMP).

4. Management Plan Requirements

4.1. Project Health & Safety Management Plan

The Principal Contractor (PC) must have a Project Health & Safety Management Plan (PHSMP) that complies with and demonstrates how the contractor will comply with the requirements of:

(a) The WHS Act;

(b) The WHS Regulation;

(c) HVNL;

(d) Rail Safety National Law;

(e) Codes of Practice, Guides and Australian Standards as referenced throughout this Standard;

(f) the latest version of the NSW Government WHS Management Systems and Auditing Guidelines;

(g) the latest version of the Office of the Federal Safety Commissioner's Audit Criteria Guidelines; and

(h) Requirements imposed on the PC by its contract with TfNSW (including this Standard).

The PHSMP may refer to other topic specific safety management plans (e.g. Chain of Responsibility (CoR) Management Plan, Rail Safety Management Plan, etc.). For more related documents and references, refer to Appendix I: References and Related Documents.

4.1.1. PHSMP Operational Readiness Review

The PC's PHSMP and any supporting procedures from the Corporate Management System which are called up by the plan must be submitted to Sydney Metro for review. Prior to commencement on site, the PC must present to Sydney Metro and demonstrate that they are ready to commence delivery in accordance with Sydney Metro's Operational Readiness Review process (refer to Appendix A: Operational Readiness Review Checklist).

4.1.2. PHSMP Annual Review

The PHSMP must be reviewed at least annually and revised in accordance with the applicable legislation, NSW Government Work Health & Safety Management Systems, and Auditing Guidelines and Office of the Federal Safety Commissioner Audit Criteria Guidelines and submitted to Sydney Metro for review. The purpose of Sydney Metro's review is solely to review the PHSMP for compliance against this Standard and the Sydney Metro Program Safety Management Plan. Any changes must be managed in accordance with the PC's Management of Change Procedure as required by the section of this Standard, entitled, Management of Change.

5. Safety Leadership and Culture

5.1. Company Officers

The Principal Contractor (PC) and their sub-contractors must identify, for their own purposes, those persons who make or participate in making decisions that affect the whole or a substantial part of the PC's (or sub-contractor's) business or undertaking, or who are otherwise Officers. As required by the WHS Act, Sydney Metro expects that each Officer of a PC or a subcontractor exercises Due Diligence to ensure that the entity in respect of which she or he is an Officer complies with its duties under the WHS Act, WHS Regulation and RSNL. PCs and subcontractors must demonstrate to Sydney Metro's satisfaction that they have given appropriate consideration to the duties of Officers as part of their PHSMP.

5.2. Leadership and Culture

The PC must develop a strategy as part of the PHSMP which will outline how it will promote and improve the *Safety Culture* on the project. The strategy must describe how the PC will seek to develop its *Safety Culture* program in accordance with an industry recognised safety culture maturity model. As a minimum, the PC's *Safety Culture* program must address:

(a) The safety values, objectives, mission statement, etc. of the organisation and how these align to Sydney Metro's vision, mission and values.

(b) Where multiple organisations are working collaboratively (e.g. joint venture, consortium, etc.), they must explain how the values of each organisation will be integrated and applied on the project.

(c) Explain how senior management from each parent company will visibly demonstrate the values identified above through their behaviours and actions.

(d) Demonstrate how *SFAIRP* principles are understood and applied by all levels of management and supervision.

(e) Demonstrate how the PC will learn organisational and management system lessons from incidents/near misses and use these lessons to develop corrective and preventative actions and ensure continuous improvement in safety performance across the project.

(f) Identify responsibilities and accountabilities and how individuals at all levels of the organisation are held accountable for substandard safety performance within a just culture.

(g) Implement a reward and recognition program that aligns to the values of Sydney Metro.

In addition, the PC's program must include the following:

(h) Participation in the Sydney Metro Health & Safety Performance Index (HSPI) Program.

(i) Attendance by the PC's Project Director, the Project Director's Line Manager, Lead Safety Manager and Major Sub-contractor Senior Management at the Sydney Metro Safety Summit – Values and Culture Alignment Workshop.

(j) Attendance by the PC's Project Director and/or the Project Director's Line Manager at the Sydney Metro Executive Safety Leadership Forum.

5.2.1. Safety Leadership Meeting

The PC must hold Safety Leadership Meetings chaired by the PC's Project Director on a monthly basis or at a frequency determined in consultation between Sydney Metro and the PC. Attendance will be required by the Lead Safety Manager and nominated members of the PC's management team. In addition, the Sydney Metro Contract Director, Project Director, Lead Safety Manager and Principal Manager, Safety will be standing invitees to the meeting.

The first meeting must develop Terms of Reference (ToR) and arrangements for the conduct of the meeting (e.g. secretariat, standard agenda items, escalation and resolution of issues, etc.). Any changes to ToR over time must be agreed with the Principal's Representative. As a minimum, the agenda must include a review of:

(a) Safety performance/trends.

(b) Safety risk register/risk profile of current and future works.

(c) Safety resources, competency and training.

(d) *Significant incidents* and progress of investigations, including corrective and preventative actions and lessons learnt.

(e) Key stakeholders and interfaces.

(f) Health and safety initiatives.

(g) Agreed actions to remedy/address adverse trends.

5.2.2. Safety Practitioners Forum

The Principal Contractor's (PC's) safety practitioners must attend the Sydney Metro Safety Practitioners forum as required.

5.3. Resources

The PC must provide sufficient safety resources (people, facilities and equipment) required to undertake the PC's activities safely. The PC must develop a resources plan to demonstrate how the following requirements in the sections below for safety resourcing will be determined.

5.3.1. Safety Resources

Except where approved in writing by Sydney Metro's Executive Director, Safety, Sustainability and Environment, the PC's safety resources must be competent as per the following:

Table 1: Safety resource competencies

Position	Qualification	Experience	Professional Memberships
Lead Safety Manager (PC).	Minimum Bachelor Degree in Health and Safety or equivalent.	Minimum 10 years' experience in major infrastructure projects.	Chartered status with Safety Institute of Australia or international equivalent (e.g. ASSE, IOSH, etc.).
Safety Managers (PC and Major Sub-contractors).	Minimum Advanced Diploma in Health and Safety or equivalent.	Minimum 5 years' experience in major infrastructure projects.	Member of Safety Institute of Australia or international equivalent (e.g. ASSE, IOSH, etc.).
Safety Coordinators/Safety Advisors (PC and Major Sub-contractors).	Minimum Diploma in Health and Safety or equivalent.	Minimum 2 years' experience in major infrastructure projects.	Nil
Safety Assurance Manager.	Minimum Degree qualified in appropriate engineering discipline or equivalent.	Minimum 15 years' experience in management of major infrastructure projects.	Membership with a recognised institution such as Engineers Australia, Safety and Reliability Society, or equivalent.

5.3.2. Supervision Levels and Competency

The PC's PHSMP must document and demonstrate their process for assessing and determining the levels of supervision deemed to be adequate for management of the works. The process must require the development of organisation charts of the PC and Sub-contractors. The organisation charts must show as a minimum the hierarchy of supervision levels (e.g. Leading Hand reporting to Supervisor reporting to Superintendent), numbers/ratios, and reporting lines.

The organisation charts must be maintained throughout the project as a management tool and provided to the Sydney Metro Delivery Office at intervals determined by the Principal's Representative.

All Leading Hands, Supervisors and Superintendents (including those employed by Sub-contractors that perform demolition, civil construction and/or temporary works construction) working for more than 3 months on the Sydney Metro Program must participate in the applicable supervisor stream of the Sydney Metro Industry Curriculum (refer to Appendix B: Sydney Metro Industry Curriculum).

6. Safety Planning – Objectives, KPIs and Targets

6.1. Safety Planning

The Principal Contractor (PC) must develop an annual safety action plan, which must include safety objectives, key performance indicators (KPIs) and targets aligned with Sydney Metro's Annual Safety Action Plan and Health & Safety Performance Index (HSPI).

6.1.1. Health & Safety Performance Index (HSPI)

The Sydney Metro HSPI is a means to drive leadership and measure performance consistently across the contracts that make up the Sydney Metro Program. The intention is to identify, incentivise and reward leadership performance which goes above and beyond normal practice. The PC must align its leadership activities with the targets that are established through the HSPI process (refer to Appendix C: Health & Safety Performance Index (HSPI)). These will be reviewed on a minimum annual basis. The PC must provide reports on leadership activities as part of their monthly reporting to Sydney Metro.

The PC will participate collaboratively in the conduct of individual leadership engagements to allow Sydney Metro to ensure consistency and quality of outcomes across multiple projects. Review of performance against HSPI metrics will take place in accordance with the Executive Safety Leadership Framework.

7. Safety Risk Management

7.1. General Requirements

The Principal Contractor (PC) must develop *Risk Management* procedures to identify health and safety hazards and risks, assess hazards and risks and plan work processes to control and communicate those hazards and risks. *Risk Management* procedures must comply with:

(a) The Work Health and Safety Regulation 2011;

(b) Codes of Practice approved under s274 of the WHS Act, specifically, the Construction Work - Code of Practice, the How to Manage Work Health and Safety Risks - Code of Practice and (where relevant to the work being performed), the Demolition Work - Code of Practice;

(a) AS/NZS ISO 31000:2009 Risk management – Principles and guidelines; and

(b) IEC 31010:2009 Risk management – Risk assessment techniques

The PC must demonstrate in the PHSMP that the health and safety risks associated with the PC's activities have been fully identified, assessed and eliminated, *SFAIRP*, and where elimination is not reasonably practicable, the risks have been minimised *SFAIRP*.

Note: In relation to *Risk Management* of engineering safety (i.e. risks presented to the O&M of railway); refer to the section of this Standard, entitled Systems Engineering and RAM.

For more related documents and references, refer to Appendix I: References and Related Documents.

7.2. Risk Assessment and Control

The PC must have a structured approach to conducting *Risk Assessments* that include the following different levels as a minimum:

(a) Project Level.

(b) Workplace/ Package/ Work Activity Level.

(c) Task/Work Method Level.

(d) Plant/Equipment/Chemical – Specific Level.

7.2.1. Project Level Risk Assessment

The PC's processes for conducting Project Level Risk Assessments must address the following minimum requirements:

(a) A project level risk workshop must be undertaken at least 1 month prior to site establishment.

(b) The project level *Risk Register* must use the consequence and likelihood criteria, refer to:

i. Appendix D (i): Consequence & Likelihood Criteria

ii. Appendix D (ii): Risk Matrix

(c) Project level risk workshops must be facilitated by a safety professional experienced in facilitating risk workshops.

(d) The workshops must be attended by key stakeholders in agreement with the Principal's Representative.

(e) The PC must issue a workshop briefing note 5 business days prior to the workshop.

(f) The PC must circulate for comment the workshop outputs no later than 5 business days following the workshop.

(g) The PC must circulate final workshop outputs no later than 10 business days following the workshop.

(h) The PC must incorporate final workshop outputs into the Project Level Risk Register no later than 15 days following the risk workshop.

(i) The Project Level Risk Register must be used to develop the Workplace/ Package/ Work Activity Level Risk Assessments which in turn must be used to inform Task/Work Method Level Risk Assessments.

(j) The Project Level Risk Register must be reviewed on a monthly basis in consultation with at least 1 representative of Sydney Metro.

(k) The PC must provide records of changes to the Project Level Risk Register to Sydney Metro within 5 business days of the review.

Where critical/catastrophic risks (fatal or multiple fatality outcomes) are identified in the Project Level Risk Register, the PC must develop a *Risk Management* plan (e.g. fatal risk protocols) which demonstrate how these risks will be managed *SFAIRP*. The *Risk Management* plan must be provided to the Principal's Representative for review.

7.2.2. Task/Work Method Level Risk Assessments

The PC must develop SWMS following completion of *Risk Assessments* in accordance with:

- SafeWork NSW – Construction Work – Code of Practice
- NSW Government Work Health & Safety Management Systems and Auditing Guidelines
- The section of this Standard, entitled Safety Risk Management

All construction work on Sydney Metro is considered to be high risk construction work. As such, it requires the development of a SWMS.

SWMS must be supported by SWIs or equivalent for detailing specific task requirements involving the use of plant, equipment and/or chemicals used in hazardous construction tasks. SWIs or equivalent must be developed by PCs or Sub-contractors in relation to subcontracted works, in accordance with the section of this Standard, entitled Plant and Equipment. Any SWMS/SWI must be made available for review by Sydney Metro upon request. Sydney Metro's review is solely for the purpose of reviewing the SWMS/SWI for compliance against this Standard and the PSMP.

7.3. Safety in Design

In addition to the above, the PC's processes must address the application of *Risk Management* through the design process. Refer to the section of this Standard, entitled Systems Engineering and RAM for Operations and Maintenance *Hazards/Risk Management*. In relation to safety of construction workers influenced by the design throughout the construction phase (i.e. buildability/constructability), the PC must undertake Safety in Design (SiD) risk workshops involving the designers in accordance with:

- SafeWork NSW – Safe design of structures – Code of Practice
- Office of the Federal Safety Commissioner Audit Criteria Guidelines

Buildability SiD risk workshops must be conducted in accordance with the following:

(a) Facilitated by a safety professional with experience in facilitating SiD risk workshops.

(b) Invitations for attendance extended to representatives from Sydney Metro.

(c) Attended by both designers and construction staff with practical experience of construction methods (e.g. supervisors).

The outputs of the SiD process must be included in the workplace *Risk Assessment* where there is a potential that they will impact the safety of workers or others.

8. Training and Competence

As a minimum the Principal Contractor (PC) must:

(a) Implement a training program based on a Training Needs Analysis (TNA) specific to the Sydney Metro Program.

  i. The TNA must identify all roles with responsibility for safety and the training/competencies that are required for that role.

  ii. The TNA must also identify Rail Safety Workers (RSWs) and Supervisors/Workers required to undertake the Sydney Metro Industry Curriculum (refer to Appendix B: Sydney Metro Industry Curriculum).

  iii. The TNA must be reviewed and updated periodically.

(b) Implement an induction program that aligns with the Construction Work – Code of Practice and the Sydney Metro Safety Induction.

(c) Implement a competency management system as required by the scope of the PC's Authorised Engineering Organisation (AEO) (where applicable).

(d) Provide training as required by applicable laws and standards including the RSNL and the WHS Act and WHS Regulation.

(e) Unless approved in writing by the Principal's Representative, use the TfNSW approved Training Management System (i.e. Pegasus/Onsite Track Easy) for training records and provision of RIW or other approved Pegasus/Onsite Track Easy card for non-rail work.

(f) Ensure all staff performing works in the rail corridor have successfully completed the necessary training requirements of the rail transport operator for working in the rail corridor and possess a TfNSW RIW card that shows TfNSW Operator Role.

(g) Ensure training of workers and supervisors in accordance with the Sydney Metro Industry Curriculum (refer to Appendix B: Sydney Metro Industry Curriculum).

(h) Implement a Verification of Competency Process for all high risk work licences and mobile plant operators.

8.1. Rail Safety Worker Competence

The PC must:

(a) Assess its operations and identify roles that are classified as Rail Safety Workers (RSW) in accordance with RSNL and ONRSR's guide to identification of RSWs.

(b) Establish and keep up to date a RSW role matrix that nominates the roles that are identified as RSWs. The PC must provide Sydney Metro with a copy of the matrix every 6 months.

(c) Ensure that every RSW undergoes competence assessment. Where the work is conducted under TfNSW's RIM accreditation, unless otherwise exempt in writing by the Principal's Representative, the assessment must be carried out in accordance with the TfNSW approved role and result in the issue of a TfNSW approved RSW ID Card.

(d) The competence assessments must be completed by a qualified assessor who has a Cert IV in Training and Assessment or equivalent and a subject matter expert in the technical aspects of the role being assessed.

(e) Keep records to support their RSW's competency assessment outcomes in compliance with ONRSR requirements. Documents must be verified and each worker is required to undertake a 100-point identification check before they are provided with the TfNSW approved RSW ID Card.

(f) Use the TfNSW approved Training Management System (i.e. Pegasus/Onsite Track Easy) for the management of RSW competency assessments.

9. Communication and Consultation

The Principal Contractor (PC) must establish procedures dealing with communication and consultation with the workforce and with other stakeholders including Sydney Metro. As a minimum, procedures must be developed in accordance with the WHS Act, WHS Regulation and the SafeWork NSW - WHS Consultation, Cooperation and Coordination – Code of Practice. The PC must use the following forums (or similar) to communicate and consult with its workforce and across its site(s):

(a) Consultative Committees (or other arrangements, i.e. HSRs).

(b) Pre-work Briefs/Pre-start meetings.

(c) Toolbox Talks.

(d) Meetings.

(e) Safety Alerts.

(f) Lessons Learnt/Innovations.

(g) Notice Boards and suggestion boxes.

9.1. Pre-Work Briefings

The PC must ensure Pre-Work Briefings are carried out for all Construction Work undertaken on the Sydney Metro Program. The PC must systematically inspect Pre-Work Briefing processes to make sure they are being conducted and recorded, and that control actions are implemented. Sydney Metro's expectation is that Pre-Work Briefings are engaging, cover off relevant issues and outline activities of the day and or other circumstances. The pre-work briefing must include the opportunity for worker input and must be led by a supervisor that has successfully completed the Sydney Metro Frontline Leadership program.

The PC is to ensure that Subcontractors undertaking construction work packages:

a. Conduct work activity/task pre-work briefings with their work crews; and

b. Maintain a record of briefing content, including attendance sign off sheets that can be provided to the PC or Sydney Metro on request.

9.2. Toolbox Talks

Toolbox talks must be conducted weekly as a minimum, and must be used to present the status of safety performance, incidents, relevant safety alerts, lessons learnt, bulletins, messages, etc. Toolbox talks must be delivered in an engaging manner.

The PC may require the subcontractor undertaking construction work packages to:

(a) Conduct specific toolbox talks with their work crews.

(b) Maintain a record of toolbox talk content and attendance that can be provided to the PC or Sydney Metro on request.

9.3. Safety Alerts, Lessons Learnt and Bulletins

The PC must ensure that any relevant safety alerts, lessons learnt, and bulletins, (including those which the Principal Contractor has received from a third party) are formally communicated on the PC's site(s) and are communicated to Sydney Metro in a timely manner to enable sharing across the program.

9.4. Health and Safety Committee Meetings

The PC must ensure that Health and Safety Committee meetings are attended by the PC's Project Director or their nominated delegate who is not in a safety role.

10. Health & Safety Reporting

10.1. Reporting to Sydney Metro

The Principal Contractor (PC) must provide the Principal's Representative with monthly safety statistics by the fifth working day of the month following the reporting period. The PC

must provide the following information as required in Appendix E: Monthly Safety Report Measures.

(a) Hours worked and number of workers (Full Time Equivalents).

(b) A breakdown of Sub-contractors vs PC Employees.

(c) Number of Sub-contractor companies.

(d) Incidents and Classifications.

(e) Drug and Alcohol Tests and Results.

(f) Inspections, Audits, Tasks Observations (planned and carried out).

(g) Number of workers inducted.

(h) Lead Indicators as determined in the HSPI.

(i) Occupational Health, Hygiene & Wellbeing reporting.

(j) Heavy Haulage *CoR* reporting.

(k) Corrective actions closed out in agreed timeframe.

(l) Percentage of injuries where a full investigation is undertaken.

(m) Number of safety alerts generated and shared.

10.2. Reporting to External Parties

The PC must:

(a) Have procedures that define when and how it will report to relevant regulatory authorities (e.g. SafeWork NSW, ONRSR, RMS OFSC, etc.) in accordance with relevant legislation, guidance and in accordance with the PC's certification requirements.

(b) Provide to Sydney Metro copies of communications to any external authorities, including SafeWork NSW, OFSC, RMS, Sydney Harbour Foreshore authority, Sydney Ports Corporation, Sydney Trains, Ausgrid, Sydney City Council, etc.

(c) Not report any matter directly to ONRSR unless with the prior approval of Sydney Metro.

11. Workplace Hazard Management

11.1. Work at Height

The Principal Contractor (PC) must develop, implement and maintain a procedure for managing the risks of working at height which addresses the risks of injury from persons and objects falling. The procedure must comply with the WHS Act, the WHS Regulation, the Construction Work – Code of Practice, the Managing the Risk of Falls at Workplaces – Code of Practice and applicable Australian Standards.

The PC must ensure that every effort is made to eliminate, isolate or engineer out the need to work at height.

Where the controls for managing the risk of falls from heights do not involve at least engineering controls, the PC must ensure the process requires the following:

(a) A *Risk Assessment* is undertaken to determine and document why each of the higher order controls are not reasonably practicable;

(b) Where a control lower than engineering on the hierarchy is the preferred method, written approval is required from the PC's Project Director or their delegate.

11.1.1. Use of Ladders for Access/Egress

Where ladders (including fixed ladders) are determined to be the preferred method of access/egress, the PC must ensure that the following are undertaken:

(a) A *Risk Assessment* must be undertaken to determine and document why each of the higher order controls are not reasonably practicable.

(b) Written approval is required from the PC's Project Director or their delegate before their use is permitted.

11.1.2. Falling Objects

Where there is a risk of falling objects striking someone, in addition to the requirements of Codes, Australian Standards and legislation, the PC must ensure the extent of the exclusion zone is determined by a *Risk Assessment* and must consider warning signage and physical measures to prevent unauthorised access.

11.2. Temporary Works

11.2.1. General Requirements

The PC must ensure a Temporary Works Management Procedure is developed and implemented. The procedure must ensure that a risk based approach is taken to the management of Temporary Works, which classifies the Temporary Works according to safety risk. The following controls are required for Temporary Works which carry the risk of multiple worker fatalities, public injury or major property damage in the event of collapse:

(a) Development of a detailed design in accordance with the applicable Australian Standard by an engineer with at least 5 years of experience and professional membership of Engineers Australia.

(b) Review and approval of the design by an independent engineer to verify conformance to the applicable Australian Standards and PC requirements.

(c) Construction of the Temporary Works in accordance with the approved design by competent workers.

(d) Verification that construction of the Temporary Works complies with the approved design by an independent person prior to use/loading of the Temporary Works. Independent persons must not be engaged by the installer of the Temporary Works.

(e) Alterations, modification or amendments to the Temporary Works design post-approval must be assessed by an authorised and competent person.

(f) Physical controls must be used where there is a risk of Temporary Works being struck by mobile plant.

Temporary Works includes:

(g) Formwork where the deck of the formwork is 3 metres or more above the lowest surrounding ground level or, if the area of the discrete formwork deck is more than 16 square metres and is designed to hold more than or equal to 2.5 cubic metres or 6 tonnes of wet concrete.

(h) Scaffolding (including mobile scaffolding and access scaffolding/stairs) from which an object or person has the potential to fall 4 metres or greater.

(i) Falsework and/or Temporary Bracing or Propping used to support structures under construction or demolition.

(j) Measures used to prevent the risk of collapse of excavations deeper than 1.5m:

i. Benching.

ii. Trench Shields.

iii. Shoring boxes.

iv. Batter slopes with and angle between 45-90 degrees.

(k) Temporary tunnel shaft ground protection (i.e. rock bolts, shotcrete, soil nails, etc.).

(l) Tower Crane Foundations.

(m) Temporary piling platforms.

11.3. Scaffolding

All scaffolding must be managed by the PC in accordance with the WHS Act, WHS Regulation, AS/NZS 1576, AS/NZS 4576, and Safe Work Australia's Scaffolding and Scaffolds Work - Guidance Material. Scaffolding above 4 metres must also be managed in accordance with the requirements in the section of this Standard, entitled Temporary Works. The following additional requirements must be met by the PC when managing the risks associated with scaffolding:

(a) Scaffolds below 4 metres must be erected in accordance with the manufacturer's instructions/drawings.

(b) Scaffold designs or manufacturer drawings/instructions must be followed by the scaffold erector and made available to the Principal's Representative upon request.

(c) Scaffolds (including those that are less than 4 metres) are only erected by trained, competent persons.

(d) Implementation of a Scafftag system for the control of pre-use and monthly inspections.

11.4. Formwork and Falsework

The PC must ensure all Formwork and Falsework is designed, erected, used and dismantled in accordance with:

- The WHS Act and WHS Regulation

- Safe Work Australia – Formwork and Falsework – Guidance material
- AS 3610-1995 Formwork for concrete

11.5. Cranes and Load Shifting

The PC must ensure lifting operations are managed in accordance with:

- The WHS Act and WHS Regulation
- Safe Work Australia – Cranes – Guidance Material
- AS 1418 Cranes (series)
- AS 2550 Cranes, hoists and winches (series)
- SafeWork NSW – Managing the Risks of Plant in the Workplace – Code of Practice

In addition, the PC must ensure the following:

(a) A procedure must be developed for the management of all lifting operations.

(b) A permit system must be in place to control all lifting operations with exception of those deemed by the PC to be low risk.

(c) Any lifting operations above 85% of the crane's rated capacity must not commence without the written approval of the PC's Project Director.

(d) All mobile crane lifts above 75% of the crane's rated capacity and all multiple crane lifts must be risk assessed and a documented lift plan must be developed in accordance with AS2550 and approved by the PC's Project Director or their appointed person (e.g. lift coordinator).

(e) The appointed person must be trained and assessed as competent in the requirements of AS2550 and AS1418.

(f) Mobile cranes must only travel and be set up on approved suitable ground, whereby a geotechnical engineer must assess the ground conditions and advise on appropriate ground protection to ensure suitable support of crane outriggers.

(g) All outriggers are to be packed/supported as per manufacturers' and/or engineer's recommendations and be protected from traffic/disturbance by physical barriers.

(h) All mobile cranes, including pick and carry cranes (i.e. Franna) must be fitted with a rated capacity limiter with external visual indicators (i.e. Christmas tree/traffic light).

(i) The rated capacity limiter must be calibrated using a known test weight at the PC's site. The frequency of calibration of the rated capacity limiter must be determined by the PC but must not exceed 3 months.

(j) Non-conductive tag lines or equivalent must be used to control loads being handled/moved by lifting equipment, to ensure workers remain clear of any suspended load.

11.5.1. Tower Cranes

The PC must ensure all Tower Cranes comply with the requirements of:

- SafeWork NSW – Expectations for Tower Cranes – Position Paper

- Safe Work Australia – Cranes Guidance Material
- AS 1418 – Parts 1 and 4
- AS 2550 – Parts 1 and 4

The PC must take the following additional steps for all Tower Cranes in the circumstances identified below:

(a) fire detection and suppression systems are not installed: the PC must demonstrate to the satisfaction of Sydney Metro that the controls in place to manage the event of a fire are sufficient to control the risks;

(b) a powered access system (i.e. lift/hoist) is not provided for use of operation and maintenance: the PC must demonstrate to the satisfaction of Sydney Metro that the controls used to manage the risk of falls during access/egress and rescue manage the risk *SFAIRP*; and

(c) there is a risk of contact with jibs of other tower cranes, or structures: all tower cranes must be fitted with engineering controls (e.g. motion limiters/restrictors) to prevent collision (governor) during use and in out-of-service adverse weather conditions (e.g. weather vane activists).

In addition, the PC must ensure that:

(d) Hydraulic hoses are flame resistant; and

(e) Tower crane operators meet minimum fitness for work pre-employment screening checks.

11.6. Piling

The Principal Contractor (PC) must ensure that for all types of piling, a suitable working platform is provided. Before a piling rig is set up a Working Platform Certificate is to be issued confirming that the platform has been properly designed and constructed in accordance with the PC's Temporary Works Management Procedure. The PC must maintain the work platform throughout all stages of the piling activity.

All plant used in pilling activities must be managed in accordance with the section of this standard, entitled, Plant and Equipment.

The PC must ensure that all workers involved in piling operations are trained and competent in the type of piling being carried out. Piling rig operators are to have proof of competency assessment for the piling rig being operated and all piling operations are to be under the supervision of a competent supervisor.

The PC must ensure that all piling activities are controlled using a permit to work system as required in the section of this standard, entitled, Permits to Work.

Piles and other materials are to be stacked safely, circular materials such as pile casings and cages are to be chocked to prevent rolling.

Safe access is to be provided to all areas and work areas around piling rigs are to be cordoned off to prevent unauthorised access from personnel and vehicles.

A suitable method of breaking down piles is to be used to prevent/reduce the likelihood of hand arm vibration. Hydraulic pile cutters/breakers and passive and active systems are to be considered before the use of manual breaking.

Open boreholes are to be covered and protected to prevent anything or anyone falling or the pile casing (if used) is to be left a minimum of 1m above ground level.

11.7. Demolition Work

The PC must ensure that all demolition work is managed in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Demolition Work Code of Practice
- AS 2601:2001 The Demolition of Structures

In addition and prior to the decision as to the method of demolition, the PC must undertake a risk workshop for each building to be demolished. Sydney Metro's representatives must be invited to the risk workshop. The risk workshop must be used to develop a demolition works *Risk Register* and Demolition Management Plan/Work Plan and determine critical path hold points to be applied throughout the demolition. The Demolition Management Plan/Work Plan must be provided to the Principal's Representative for review for compliance against this Standard and the above legislation, Demolition - Code of Practice and Australian Standards. Demolition activities (including removal of furniture, fittings, and fixtures) must not commence prior to written approval from the PC's Project Director.

All demolition work methodologies must include photographs/sketches/schematics to be used to communicate the sequence of demolition to be followed by all workers involved in the work.

For all high-rise demolition, all PC works associated with demolition planning and methodology must be independently reviewed and approved by a qualified structural engineer who has a minimum of 5 years of experience in high-rise demolition and holds a professional membership with Engineers Australia.

The PC must ensure that all demolition workers and supervisors participate in the Sydney Metro Demolition Industry Curriculum Program (refer to Appendix B: Sydney Metro Industry Curriculum). Refer also to the sections of this Standard, entitled Asbestos Control and Medical Assessment and Health Surveillance Program for further related detail.

PC Demolition Supervisors (Competent Persons) must have the following requisite qualifications when undertaking demolition supervision works at Sydney Metro:

(a) State Demolition Nominated Supervisor Training (2016).

(b) Certificate IV in Demolition (CPC410013).

Note: NSW arrangements for new applications licencing requirements requires as a minimum State Demolition Nominated Supervisor Training (2016).

11.8. Explosives

The PC must develop an Explosives Management Plan in accordance with:

- The WHS Act and WHS Regulation
- Explosives Act 2003 (NSW) and NSW Explosives Regulation 2013
- Australian Explosives Codes

- Australian Dangerous Goods Code
- AS 2187 and AS 4326

The PC's Explosive Management Plan must contain as a minimum:

(a) A description of the process by which the explosives will be stored, transported and used in accordance with licence requirements

(b) Licensing, training and competence requirements for those storing, transporting, and using explosives

(c) An assessment of the risks that may arise from storage, transport and use of explosives

(d) A description of the measures that are being implemented to manage risks associated with the storage, transport and use of explosives

(e) Any further information that may be required by a regulatory authority

The PC's Explosives Management Plan must be provided to Sydney Metro for review for compliance against this Standard. Approval must be gained from the PC's Project Director prior to any storage, transport or use of explosives takes place.

Prior to the use of explosives, the PC must also develop a Blast Management Plan as required by AS 2187 (series). The Blast Management Plan must be provided to Sydney Metro representatives upon request for review for compliance against this Standard.

11.9. Excavation Work and Tunnelling

11.9.1. Excavation Work

The PC must manage the risks associated with all excavations utilising a permit to work system as required by the sections of this Standard, entitled Permits to Work and Permit to Work – Tunnelling. Procedures must be developed and implemented in accordance with:

- The WHS Act and WHS Regulation
- Contaminated Land Management Act 1997 (NSW)
- SafeWork NSW – Excavation Work – Code of Practice

The risks associated with contacting underground/buried services must be managed by the PC in accordance with the section of this Standard, entitled Underground/Buried Services.

For all excavations deeper than 1.5m, the PC must ensure benching and/or battering is designed in accordance with the PC's Temporary Works procedure and the requirements listed in the section of this Standard, entitled Temporary Works. Geotechnical engineers must provide written certification and/or verification that the proposed benching and/or battering is designed in accordance with the Temporary Works procedure. In addition, geotechnical engineers' advice related to excavation safety, must include when a review must be undertaken of the proposed method and frequency of benching and/or battering by reference to both clear time periods and/or environmental or other conditions.

Where shoring is used, shoring systems that prevent excavation collapse must be used in preference to the use of shoring boxes. Shoring systems must be certified by a qualified engineer experienced in the system used.

Steel shoring and trench lining equipment must be designed by a competent person in accordance with AS 4744.1 and/or AS 5047.

11.9.2. Tunnelling

The PC must ensure the risks of tunnelling are managed in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Tunnels Under Construction Code of Practice
- Safe Work Australia – Guide for Tunnelling Work
- Applicable Australian and International Standards
- Sections of this Standard: Permit to Work – Tunnelling and Temporary Works.

In addition, the PC must ensure all tunnelling workers complete the Sydney Metro Industry Curriculum Program applicable to Tunnelling (refer to Appendix B: Sydney Metro Industry Curriculum).

The PC must develop and implement a procedure for the management of exclusion zones around shotcrete taking into account the principles contained within the Crossrail Best Practice Guide for SCL Exclusion Zone Management.

11.10. Electrical Safety

The PC must ensure risks associated with electrical work are identified and managed. Procedures must be developed in accordance with:

- The WHS Act and WHS Regulation
- AS/NZS 3012:2010 Electrical installations – Construction and demolition sites
- SafeWork NSW – Managing Electrical Risks in the Workplace – Code of Practice

11.10.1. Electrical Work

The PC must ensure all electrical work on low-voltage installations is conducted in accordance AS/NZS 4836. Live electrical work is not permitted, except with the prior written approval of the Line Manager of the PC's Project Director. Live work is taken to include work on or near (i.e. within the safe approach distances) energised electrical circuits.

Where a circuit is de-energised so that work may be performed on it, lockout devices must be used in addition to danger tags. The PC must have a permit system that ensures confirmation of effective de-energisation through testing with approved testing devices.

Where electrical work will be required in the vicinity of or on High Voltage electrical infrastructure, the PC must develop procedures in accordance with the Electrical Distribution Authority's standards and rules.

The PC must have processes in place to manage the risks associated with working near overhead and underground services. These must be developed in accordance with Safe

Work Australia's guidance material for working in the vicinity of overhead and underground electric lines. In addition to the above, a site specific services plan must be developed.

11.10.2. Overhead Services

The PC must have a procedure that controls all work conducted in the vicinity of overhead services. The procedure must include hold points and a permit to work system in accordance with the section of this Standard, entitled Permits to Work. Control measures must be developed in accordance with the Hierarchy of Controls and the applicable utility provider's standards. The procedure must require the PC's Project Director to approve the use of spotters as a control measure without higher order controls such as physical barriers, height/slew restrictors, etc. Where spotters are used, they must be trained and assessed as competent by the PC.

The PC must secure that all low voltage or telecommunications overhead services within the proximity of vehicle/plant access points to construction sites be fitted with tiger tails. In addition to the use of tiger tails, the PC must also ensure that goal posts and flagging are used.

11.10.3. Underground/Buried Services

The PC must have a documented process for managing the risks of impacting existing underground services through ground disturbance in accordance with SafeWork NSW's - Work Near Underground Assets - Guide.

The process must include the development of Site Specific Services Plans, a permit to work system and the requirement for approval by a senior manager of the PC of the methods to identify and validate all known, suspected and unknown buried services.

In addition to contacting Dial Before You Dig and the relevant utility/service provider, methods for locating and avoiding underground services must include:

(a) A site inspection to identify potential services, their location, status and type.

(b) Use of Ground Penetrating Radar as a control measure to attempt to identify any unknown services.

(c) The use of non-destructive digging techniques that have been approved by the utility provider and appropriate to the risks from potential damage of utility during ground disturbance.

(d) The use of cable avoidance tools.

Where slit-trenching methods are used, the specific details for the conduct of slit-trenching must be developed by the PC in accordance with the *Risk Assessment* (e.g. depth, potential bending radius of cables, etc.). The process must ensure that persons undertaking service location and/or non-destructive digging are trained and competent and where required, authorised by the applicable utility service provider.

The PC's permit to work system must be in accordance with the section of this Standard, entitled Permits to Work.

11.11. Confined Spaces

The PC must develop procedures for the management of work in or on confined spaces. The procedures must provide for the identification of confined spaces in accordance with classification of confined spaces as per:

- The WHS Act and WHS Regulation
- SafeWork NSW – Code of Practice Confined Spaces
- AS 2865-2009 Confined spaces

The procedure must ensure a permit to work system is applied for confined space work and permits must be issued by the PC in accordance with the section of this Standard, entitled Permits to Work.

11.12. Hot Work

The PC must develop/implement a procedure for managing the risks of hot work in line with:

- The WHS Act and WHS Regulation
- Safe Work NSW – Welding Processes Code of Practice
- AS 1674:2007 Safety in welding and allied processes

Hot work conducted outside of a designated hot work area must be controlled in accordance with a permit to work system which complies with the section of this Standard, entitled Permits to Work. In addition, the PC must ensure all welding tasks are conducted by persons qualified and competent in the requirements of AS/NZS 1554.

11.13. Chemical Management

The PC PHSMP must include a system to reduce identified risks to *SFAIRP* for working with, transporting and storage of Hazardous Chemicals (including Hazardous Substances and Dangerous Goods) in accordance with:

- The WHS Act and WHS Regulation
- The Dangerous Goods (Road and Rail Transport) Act and Dangerous Goods (Road and Rail Transport) Regulation
- Australian Dangerous Goods (ADG) Code
- SafeWork NSW – Managing Risks of Hazardous Chemicals in the Workplace – Code of Practice

Where Hazardous Chemicals are used/ transported/ stored by PC's on Sydney Metro work sites, a *Risk Assessment* must be carried out and used to develop appropriate controls including the development of a SWMS and/or SWIs for the safe use/ transport/ storage of the Hazardous Chemical. The PC must ensure that storage locations for Hazardous Chemicals are sign-posted and that signs include relevant emergency procedures.

11.14. Occupational Health, Hygiene and Wellbeing

Sydney Metro aims to improve the health and wellbeing of its workforce by ensuring its contractors place a high priority on and appropriately resource occupational health, hygiene and wellbeing programs. In order to achieve this aim, the PC must:

(a) Engage the services of an *Independent Certified Occupational Hygienist (COH)* to provide governance over the performance of all occupational health and hygiene activities.

(b) Establish systems of work that facilitate input and participation of all stakeholders to inform and improve decision making regarding occupational health risks to prevent occupational illness and disease. This includes providing Sydney Metro with the information necessary for Sydney Metro to sufficiently understand the risk to health across the PC's scope of work the on Sydney Metro program.

(c) Develop, document, implement, and evaluate systems intended to identify, assess and control those hazards likely to adversely affect workers health during Contract Package design, procurement, planning, commissioning, construction and operation.

(d) Satisfy the application of the control hierarchy, commensurate with controlling risks to a level that is as low as reasonably practicable.

(e) Comply with all legal and other requirements.

11.14.1. Occupational Health & Hygiene Program

An *Occupational Health, Hygiene & Wellness Management Plan (OHHWMP)* must be documented by the PC and submitted to Sydney Metro for review of conformance to this standard and applicable legislation, Codes of Practice, guides and Australian Standards, prior to site establishment. It must specify and detail the methods for the systematic management of occupational health risks to all personnel working under the direction of the PC and must include, but not be limited to:

(a) Occupational Health, Hygiene & Wellness (OHHW) Objectives and Targets including leading Key Performance Indicators.

(b) Methods for consultation, communication and engagement with all stakeholders commensurate to Health Risk Assessment (HRA) activities.

(c) Minimum competency and training requirements for workers who are required to implement and supervise activities to comply with this Standard, including members of the PC's health and safety team, management, and all members of the workforce.

(d) Wellbeing initiatives targeted at reducing personal risk factors likely to impact OHHW performance.

(e) Standardised methods for the assessment and evaluation of occupational health risks in accordance with industry recognised approaches, ensuring health risks are adequately anticipated, recognised, evaluated, and controlled by competent persons in accordance with the hierarchy of controls as per the three level model detailed in the section of this Standard, entitled Health Risk Assessment.

(f) Methods to identify persons for participation in medical assessment and health surveillance activities in accordance with the section of this Standard, entitled Medical Examination and Health Monitoring Program.

(g) Methods to assess and verify the adequacy of controls during each project phase including Exposure Control Plans to be created for *Significant Risks to Health* with particular regard for asbestos and ventilation.

(h) The review of control effectiveness for those measures listed in *Exposure Control Plans* at a frequency consistent with the assessed risk. *Significant Risks to Health* must be prioritised for control. Verification, ongoing maintenance, and testing of engineering controls must be documented. Where hazards are assessed as having a *Significant Risk to Health*, audit tools must be created to audit the effectiveness of critical controls for those hazards.

(i) The Exposure Assessment Program including verification and interpretation of exposure assessment activities to demonstrate compliance, effective control, and characterization of *Similar Exposed Groups (SEGs)* as per AIOH (2014). The program must include information on scientific analysis, calibration of equipment, sampling methodologies and appropriate analytical laboratory selection. Personal exposure monitoring must be performed at a frequency relative to the level of risk assessed in the HRA or a higher frequency as recommended by the *COH*.

(j) The process to provide training in OHHW to the workforce in addition to developing general competence and knowledge within the PC's WHS team on the health hazards associated with the work to be performed.

(k) Methods for stakeholder identification, consultation, communication and engagement with the workforce and Sydney Metro, including the process to collaborate with Sydney Metro on HRA and exposure assessment activities.

(l) Implementation of a respiratory protection program in accordance with AS1715 in all circumstances where engineering controls or higher do not control exposure concentrations to below 50% *TWA-WES*.

(m) Implementation of a hearing conservation program in accordance with AS1269 in all circumstances where engineering controls or higher do not control occupational noise exposure concentrations to below 80 dB LAeq,8hour[1].

(n) The process by which all formal recommendations made by the *COH* will be recorded, communicated, tracked, and implemented as soon as possible by the PC.

(o) The occupational health and hygiene information management system used for the systematic retrieval and reporting of valid information to manage occupational health and hygiene risks. The system must link de-identified medical surveillance and health data with de-identified personal exposure data collected per *SEG* for the purpose of assessing occupational health performance.

(p) Recording and investigating all incidents associated with occupational health hazards to determine corrective actions required to reduce the risk of illness or fatality to workers. This includes individual exposure sample results that exceed the WES or where occupational illnesses have been reported. Incident investigation activities must include revision of the exposure control plans to assess the effectiveness of existing controls.

(q) Capturing of data and monthly reporting on the efficacy of the OHHW program against.

[1] Whilst 85 dB LAeq,8hour is the current legal exposure limit, 80 dB LAeq,8hour will serve as an action limit.

11.14.2. Health Risk Assessment

The PC must have an established and documented system which ensures that the assessment and evaluation of occupational health risks follows the three-level assessment model described below. All HRA's must be facilitated by the independent COH in conjunction with the PC team relevant to the works package. HRA results must be approved by the PC and submitted to Sydney Metro for review in accordance with Appendix F.

The PC's project level risk register must use the occupational health consequence and likelihood criteria (Appendix G: Health Risk Matrix).

Formal Level 1 Baseline qualitative HRA's should be conducted as part of the section of this Standard, entitled Project Level Risk Assessment to identify and evaluate occupational health risks associated with all activities likely to be performed. *Level 1 HRA* involves a desktop review of available information including historical exposure data (if available), for purposes of identifying *SEGs*; appropriate control measures to reduce the risk *SFAIRP*; informing qualitative judgement of occupational exposures; prioritising *SEGs* for control; establishing quantitative exposure assessment and health surveillance activities; and to provide assurance that health hazards can be managed to an acceptable level of risk.

Level 2 HRA involves a walkthrough assessment per *SEG* by the *COH* in consultation with relevant stakeholders. Formal Level 2 qualitative HRA's must be conducted within 1 month of project commencement for those *SEGs* estimated to have a *Significant Risk to Health*; and three months for remaining *SEGs*. *Level 2 HRA* documents exposure characteristics for each *SEG*; verifies *Level 1 HRA* exposure estimates including the presence and perceived effectiveness of implemented controls; and provides formal recommendations for implementation by the PC.

Level 3 Quantitative HRA's must include a documented exposure assessment strategy by the *COH*, submitted to Sydney Metro prior to implementation. *Level 3 HRA* must be performed where *Level 2 HRA* demonstrates that a *Significant Risk to Health* exists; where exposures could exceed, or have exceeded, the WES; where complaints or symptoms have been reported relating to health hazards; or changes in activities could potentially increase exposures to health.

Level 3 HRAs are conducted to measure personal exposure to health hazards to determine compliance with *Acceptable Workplace Exposure Standards (WES)*; to characterise *SEGs*; to evaluate the effectiveness of controls; to perform observations and conduct worker interviews; to identify and quantify hazards in the workplace; and to enable workers to ask questions. The independent *COH* must be provided access to all active work areas. A system must be in place that ensures all personal exposure sampling and analysis is performed by *Occupational Hygienists* in accordance with relevant Australian Standards or validated test methods. All respirable crystalline silica exposure samples must be analysed by a laboratory, accredited by NATA to perform X-ray diffraction analysis in accordance with the NHMRC (1984) method.

Where monitoring for personal exposure identifies a *Significant Risk to Health* (excluding PPE as a control measure) Sydney Metro must be notified; the PC must review the control measures to reduce the risk and select and implement those control measures to control the risk SFAIRP; and all recommendations made by the COH must be recorded, communicated, and implemented.

PC Risk review frequencies, including Level 3 HRA, must be no less than monthly for risks assessed as High or Very High; Two-Monthly for risks assessed as Medium; and Quarterly otherwise. In all cases, the level of protection afforded through the use of PPE shall not be taken into account when determining the level of risk to health.

The results of personal exposure assessment must be compared against Acceptable WES to determine compliance, evaluate occupational health risks and determine exposure acceptability for each hazard. Acceptable WES are not limited to those substances listed below. Action Limits must be established at equal or lower to 50% of the Acceptable WES. Exposures above the Action Limit demonstrate that a process is not under reasonable control and an Exposure Control Plan must be implemented to further reduce exposure.

Table 2: Workplace Exposure Standards

Parameter	Unit of Measure	STEL	8-hour TWA
Respirable Dust	mg/m3	n/a	2.5
Inhalable Dust	mg/m3	n/a	10
Respirable Crystalline Silica (RCS)	mg/m3	n/a	0.1
Diesel Particulate Matter (DPM)	mg/m3	n/a	0.1
Carbon Monoxide (CO)	ppm	200	30
Carbon Dioxide (CO2)	ppm	30000	5000
Hydrogen Sulphide (H2S)	ppm	15	10
Nitric Oxide (NO)	ppm	n/a	25
Nitrogen Dioxide (NO2)	ppm	5	3

Action Limits must include any personal full shift exposure > 50% of the TWA-WES; and/or > STEL; and/or > ceiling limit; and/or full shift additive concentration WES > 1. Any individual exposure monitoring result that exceeds an Action Limit must be investigated to determine corrective actions required to reduce exposure to below the Action Limit. Exposures are considered acceptable only where individual exposures are below the Action Limit, and where the 95% upper confidence limit of the minimum variance unbiased estimate (MVUE) of a SEG's exposure is below the TWA-WES.

11.14.3. Asbestos Control

PC asbestos exposure risks, including unexpected asbestos identification, must be controlled in accordance with the requirements detailed in SafeWork NSW Codes of Practice:

- SafeWork NSW – How to Manage and Control Asbestos in the Workplace – Code of Practice
- SafeWork NSW – How to Safely Remove Asbestos – Code of Practice

Licenced Asbestos Assessors utilised must be recognised as competent *Occupational Hygienists*.

11.14.4. Risks of Importation of Asbestos Containing Materials

The importation of asbestos or asbestos containing materials into Australia is prohibited under the Customs (Prohibited Imports) Regulations 1956. PCs must ensure that procedures are developed and implemented to manage the risk of importing asbestos and asbestos containing materials. Procedures must address:

(a) Development of specifications, including any products that may be prohibited and / or restricted, including asbestos;

(b) Identification of inspection and testing regimes based on risk of containing banned products, including country of origin, type of material/product, end use, supplier etc.; and

(c) Product recall and emergency / crisis response.

Where products are known to, or may contain asbestos, the PC must:

(a) Obtain certification from the manufacturer that goods are asbestos-free;

(b) Obtain test certificates from the overseas supplier to verify the asbestos free claim. For test certificates to be valid, there must be proof that the testing was undertaken for the batch of product that is being imported and be conducted by a competent laboratory, and

(c) Refer to guidance from the COH and regulators whether further testing by a National Association of Testing Authorities (NATA) laboratory is necessary.

Where a known risk is identified, the PC must provide written assurance to Sydney Metro that they have implemented appropriate steps throughout their supply chain.

11.14.5. Ventilation in Tunnels and Enclosed Areas

A PC Ventilation Management Plan must be documented where HRA activities identify ventilation as a control measure, to achieve the most conservative performance requirements detailed in:

- SafeWork NSW – Tunnels under Construction – Code of Practice
- Safe Work Australia – Guide for Tunnelling Work

Additionally, the PC's Ventilation Management Plan must ensure:

(a) that in every area, healthy conditions exist and hazardous chemicals / substances are removed to the extent that they no longer pose a *Significant Risk to Health SFAIRP*. A minimum oxygen concentration of 19.5% must be maintained at all times.

(b) The concentration of oxygen and hazardous chemicals / substances must be routinely monitored in locations representative of the workforce, and steps taken as necessary to ensure contaminant levels do not exceed the Acceptable WES or not otherwise advisedly impact worker health and wellbeing.

(c) The quantity of air supplied and extracted must be that the average flow in the full cross section of the tunnel or shaft is between 0.5 m/s and 2 m/s at all times. The minimum flow recorded in the area where persons work, or are expected to work, must not fall below 0.5 m/s (e.g. in the ring build area of a Tunnel Boring Machine (TBM)).

(d) Ventilation air entering the tunnel is free from dust, smoke, or other impurities.

(e) Except in emergency situations, no person is permitted to work underground when the ventilation system is not operational and an environment hazardous to health exists. Where an emergency exists, persons entering into the tunnel must wear appropriate SCBA and personal gas monitors.

11.14.6. Respirable Crystalline Silica (RCS) Control

PC control measures to minimise exposure to respirable crystalline silica must be documented in the OHHWMP, must apply the hierarchy of controls, and must include the following:

(a) In all cases, except as otherwise approved in writing by the PC's Project Director, engineering controls must be used to reduce exposure to RCS.

(b) Where administrative or lower controls are used, it must be demonstrated that the planned control measure does not result in a new exposure scenario (e.g.: spotters must not be used for dust control where the task results in a *Significant Risk to Health*).

(c) Dust extraction units or water sprays must be placed at sources of dust emission. Where water sprays are used to control dust, unless approved in writing by the PC's Project Director, they must be of the misting type and be designed to specifically control dust emissions and minimise water use (e.g. be an OEM installed feature of plant determined through the Plant Hazard Identification and Control process).

(d) Prevention of the use of a spotter with a water hose for dust control unless approved in writing by the PC's Project Director.

(e) Prohibition of dry brush sweeping in all work areas.

(f) Until personal exposure data can be demonstrated that exposures to RCS are controlled to below 50% of the Acceptable WES:

  i. The use of respiratory protection used under an approved Respiratory Protection Program is mandatory.

  ii. Personal exposure monitoring, documented under an approved Exposure Assessment Strategy, must be performed each month per SEG for the following workers and/or work:

    - ground personnel working in excavations (e.g.: shaft/station/box construction or those performing bulk excavation);
    - all members of a tunnelling crew (e.g.: tunnellers, ring builders, road header operators and offsiders; heavy plant operators; surveyors); and
    - persons performing masonry or concrete cutting, sanding, grinding or drilling.

  iii. Recommendations made by the COH as part of these assessments must be implemented and recorded:

11.14.7. Diesel Exhaust Emissions Control

PC risks associated with exposure to diesel particulate matter and diesel exhaust gases must be documented in the OHHWMP and must be managed in accordance with the WHS Act, the WHS Regulation, Safe Work Australia's Guidance for Managing the Risks of Diesel Exhaust, and the NSW Department of Primary Industry Guideline for the Management of Diesel Engine Pollutants in Underground Environments (MDG29). In cases of conflict between those documents the more conservative approach must be implemented by the PC unless otherwise approved in writing by the PC's Project Director.

Until personal exposure data can be demonstrated to be below the Action Limit of the respective Acceptable Workplace Exposure Standard (excluding PPE as a control), personal exposure monitoring, documented under an approved Exposure Assessment Strategy, must be performed each month for each *SEG* working as part of tunnel construction; shaft/station/box construction; bulk excavation; and those working in enclosed areas where diesel powered plant is used.

11.14.8. Thermal Heat Stress Risk Control

The PC's OHHWMP must document the standardised process to assess and control the risk of developing a heat related illness. Those that assess thermal stress risk must be trained and competent in the processes and equipment to be used. The potential for heat stress must be assessed and controlled in accordance with the methods described in the publication, A Guide to Managing Heat Stress: Developed for Use in the Australian Environment (*Australian Institute of Occupational Hygienists* [AIOH] 2013 and include the use of the Thermal Work Limit as a Stage 2 Index.

11.14.9. Contaminated Ground

An assessment must be undertaken by a COH during the work planning phase to determine the potential risk to workers for any ground contaminants prior to ground disturbance. A plan must be developed by the PC to ensure controls are implemented to determine and monitor the level of contaminants in accordance with the Acceptable WES for workers.

11.14.10. Noise

The PC's OHHWP must document the standardised process to assess and control the risk of developing noise induced hearing loss which must include the requirements listed in:

- SafeWork NSW – Managing Noise and Preventing Hearing Loss at Work – Code of Practice
- AS/NZS 1269 Occupational Noise Management

11.14.11. Psychosocial Hazards

The PC's OHHWP must describe how the PC will manage psychosocial hazards such as bullying and harassment, work-life balance, stress and resilience, and suicide prevention. The PC's OHHWP must also identify how the PC will encourage diversity and inclusion in the workforce and provide for individuals that may be vulnerable to the above psychosocial hazards.

11.14.12. PPE Programs

Where respiratory protection is used by the PC, the requirements in both AS/NZS 1715 and the section of this standard entitled Respiratory Protection Equipment (RPE) must be implemented. Where hearing protection is used, the requirements in AS/NZS 1269.3 must

be implemented by the PC. All PPE programs must be documented and approved by the *COH* prior to work commencing.

11.14.13. OHHW Training Program

Training and instruction must be documented and provided by the PC to the workforce for the occupational hazards identified in the HRA. Training must include the requirements in the WHS regulations in addition to those specified in:

- AS/NZS1715, AS/NZS1269.3, AS/NZS2161.1, AS/NZS1336 and AS/NZS4501.1
- SafeWork NSW – Managing risks of hazardous chemicals in the workplace - Code of Practice
- Safe Work Australia – Health Monitoring for Exposure to Hazardous Chemicals – Guide for PCBU
- SafeWork NSW – Managing the work environment and facilities – Code of Practice

11.14.14. Medical Examination and Health Monitoring Program

The PC process for Medical Examination and Health Monitoring must be documented in the OHHWP. As a minimum the Plan must be developed in accordance with the Safe Work Australia – Health Monitoring for Exposure to Hazardous Chemicals – Guide for PCBUs and provide for the following:

(a) Skin checks for dermatitis for workers exposed to cement dust or wet concrete (e.g. pre-cast facility, concrete pumping, grouting, concrete cutting workers, etc.).

(b) Pre-employment and annual skin cancer checks for workers who predominantly work outdoors (e.g. traffic controllers, scaffolders and riggers, rail infrastructure workers, surveyors, etc.).

(c) Provision of crystalline silica baseline health monitoring for workers assessed as having a *Significant Risk to Health* and be performed as per Safe Work Australia, Crystalline Silica.

(d) Health effects of persons required to conduct hot work as a significant proportion of their work (e.g. boilermakers, welders, maintenance workers, etc.). All workers exposed to hot and humid environments and occupational activities must be evaluated specifically with regards to personal risk factors likely to affect their thermoregulation.

(e) Audiometric assessment as per AS/NZS 1269.4 baseline and at least every two years. More frequent audiometric testing, if determined in the HRA, must be conducted.

(f) Workers exposed to hand arm vibration must be evaluated specifically with regards to personal risk factors likely to affect their health.

(g) Biological monitoring, for example a blood-test for workers potentially exposed to lead (e.g. demolition workers).

Medical examination is required by the PC to ensure workers are deemed fit for duty for the type of work to be performed. Where personnel are required to wear RPE, they must be provided a Respiratory Protective Equipment assessment by a medical practitioner as per AS/NZS 1715 and assessed as fit to wear the assigned RPE.

The PC must ensure that any medical recommendations are acted upon.

11.14.15. OHHW Key Performance Indicators

The PC must establish an OHHW KPI suitable for the lifecycle phases of the project. It must be a leading metric that contributes to the achievement of the OHHW Objectives and Targets. Where PPE forms a risk control measure to reduce occupational exposure to a *Significant Risk to Health,* then leading indicators focused on PPE must be implemented as part of that KPI. These are termed *PPE Provisions*, and result in the OHHW KPI being divided into sub-groups. Therefore achievement of the OHHW KPI becomes dependent on achieving each individual target within each sub-group. PPE Provisions in the Occupational Health KPI must include:

(a) Number of workers who have received respirator or hearing protection fit testing in the past 12-months compared to those who are required to wear that PPE. Expressed as a %.

(b) Number of workers who have received respirator or hearing protection training (as applicable to the type of PPE in use) in the past 12-months compared to those who are required to wear that PPE. Expressed as a %.

Each sub-group shall have equal weighting and be grouped together for determination of achieving the OHHW KPI, with a target of 90%.

11.14.16. OHHW Performance Reporting

The PC must report performance against targets monthly in the Health Performance Report. The COH engaged by the PC is to prepare and approve the data to be included in the monthly report disseminated to Sydney Metro. This requirement does not limit the immediate reporting of incidents.

The Health Performance Report shall include items listed in Appendix E – Monthly Health & Safety Report Measures, in addition, to the following via the OHHW Information Management System:

(a) Validated personal exposure data in an easily accessible format, grouped per SEG, and de-identified from the worker.

(b) De-identified medical and health data linked with personal exposure data per SEG for the purpose of assessing occupational health performance.

(c) The assessed risk to health per SEG based on the most recent HRA performed.

11.14.17. OHHW Performance Review

The PC shall facilitate independent audits of health risk assessment and control activities by Sydney Metro with the aim of validating performance. Audits will be prioritised to those SEGs that have been assessed as having a Significant Risk to Health and will involve qualitative assessment of health risk, inspections of control measures, and quantitative assessment via personal exposure assessment where necessary.

11.15. Hazardous Manual Tasks

The PC must have a process that identifies, assesses and controls the risks associated with hazardous manual tasks in accordance with:

- WHS Act and WHS Regulation
- SafeWork NSW – Hazardous Manual Tasks – Code of Practice

The process must identify when comprehensive risk assessments are to be undertaken and provide for hazardous manual task controls to be included in SWMS/SWIs. In relation to the application of the hierarchy of controls, for tasks identified as highest risk of musculoskeletal disease or injury, ergonomic assessment must be undertaken by a competent person.

11.16. Driving and Vehicle Safety

The PC must comply with the requirements of the WHS Act, Road Transport Act 2013, Road Rules 2014, HVNL, and their subordinate legislation to ensure the risks to workers and the public are reduced SFAIRP when driving on Sydney Metro sites and driving to and from Sydney Metro sites on the public road network.

11.16.1. Minimum Vehicle Safety Equipment

The PC must ensure all light and heavy vehicles used to transport equipment, plant, materials and people to and from the site and working areas are equipped with the following mandatory safety equipment:

(a) Three-point seat belts (for the driver and all passengers).

(b) Rear-view mirrors.

(c) Reversing cameras, quacker type alarms and collision/proximity sensors.

(d) Lights (head and tail, stop, turn signal and emergency warning).

(e) Light and high visibility colours for vehicles.

(f) Daytime running lights.

(g) No additional window tinting.

(h) Flashing lights (unless determined otherwise by risk assessment).

(i) Fire safety equipment capable of supressing or extinguishing potential vehicular fires.

In addition to the above, the PC must ensure all vehicles on the project display Sydney Metro approved signs in a prominent position on the vehicle when driven on public roads which associate the vehicle with the project.

11.16.2. Vehicle Registration, Maintenance and Inspection

The PC must ensure all work vehicles are registered, roadworthy and pre-start checked before being driven. The PC must ensure that all work vehicles are inspected, serviced and maintained in accordance with the manufacturer's recommendations. In addition, the PC

must maintain a register for company vehicles showing registration expiry dates and licence requirements.

11.16.3. Vehicle Drivers

The PC must ensure that all workers who drive a vehicle as part of their work in the PC's business or undertaking, including those persons employed by Sub-contractors (including owner drivers), are licensed, fit and verified as competent to drive the vehicle they are driving.

In addition, the PC must develop a Driver Code of Conduct which outlines minimum driver behavioural requirements to ensure compliance with the WHS Act, WHS Regulation, HVNL and Road Transport legislation, and which all drivers, including those employed by Sub-contractors (including owner drivers) are required to sign.

11.17. Heavy Vehicles (Chain of Responsibility)

The PC must have systems and processes in place to ensure compliance with *Chain of Responsibility (CoR)* legislation, including the HVNL and regulations. The PC must develop a (CoR) Management Plan which, as a minimum, addresses the following requirements:

(a) Statement of commitment to CoR.

(b) Legislative Requirements and provision of evidence that the contractor has met their legal obligations.

(c) Organisational Chart showing team structure and CoR responsibilities.

(d) Hazard identification and risk analysis.

(e) Risk Register including hazards, subsequent risks and controls.

(f) Reporting on near misses, accidents, incidents and infringements (where breaches of Road Rules and CoR legislation are treated as an incident).

(g) Communicating requirements to, and managing interfaces with stakeholders, suppliers and subcontractors.

(h) Provision for dealing with regulators and authorities.

(i) Consultation and communication protocols.

(j) Key personnel, description of their positions/qualifications and reporting lines.

(k) Resources management.

(l) Provisions for safety reporting (e.g. breaches, incidents and CoR compliance)

(m) CoR Training, Instruction and Supervision.

(n) CoR Emergency Processes and Procedures.

(o) CoR Management Plan Review and Continuous Improvement.

In addition to the above, the PC must ensure:

(a) Systems are in place to measure and record the gross vehicle mass (GVM) of each vehicle in accordance with the HVNL as it departs from a Sydney Metro site. This can be achieved through a variety of ways, in the following order of preference:

i. vehicle telematics including the provision for on-board mass measurement;

ii. weighbridges;

iii. axle-pads or similar; or

iv. estimation through bucket loads and confirmation through use of weigh bridges en route to unloading / delivery destination.

(b) Loads carried on or in *Heavy Vehicles* are properly restrained to prevent them from falling or becoming dislodged in accordance with the HVNL and NTC Load Restraint Guide (Latest Version).

(c) All vehicles do not exceed prescribed mass and dimension requirements under the *HVNL*, unless approval and authorisation is gained by RMS (e.g. Oversize Overmass permit) and local council authorities.

(d) The on-road transport of dangerous goods is managed in accordance with the Dangerous Goods (Road and Rail Transport) Act and Dangerous Goods (Road and Rail Transport) Regulation.

11.18. Construction Traffic and Vulnerable Road Users

Sydney Metro recognises that during the construction phase of the project, the introduction of construction *Heavy Vehicle* traffic to densely populated and highly pedestrianised areas in and around Sydney's CBD has the potential to generate road safety risks to the public, in particular vulnerable road users (VRUs). As a result, the PC must ensure the following specific measures are taken to minimise any impacts of construction *Heavy Vehicle* traffic to other road users.

11.18.1. Heavy Vehicle Operators

The PC must ensure that all *Heavy Vehicle* operators engaged on the contract, including owner drivers, are assessed and selected to ensure that they meet the minimum requirements set out in this standard. A *Heavy Vehicle* operator includes the PC and Sub-contractors and suppliers engaged in the following activities:

(a) Removing excavated material or waste;

(a) Delivering concrete, equipment (including temporary works), plant or materials.

The PC must ensure *Heavy Vehicle* operators are accredited or are in the process of gaining accreditation under the *National Heavy Vehicle Accreditation Scheme* (NHVAS).

In addition, the PC must ensure that all *Heavy Vehicle* operators (where eligible to participate) are enrolled in the Roads and Maritime Services *Safety, Productivity & Environment Construction Transport Scheme* (SPECTS).

11.18.2. Haulage Route Compliance

The PC must ensure that all *Heavy Vehicle* haulage routes comply with any planning approval requirements and are endorsed by the Traffic and Transport Liaison Group or the CBD Coordination Office. In addition, the PC must ensure that approved *Heavy Vehicle* haulage routes are adhered to at all times by the haulage contractor and that systems are in place to monitor the location of the vehicle at all times.

11.18.3. Heavy Vehicle Safety Equipment

The PC must ensure that all *Frequent Heavy Vehicles* (as defined below) over 4.5 tonnes gross vehicle mass (GVM), are fitted with the following safety equipment, as a minimum, unless it can be demonstrated to the reasonable satisfaction of Sydney Metro that the *Heavy Vehicle* will not perform the function for which it was built if the equipment was fitted:

(a) Side-underrun guards, in accordance with the ATA's Industry Technical Council Advisory Procedure for Side Under Run Protection, on both sides:

  i. between the front and rear axle of all rigid (single unit) trucks; and

  ii. between the front axle/landing legs and rear axle of trailers forming part of a combination.

(b) Class IV, V and VI mirrors, or equivalent as defined under Australian Design Rule 14/02 – Rear Vision Mirrors.

(c) Blind spot elimination/detection systems as per the Truck Industry Council's Voluntary Code of Practice to Ensure an Adequate Field of View if blind spots cannot be eliminated by measures specified in (b).

(d) A TCA certified Intelligent Fleet Management System/Vehicle Telematics System capable of monitoring driver speed, acceleration/deceleration, fatigue, and vehicle location as a minimum. Reports from these systems must be made available to Sydney Metro Delivery Office on request.

(e) Rear warning signs alerting other road users to the dangers of overtaking the *Heavy Vehicle* and signs on the front nearside warning pedestrians about walking close to the front of a moving or stationary *Heavy Vehicle*.

(f) Conspicuity (line and contour) markings compliant with the requirements of UN/ECE 104 – Uniform Provisions Concerning the Retro-Reflective Markings for Heavy and Long Vehicles and their Trailers and ADR 13/00.

The PC must ensure that all *Frequent Heavy Vehicle* drivers are provided with sufficient training, instruction and supervision to ensure the competent use of the safety equipment specified in this section.

Regular inspections must be conducted by the PC to ensure all *Frequent Heavy Vehicles* entering site locations are compliant with the above requirements. Where vehicles do not meet the above minimum requirements, a Heavy Vehicle Safety Equipment Waiver must be obtained from the Principal's Representative before the vehicle is allowed to operate on the project.

A *Frequent Heavy Vehicle* on the Sydney Metro program is defined as:

(g) All *Heavy Vehicles* removing excavated material (i.e. spoil removal).

(h) All concrete mixer vehicles (e.g. concrete agitators).

(i) All *Heavy Vehicles* over 4.5 tonnes GVM either supplying or removing equipment, plant and/or materials or people from a site making 5 or more round trips in any 12 month period to any Sydney Metro worksites for any part of the program.

11.18.4. Heavy Vehicle Driver Training

The PC must ensure that all *Frequent Heavy Vehicle* drivers engaged on the project, including those employed by Sub-contractors and suppliers (including owner drivers), attend the Sydney Metro approved Vulnerable Road User Awareness Training Course (refer to Appendix B: Sydney Metro Industry Curriculum) before they work on the project or reach *Frequent Heavy Vehicle* driver status.

The PC must ensure that all other drivers (e.g. Light Vehicle Drivers and Infrequent Heavy Vehicle Drivers) on the Sydney Metro program, are provided with the Sydney Metro Driver Safety Information Pack which outlines Sydney Metro's minimum expectations when driving on Sydney Metro sites, and to and from Sydney Metro sites.

11.19. Working In and Around Live Traffic

The PC must manage the risks associated with working in and around live traffic in accordance with NSW WHS Legislation, the RMS Traffic Control at Worksites manual, and AS 1742.3 – Manual of Uniform Traffic Control Devices – Traffic Control Devices for Works on Roads. The PC must develop a Traffic Management Plan which will include a procedure for working on or near public roads including the development, review, approval and implementation of Traffic Control Plans (TCPs)/Traffic Control Guidance Schemes (TCGSs) for specific activities involving work on or near public roads. As a minimum requirement, the PC must ensure the following when working in and around live traffic:

(a) Traffic Management Plans (TMPs) must be developed by a person that holds the RMS approved Prepare Work Zone Traffic Management Plan certificate of competence.

(b) TMPs must be approved by the Traffic and Transport Liaison Group and CBD Coordinator General's Office and/or Transport Management Centre.

(c) Where there is a risk of workers from being struck by live traffic, temporary road closures and detours must be considered as the first option to eliminate the hazard of moving traffic.

(d) Unless it can be reasonably justified through a risk assessment, temporary traffic signalling devices must be used to control traffic movements as per AS1742.3 and mitigate the risks to workers (including traffic controllers) of being struck by moving traffic.

(e) Where the use of traffic controllers is deemed reasonably practicable, traffic controllers must hold an RMS approved Traffic Controller's licence (formerly known as the Blue Card – Stop/Slow bat).

(f) Unless approved in writing by the PC's Project Director, traffic controllers and workers on the road must be provided with physical protection from the risk of being struck by out-of-control vehicles using preferably road safety barriers compliant to AS3845, or engineer-certified crash attenuators (e.g. Truck and Trailer Mounted Attenuators) fitted to shadow vehicles.

(g) Where crash attenuators are used they must be used in accordance with the National Guidelines for the use of Truck and Trailer Mounted Attenuators (TMAs).

(h) All signage must be installed in accordance with the relevant TCP/TCGS and must be periodically checked throughout the work.

(i) In addition to the minimum required PPE as specified in the section of this Standard, entitled Personal Protective Equipment (PPE), Traffic Controllers must wear high visibility clothing with trousers fitted with double-reflective stripes or reflective boot covers in accordance with Section 8 of AS 4602.

(j) Sufficient traffic controller workers must be engaged so that the traffic controllers may rotate and have breaks.

(k) Traffic controllers working at night must carry illuminated wands to direct traffic.

11.20. Plant and Equipment

The PC must develop procedures for managing the risks of plant in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Moving Plant on Construction Sites Code of Practice
- SafeWork NSW – Managing the Risks of Plant in the Workplace Code of Practice
- Safe Work Australia – Guide for Safe Design of Plant
- Safe Work Australia – Guide for Manufacturing Safe Plant
- Safe Work Australia – Guide for Importing and Supplying Safe Plant
- applicable Australian Standards relating to that plant.

The PC's procedures must ensure that:

(a) Safety specifications in accordance with applicable Australian Standards detailing the minimum safety requirements are provided to any supplier of plant for use on the project.

(b) Plant used on the project is compliant with Australian Standards.

(c) A Plant Hazard Risk Assessment (PHRA) is provided to the PC by the supplier for the following:

i. powered mobile plant (e.g. forklift trucks, MEWPs, telehandlers, mobile cranes, mobile concrete pumps, graders, scrapers, front-end loaders, etc.); and

ii. plant used for load shifting/movement (e.g. tower cranes, materials hoists, conveyors, etc.).

(d) The PHRA addresses hazards with the use (including access/egress and refuelling) and/or servicing and/or maintenance of the plant, including those created through any modifications or attachments.

(e) The PHRA is reviewed, accepted and registered by the PC prior to use on the project.

(f) Operating instructions (e.g. Safe Work Instructions) based on the outcomes of the PHRA and OEM instruction manual are developed for mobile plant.

(g) Incoming mobile plant is inspected by a competent person prior to use on the project and fitted with a unique identification marker (e.g. numbered and dated sticker).

(h) A register is maintained of all mobile plant (i.e. including plant supplied by Sub-contractors, hired plant, etc.) on the project to track inspections and servicing.

(i) Where required by legislation or the applicable Australian Standard, registration, certification, inspection reports and test certificates are available.

(j) Plant and equipment is used and maintained in accordance with manufacturer's specification, standards or engineer-certified modification.

(k) Daily pre-start inspections take place in accordance with the operator's manuals for all mobile plant.

(l) Where modifications have been made, including through the use of attachments, engineer certification has been provided to ensure the modification is safe for use.

(m) Persons using plant hold the necessary licences or certificates and are verified as competent to operate the particular item and/or perform the particular tasks.

Where requested by Sydney Metro, Plant Safety Documentation must be provided by the PC to Sydney Metro upon request, for review for compliance against this Standard.

11.20.1. Plant Specific Requirements

The following specific requirements for plant must be implemented by the PC for all Sydney Metro works:

(a) All boom-type Mobile Elevating Work Platforms must be fitted with approved Secondary Protective Guarding Devices to control the risks of entrapment and crushing.

(b) Only fully-automatic quick hitches are approved for use on excavators.

(c) Slew and height restrictors must be used for swing-arm mobile plant used in the rail corridor, or where used in the vicinity of live electrical services where the design envelope of the plant may encroach the safe approach distance and no higher order controls are in place.

(d) Two-way radios are provided to enable communication between plant operators, supervisors and spotters.

(e) Rated capacity indicators must be fitted in accordance with AS 1418.5 with additional external warning light systems visible to personnel working around the mobile crane.

(f) Rated capacity limiters for all mobile cranes over 1 tonne capacity (including telehandlers) in accordance with AS 1418.5.

(g) Piling and drilling rigs, rock saws, trenchers, etc. must be fitted with guarding in accordance with AS4024.

(h) Mobile plant that generates dust during operations must be fitted with OEM approved dust suppression systems that minimise the use of water (i.e. are of the misting type) unless approved in writing by the PC's Project Director.

(i) Detailed specifications (including design drawings) must be developed and provided to the Principal's Representative for review and acceptance prior to procurement by the PC.

(j) A report developed by an independent, competent person that certifies compliance to the specification and applicable Australian Standards must be provided to the Principal's Representative prior to the use of the item of plant.

(k) Where such plant is to be imported and the plant is not designed to comply with Australian Standards, the independent report must include a detailed gap analysis of the difference between the design standards used and the applicable sections of Australian Standards.

11.20.2. Hand Tools

The Principal Contractor (PC) must ensure that all hand tools:

(a) are used for their intended purpose;

(b) are the correct tool, size and type for the job; and

(c) are inspected for damage and wear before use.

Any damaged tools are not to be used and removed from use and tagged out until repaired.

Hand held tools such as chisels and saws are to be kept sharp, free from mushroom heads and placed in a safe place when not in use. The manufacture and use of site-made tools is prohibited.

11.20.3. Power Tools

The Principal Contractor (PC) must ensure that all workers using power tools are trained, competent and authorised to operate the type of power tool in use.

The PC must ensure the following for all power tools that are used on the Sydney Metro Program:

(a) All power tools are inspected before use and periodically as required by a competent person.

(b) Any power tool found damaged is to be removed from service and tagged out.

(c) Power tools are to be suitably stored in a dry well-ventilated area when not in use.

(d) Suitable PPE is to be worn to prevent injury from flying fragments, ejected material or ill health from noise, dust etc. Controls are to be in place to prevent personnel operating power tools for long periods of time where there is a risk of hand arm vibration syndrome.

(e) Guards are to be fitted to protect moving or exposed parts and are to be correctly adjusted, be able to return to the closed position (i.e. on circular saws) and not removed whilst the tool is connected or in operation unless designed to do so. Power tools must be operated on a work bench.

(f) Handles are to be fitted where appropriate such as on drills and must be held with both hands to prevent kick-back or an anti-twist device is to be fitted.

(g) Power tools are to be regularly maintained and before any maintenance is carried out they are to be switched off and where appropriate removed from their prime energy source (i.e. remove plug from electrical socket).

(h) All electrically powered tools comply with the minimum safety standards as required by the Electricity (Consumer Safety) Regulation, and the risks associated with all electrically powered tools are managed in accordance with SafeWork NSW's Managing Electrical Risks in the Workplace – Code of Practice

(i) Portable tools such as hand held grinders; circular saw and drills are to be fitted with switches, levers, triggers that require constant pressure for operation and automatically stops when released. The use of a device that prevents the release (i.e. lockable trigger switch) is prohibited.

(j) Angle grinders and similar tools are to be fitted with the correct blade for the material to be cut and the rated speed of the blade/wheel is to be checked before use to confirm that it is equal or greater than the maximum speed of the grinder. Cutting blades are to be inspected for integrity before use. The use of 9 inch Angle Grinders is prohibited on the Sydney Metro Program.

(k) Tools are to be fitted with an extraction system or a wet cutting suppression system where there is a risk of harmful airborne dusts.

(l) The use of petrol powered tools is prohibited when working in enclosed or confined spaces.

(m) Fuel driven tools are to be re-fuelled in an area clear of the work area and free from other flammable materials, using an approved fuel container. Fuel containers are to be re-sealed and returned to a safe storage area after re-fuelling has been completed

11.21. Working In and Around Water

11.21.1. Marine Vessels

The PC must ensure the risks associated with marine works involving the use of vessels are managed in accordance with the NSW Marine Safety (General) Act 1998 and Marine Safety (General) Regulation 2009. For all marine works involving the use of vessels, the PC must develop and maintain a Marine Works Management Plan supported by mapping of all marine work zones. The Marine Works Management Plan must be provided to Sydney Metro for review for compliance against this Standard and as a minimum, address the following:

(a) Requirements for issuing a Marine Notice (i.e. navigation warning/special event: navigation hazard/marine construction zone).

(b) Marine safety and vessel movements to reflect Port Operating Protocols (POP).

(c) Harbour master protocols regarding all marine vessel movements.

(d) Requirements for maintaining a register of all marine vessels operating.

(e) Protocols when working with biologically contaminated water.

(f) Processes for the mitigation of marine vessel accidents caused by construction activities.

(g) Marine works emergency preparedness and response – emergency assembly points.

(h) Marine vessel safety – boat safety equipment requirements.

(i) Marine safety competencies for all self-propelled and towed barge, operating marine vessels.

(j) Marine vessel inspections and protocols.

(k) Launch protocols for transfer:

i. transfer by marine vessel;

ii. small boat transfer;

iii. transfer from tender vessel to working barge/jack up barge; and

iv. personnel basket transfer.

11.21.2. Diving Work

The PC must ensure risks associated with diving works are managed in accordance with:

- The WHS Act and WHS Regulation
- AS/NZS 2299.1:2007 Occupational diving operations – Standard operational practice.

In addition, the PC must ensure the following:

(a) Protocols are established for Harbour Master approvals for diving operations.

(b) A Diving Operations Manual is developed and maintained in accordance with AS/NZS 2299.1.

(c) A Dive Plan is developed as per AS/NZS 2299.1.

(d) Where SCUBA (Self-Contained Underwater Breathing Apparatus) is to be used instead of SSBA (Surface Supplied Breathing Apparatus), the PC's Project Director must provide prior written approval.

(e) SWMSs specific to the diving activity are prepared and approved by the PC prior to the commencement of any diving operation.

(f) The following training and competency requirements are addressed in Table 3: Diving Work – Minimum Training and Competency Requirements:

Table 3: Diving Work – Minimum Training and Competency Requirements

Position	Training and Competency Requirements
Dive Supervisor	(1) Medically fit to dive, qualified and trained diver to a level equal to or exceeding that specified in AS 2815.1, AS 2815.2, AS 2815.3 or AS 2815.4. (2) Trained in accordance with AS 2815.5. (3) Have a certificate issued by the Australian Diver Accreditation Scheme (ADAS) or an occupational diver training establishment that is a registered training organisation (RTO). (4) Experienced in the diving techniques which may be used, and in the equipment and procedures used in the diving operations to be performed. (5) Trained in the recognition and management of diving emergencies.

Position	Training and Competency Requirements
	(6) Have a current first aid certificate.
Diver and Standby Diver	(1) A diver must be medically fit to dive, qualified and trained to a level equal to or exceeding that specified in AS 2815.1, AS 2815.2, AS 2815.3 or AS 2815.4 and must have a certificate issued by: a. The Australian Diver Accreditation Scheme (ADAS); or b. An occupational diver training establishment that is a registered training organisation (RTO).
Diver's Attendant	(1) Trained in first aid and have a working knowledge of the following: a. The requirements of underwater work. b. Signals in use. c. Decompression procedures. d. Diving plant and equipment in use, including ancillary fittings such as pressure gauges, compression and filters.

(g) All diving plant and equipment must:

i. Be operated, maintained and serviced in accordance with the manufacturer's instructions by a competent person.

ii. Not be altered, modified or changed in any way that impairs the safe and efficient operation of the equipment.

iii. Not be used if such plant or equipment is not in a safe working condition.

iv. Be inspected in accordance with the manufacturer's instructions, include a list of essential pre-dive checks and this list must be provided by the PC and maintained by the PC at each location.

11.21.3. Work adjacent to or over water

The PC must develop and implement a procedure in relation to how work adjacent to or over water will be managed. The procedure must implement the following requirements:

(a) Any work over water requires a minimum of two people.

(b) If there is a risk of drowning, workers must wear either a buoyancy aid or use a fall arrest system.

(c) Rescue equipment (either a boat or a lifebuoy) must be provided and workers that cannot swim must avoid working near a deep water body.

This procedure must also cover the development of stable grounds for the placement of lifting devices (e.g. cranes or excavation equipment) if this is not already covered by the management procedures of Construction Plant in such areas.

11.22. Remote or Isolated Work

The PC must ensure procedures are developed and implemented to provide communication, rescue, medical assistance and the attendance of emergency service workers to workers associated with remote or isolated work in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Managing the Work Environment and Facilities – Code of Practice.

The procedure must provide for:

(a) The identification of the hazards to which any person could be exposed to as a result of working in isolated areas.

(b) Planning of work to minimise risks to employees and contractors SFAIRP.

(c) Effective controls for all work involving working in isolation, including :

i. Nature and duration of the tasks to be carried out.

v. Number of personnel involved.

vi. Availability, ease of use and reliability of means of communication.

vii. Availability of assistance and the estimated response time.

viii. Adequate information, instruction, training and supervision for people who work in isolation.

11.23. Night Work

The Principal Contractor (PC) must ensure the risks associated with working at night are managed in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Managing the Work Environment and Facilities – Code of Practice

Suitable arrangements must be in place to ensure night work is carried out safely and without risk to those working, the following areas must be considered:

(a) Identification of the hazards associated with night work

(b) Assessing the risks associated with night work

(c) What systems will be introduced to manage the risk of night work

(d) The controls to be implemented to reduce the risks SFAIRP

(e) A SWMS must be developed following the risk assessment.

Area and task lighting is to be provided for all work areas and activities and the minimum illumination provided must comply with AS 1680.

Illumination levels are to be checked using a lux meter during the shift and records kept.

Personnel who are required to transport, position, raise and lower mobile lighting towers are to be trained.

All lights including a flashing amber beacon on plant and vehicles are to be operational at all times they are working or moving around site. Plant and vehicles that have defective lighting are to be removed from use until repairs have been carried out.

Designated walking routes and work areas are to be adequately lit.

11.24. Welfare Facilities

The Principal Contractor (PC) must provide suitable and sufficient welfare activities in accordance with:

- The WHS Act and WHS Regulation
- SafeWork NSW – Managing the Work Environment and Facilities – Code of Practice

Welfare facilities must be provided as soon as work on site commences (i.e. mobilisation phase) and until work is fully completed.

Everyone on site must have access to adequate toilet and washing facilities, a place for preparing and consuming refreshments and somewhere for storing and drying clothing and personal protective equipment. Welfare facilities are to be conveniently available to people working on the site.

Toilets need to be in close proximity to where the work is being done and washing facilities should be as close as possible to the toilets. Washing facilities also need to be close to canteens and rest rooms so that people can wash before eating.

11.25. Lock-out/Tag-out

The Principal Contractor (PC) must develop Lock-out/Tag-out (LOTO) procedures to prevent injuries from unexpected energisation, activation or unintentional release of energy during initial start-up, maintenance or repair of equipment or machinery. The PC's LOTO procedures are to cover the following, as a minimum:

(a) Preparation for shutdown.

(b) Shutdown.

(c) Isolation.

(d) Applying LOTO devices.

(e) De-energisation or release of stored energy.

(f) Verification.

(g) Release from lock out.

(h) Testing on energised equipment.

All potential sources of hazardous energy such as gravity, electrical, mechanical, pneumatic, pressure etc. must be considered when determining LOTO procedures.

Isolation locks must be used to control the risk of inadvertent re-energisation. Tags used as a control alone, are not permitted.

The PC must ensure that only authorised personnel are permitted to perform LOTO procedures.

A SWMS and Permit to Work is required for all works involving LOTO.

11.26. Permits to Work

The PC must develop and implement procedures and processes that enable it to identify all required permits (including design permits that are required for undertaking the PC's activities), and detail how and when they are to be issued.

Without limiting the above requirement, the following activities are not permitted to commence without an authorised permit:

(a) Hot Work except when conducted in a designated hot work area.

(b) Low Voltage Electrical Work.

(c) High Voltage Electrical Work.

(d) Work within "no-go zones" and "Accredited Persons Zone" associated with overhead power lines or other electrical equipment.

(e) Work in a Confined Space.

(f) Work involving the use of fall-arrest devices where used as a primary means of control.

(g) Demolition involving mobile cranes, a wrecking ball or the pulling down of a building with ropes or chains.

(h) Asbestos Removal.

(i) Excavation/Ground Disturbance Work.

(j) Diving Operations.

(k) Work where LOTO procedures are required.

The PC must ensure that all applicable staff sign-on and off the relevant permit when required to work in areas to which the permit applies. All permits must be available for inspection by the Principal's Representative at all times. The following minimum requirements apply to the PC's permit to work system:

(l) Permit to work issuers must be independent to the persons carrying out or supervising the work.

(m) Permit to work issuers must be competent and authorised to issue permits;

(n) Delegation of authority must be documented and provided by the PCs Project Director.

(o) The PC's permit to work system must apply to all Sub-contracted works – Sub-contractor's own permit to work systems are not allowed to be used in lieu of the PC's permit to work system.

(p) Specify checks and tests of controls prior to commencement of work covered by the permit.

(q) Specify maximum timeframes for permit to work before it must be reissued. Any re-issue or extension should be based on the criticality of the risk being controlled by the permit.

11.27. Permit to Work – Tunnelling

The PC's Permit to Work – Tunnelling activities must require the following:

(a) Defined time periods for review and length of time of permit, based on the risk posed by geological ground conditions.

(b) The attendance at permit review/approval meetings by authorised representatives of the designer and PC construction team.

(c) Permits must be signed by all attendees of the meeting and must only be issued (authorised/approved) by the specific individual nominated in writing by the Project Director.

(d) Minimum competency requirements must be defined for all participants in the permit to tunnel review/approval process, including Designer, Independent Verifier/Certifier/Geotechnical Engineers, Permit Issuer and Permit Receiver/Holder.

(e) Individuals must be specifically assessed as competent and appointed by the PC's Project Director.

(f) The nominated authorised individuals required to be involved in the permit review/approval meeting must be appointed by the PC's Project Director.

(g) The permit must identify specific trigger levels for emergency response based on ground condition movement.

(h) Management response when nominated trigger levels are exceeded must be defined in the permit to tunnel/emergency response procedure and must provide for 24/7, round-the-clock notification calls to nominated senior management within specified timeframes dependent on the trigger level exceeded.

(i) The monitoring of ground condition movement must be determined by the permit team and be subject to review as part of the permit review approval process.

(j) Metrics and KPIs must be developed and monitored by the PC.

(k) An inspection/audit regime must be developed specific to the permit to tunnel process.

11.28. Safety Signage

The PC must install signs that are clearly visible from outside the work place/work site showing their name and telephone contact numbers (including an after-hours telephone number) and showing the location of the project office. Safety signage must comply with the requirements of AS 1319:1994 Safety signs for the occupational environment.

12. Rail Safety

The Principal Contractor (PC) must ensure that where the PC's activities involve work in or adjacent to the Rail Corridor, the PC's PHSMP includes provision for management of rail safety, including worksite protection and general rail safety risk management, based upon (without limitation) compliance with the relevant Rail Transport Operator's Network Rules and Procedures and Safety Management System. Identification of the party in "management of control" is a fundamental part of this planning.

12.1. Rail Safety Risks

Determining applicable Rail Safety Work and related tasks will enable the identification and assessment of the associated rail safety risks that require management and control.

The project specific risk registers shall be used to demonstrate evidence for the management of the applicable rail safety risks in accordance with the section of this standard, entitled Safety Risk Management.

12.2. Rail Safety Worker Requirements

The Principal Contractor (PC) must establish and maintain an up-to-date matrix showing all Rail Safety Worker (RSW) roles for their respective work. RSW requirements for general construction workers will commence when the construction site has become a *rail site*.

A construction site becomes a *rail site* when rail is laid.

12.2.1. Competence and Induction

When working on a *rail site*, or when working in a rail corridor or on assets of another Rail Transport Operator, PC employees are required to:

(a) Hold the relevant Certificate of Competence (refer to the section of this Standard, entitled Training and competence).

(b) Meet all Fitness for Work (refer to the section of this Standard, entitled Alcohol and Other Drugs, Fatigue Management and Health Assessment) requirements established in this Standard.

(c) Hold a Card showing completion of the relevant rail safety awareness training course as required by the Rail Transport Operator (e.g. Rail Industry Safety Induction (RISI), Rail Industry Worker (RIW), PPP PC equivalent) or an authorised RISI waiver/exemption.

(d) Undertake induction and competence training relative to the site or corridor in which the work is being carried out.

12.3. Project Work Notification and Work Activity Advice

The PC must complete and submit the relevant RTO's Project Work Notification (PWN – or other equivalent document) to the Principal's Representative at least six weeks prior to the planned works, including for any works planned for a track possession. The PC must comply with the requirements of the RTO's Safety Management System (SMS) network rules and procedures and any additional requirements under the Safety Interface Agreement between TfNSW and the relevant RTO.

In addition, the PC must complete and submit to Sydney Metro a Work Activity Advice (WAA) as per Appendix J: Work Activity Advice (WAA) Form. Each WAA must cover a particular part of the works and includes the SWMS and any other necessary safety documentation (e.g. lift plan, Vehicle Movement Plan, etc.) applicable to that part of the Works. The completed WAA is to be submitted for review to the Principal's Representative. Once the WAA has been accepted it must be maintained current by the PC and be available

for inspection/review at the location of the work. The Contractor must conduct a pre-work briefing with all personnel involved, including the Protection Officer(s).

12.4. Arrangements for Track Possessions

For each track possession to be utilised by the PC, the PC must conform to the requirements of the relevant RTO. The PC may not have exclusive access to any rail tracks or areas within the vicinity of rail tracks during a track possession. The PC must coordinate the PC's activities with those sharing the track possession, including parties involved in the operation or maintenance of the rail system and other contractors.

12.5. Track Worker Protection

The PC must ensure for longer term worksites within the rail corridor that every effort is taken to ensure the workgroup is delineated from the danger zone using physical separation. Where this is not possible, workgroups must be protected using proved Automatic Train Warning Systems with Vortok Fencing or equivalent.

12.6. Worksite Protection

Worksite Protection, implemented by a qualified and competent Protection Officer (PO) is required for work within the Rail Corridor. Worksite Protection must be implemented in accordance with the Sydney Trains Network Rules and Procedures. Sydney Metro Worksite POs are required to hold a minimum of Worksite PO Level 2 certification (PO2) and have successfully completed the relevant Sydney Metro Industry Curriculum Training Program(s) (refer to Appendix B: Sydney Metro Industry Curriculum).

12.6.1. Construction Fencing in the Rail Corridor

Unless it can be reasonably justified through a risk assessment, the PC must ensure that construction fencing in the form of a solid barrier is used as a means to isolate the identified risks associated with carrying out work adjacent to and within the rail corridor and Danger Zone.

When used on Sydney Trains network, the placement and type of barrier to be used in these circumstances must be agreed with Sydney Trains and documented in the applicable Safety Interface Risk Register/Agreement.

Construction fencing on rail sites may be:

- a metal or wooden hoarding approximately 2 metres high (e.g. demolition site fence);
- jersey kerbs (which are interlocked) with metal mesh attached to the top section;
- other approved barrier types may be applied on site;
- chain link fencing.

Star pickets with plastic tape are not permitted due to the potential for damage to buried services.

Construction fencing is to be designed to withstand wind load and the suction force of passing trains. The barrier design is to also consider the stability of the ground.

When metal fencing or barriers are used on rail sites and corridors, Sydney Trains electrical safety rules shall be applied such as insulation and bonding requirements.

12.6.2. Demarcation Fencing

Tape and bollards should only be used as demarcation fencing where it is not reasonably practicable to use a specifically engineered fencing system (e.g. Vortok fencing).

Installation of demarcation fencing must be carried out strictly in accordance with the Network Rules and Procedures of the RTO.

Demarcation fencing is required to be installed in accordance with Australian Standards or approved manufacturer installation instructions

12.7. Mobile Plant in the Rail Corridor

Due to the nature of risks there are particular requirements for use of plant in the rail corridor.

All mobile plant equipped with a swing arm (e.g. excavators, concrete boom pumps, boom-type EWPs, telehandlers, mobile cranes, drilling/piling rigs, etc.) must be fitted with "fail safe" programmable motion limiting devices.

The location of the plant, danger zone and assets to be protected by the use of the limiting device must be established by the Protection Officer, Supervisor and plant operator and be communicated in the pre-work brief, worksite protection plan and/or SWMS. Limiting devices must be tested as functioning correctly as part of the operator's plant pre-start inspection checklist.

12.7.1. Road Rail Plant and Track Machines

Plant on track (i.e. road rail vehicles, track machines, trolleys) must be:

(a) used under the accreditation of a nominated Rolling Stock Operator;

(b) certified for use on Sydney Trains/ TfNSW rail infrastructure (i.e. listed on the ASA register at http://www.asa.transport.nsw.gov.au/ts/asa-standards#rolling-stock and be included in the RSOs accreditation conditions issued by ONRSR); and

(c) used in accordance with the ASA Train Operating Conditions (TOC) Manual.

Refer to the ASA website for further requirements.

All self-propelled plant used on track must be equipped with:

(a) a sticker indicating current registration on the TOC manual of the RTO;

(b) two-way radio equipment;

(c) headlights and tail and marker lights;

(d) orange flashing lights or hazard warning lights;

(e) two red and 2 green flags;

(f) at least 12 railway track signals (detonators); and

(g) two multi-coloured hand lamps or torches

Trolleys must be towed or pushed by another vehicle and must be fitted with a spring applied brake system that requires a positive hand action to release, and which, when released, automatically applies the brake.

Plant used on track must not be used to convey passengers except in specifically designed seats that are fitted with seat belts.

A plant risk assessment must be supplied and must address all modifications made to the plant to allow it operate on rail, including the necessary engineering standards and certifications.

Operators of road-rail vehicles and track machines are deemed to be Rail Safety Workers for the purposes of travelling on track and must also be verified as competent to operate the plant when being used for construction/maintenance purposes. The accredited Rolling stock Operator must ensure this requirement is met.

Where an incident occurs that involves rolling stock, in addition to other reporting requirements, the incident must be reported to ASA in accordance with applicable ASA standards.

12.8. Working around Electrical Infrastructure

The rail corridor presents increased risk of injury from electrical infrastructure due to the higher number of electrical services present and the restricted space in which work has to take place. This section supplements the requirements documented in the section of this standard, entitled Electrical Safety and provides additional specific requirements for working around electrical infrastructure in and around the rail corridor.

12.8.1. Planning work around electrical infrastructure

Work must be planned and conducted in accordance with the requirements of the owner of the electrical assets.

A permit to work system must be used to control risks of working around electrical infrastructure SFAIRP. The Permit to Work must ensure that key hold points are identified and applied, and that an appropriate competent authority issues the Permit.

When planning electrical work (i.e. work involving authorised electrical workers/gold card holders that involves construction or alteration of the electrical network) an authorised person (gold card holder) must:

(a) be consulted in the request for isolation submitted to the Electrical Distribution Authority (i.e. Sydney Trains);

(b) be involved in the development or review of SWMS; and

(c) participate in the walk-through inspection that is conducted with the Sydney Trains permit issuer in preparation for the work to ensure it is clear to which extent of area

that is to be de-energised and that precautions are to be taken in relation to the work.

12.9. Underground Services

Additional care must be taken when planning excavation or ground penetration in the rail corridor due to the quantity and type of services, the availability of accurate information/ drawings and the presence of direct buried of services, which provides no warning or protection to in-ground services from being struck and damaged during mechanical excavation.

Contact Dial Before You Dig on 1100 and the local asset owner to identify potential in-ground services and determine what minimum controls are to be implemented. Any excavation within three metres of Sydney Trains high-voltage electrical cables requires an Electrical Isolation Permit.

Competent authorised service locators should be used to identify and clearly mark out the location of buried services using technological solutions such as metal detectors, ground penetrating radar and ultrasonic tracing. The techniques to be used during service location and excavation should be determined based on a risk assessment of the location carried out in consultation with the accredited RIM. The highest risk sites include those near signal boxes, substations, section huts and level crossings.

In addition to enhanced service location techniques, potholing using Non-Destructive Digging methods must be used to expose services before any mechanical excavation commences. Where there are high risk services (e.g. high-voltage AC power supply, 1,500V DC traction supply or signal cables) a representative of the asset owner should be present to oversee excavation and ensure permit conditions are complied with.

12.9.1. Detailed Site Survey (DSS)

A Sydney Trains Services Search Request must be submitted for any work to be undertaken in the Rail Corridor. Detailed Site Survey (DSS) plans will be issued if they are available. If they are not available an Internal Services Search (ISS) will be issued. An ISS report will take a minimum of six (6) weeks to be issued. ISS reports have a validity period of six (6) weeks after which time a new Services Search will be required. If control is required for periods of more than 6 weeks a DSS should be commissioned.

12.10. Protection of Infrastructure from Damage

As part of planning works in the rail corridor all safety critical assets must be identified and appropriate protection controls put in place to minimise the risk of inadvertent damage during the works. This should be determined in consultation with the Rail Infrastructure Manager and should include use of blue witches hats placed at points, bunting to warn of over wiring and stanchion guy wires, jersey kerbs to protect ground level troughing that is exposed to mobile plant movements, etc. These protective measures must be included in Vehicle Movement Plans or other site diagrams/drawings and communicated in SWMS and pre-work briefs.

12.11. Emergency / Incident Planning, Response and Reporting

The PC must develop plans and SWMS for works in the rail corridor which include the protocols to be followed in the event of an emergency or incident. Protocols must address the following, as a minimum:

(a) Report all incidents, emergencies, hazards to the site Protection Officer in accordance with the Worksite Protection Plan

(b) Operational safety incident reporting (e.g. contact the Operations Centre/RMC of the relevant rail operator);

(c) Notification to asset owners and maintainers for damage equipment or assets; and

(d) Notification to electrical network operators for an incident involving an electrical network (e.g. Sydney Trains EOC, Ausgrid, etc.).

(e) Report on all emergencies and incidents in accordance with the section of this standard, entitled, Incident Reporting & Investigation.

A plan must also be developed for the retrieval of broken down plant to ensure potential delays are minimised.

13. Fitness for Work

13.1. Alcohol and Other Drugs

Sydney Metro maintains a zero tolerance approach to illegal drugs and alcohol in the workplace. The Principal Contractor (PC) must develop procedures for the management of alcohol and other drugs whilst carrying out work for Sydney Metro. The procedures must address the below requirements.

13.1.1. Definitions for Drug and Alcohol Limits

The PC must ensure all workers engaged by the PC including those employed by Sub-contractors are free of alcohol and illicit drugs when performing work.

Free of alcohol means:

(a) For all Rail Safety Workers (RSWs): .00% BAC.

(b) For others including contractors or consultants: < .02% BAC.

Free of Drugs means:

(c) For Illicit Drugs: Zero.

(d) For Other Drugs: Below the Cut-Off Levels as prescribed in AS/NZS 4308.

13.1.2. Testing

The PC's Drug and Alcohol Procedure must include the requirement for Drug and Alcohol testing of workers at the following stages:

(a) At pre-commencement on the project.

(b) Post-incident.

(c) Random.

(d) For cause.

A drug and alcohol testing regime must be implemented by the PC. The testing regime must be carried out by competent testing officers in accordance with:

- AS 3547:1997 Breath alcohol testing devices for personal use
- AS/NZS 4308:2008 Procedures for specimen collection and the detection and quantitation of drugs of abuse in urine
- RSNL 2012

All testing must ensure a systematic process of data collection and evidence which will provide sufficient information to the regulator if required. Where testing of RSWs is undertaken, the testing officers must be approved by TfNSW. The testing regime must provide for both preliminary and confirmatory testing for both drugs and alcohol, including for RSWs who test non-negative, confirmation analysis by a police officer or medical practitioner.

Where rail safety work is being carried out under the accreditation of TfNSW, the PC must allow Sydney Metro authorised Testing Officers access to worksites without notice, to conduct random and post-incident alcohol and other drug testing.

Where rail safety work is not being carried out, the PC must undertake daily testing for the presence of alcohol at the start of the each shift. The quantity, selection and method for testing must be determined by the PC and documented in their drug and alcohol testing procedure. The PC must report test results to Sydney Metro as part of their monthly safety obligations and Sydney Metro incident reporting requirements.

13.1.3. Employee Assistance

The PC's alcohol and other drugs procedures must provide for employee assistance and disciplinary procedures that are at least equal to or, if the PC chooses, more severe than those outlined in the TfNSW Managing Conduct and Discipline Policy (available upon request).

13.1.4. Notification

The PC must report positive or non-negative tests to Sydney Metro in accordance with the section of this Standard, entitled Incident Notification and Reporting.

13.2. Fatigue Management

The PC must have procedures and systems that demonstrate how it will manage fatigue in accordance with:

- The WHS Act
- Rail Safety National Law
- Heavy Vehicle National Law

- Safe Work Australia – Guide for Managing the Risk of Fatigue at Work
- Applicable ONRSR guidance material.

Except where approved by the Principal's Representative, the PC must use a Sydney Metro approved electronic system (i.e. Pegasus/Onsite Track Easy) to manage hours worked by RSW's and those identified in safety critical roles. Reports on fatigue management must be provided to the Sydney Metro on request.

13.2.1. Fatigue Minimisation Controls for Rail Safety Workers

Where rail safety work is being undertaken under TfNSW's RIM accreditation, the PC must apply the following fatigue minimisation controls to RSWs who may, in the normal course of their duties, be required to work extended hours on site (i.e. not office workers):

(a) Except in a declared incident, no more than 12 hours will be worked at a time not including travel time to and from work.

(b) 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.

(c) Rest periods must ensure 11 hours rest away from work.

(d) Maximum number of work days must not exceed 12 work days within 14 consecutive days.

(e) Minimise to:

  i. five consecutive occasions where eight hours are worked at night (i.e. wholly during the period between 18.00/6pm and 06.00/6am); or

  ii. four consecutive occasions where 10 hours are worked at night; or

  iii. three consecutive occasions where 12 hours are worked at night; without a 48-hour rest break.

(f) Ensure workers receive a minimum of 48 consecutive hours free of work in a 14-day period.

(g) Have the capacity to replace or relieve workers where unplanned or unavoidable extended hours have created a risk to workers health and safety.

For RSWs who are office-based (not on site) 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 apply when undertaking rail safety work:

(h) No more than 12 hours work at a time.

(i) Workers must be ensured of 11 hours rest away from work.

(j) 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 and conduct a *Risk Assessment* to assess the need for extended hours.

13.2.2. Fatigue minimisation for other safety critical roles

The PC must identify other safety critical roles for the purposes of managing fatigue and ensure clear requirements are established for the management of hours worked and rest between shifts for those identified safety critical roles.

Safety critical roles must be determined based on the potential exposure to the public and/or multiple worker fatalities caused by impairment due to fatigue of the safety critical worker. Examples may include *Heavy Vehicle* drivers, heavy plant operators, crane operators, divers, and/or high voltage electrical workers.

13.3. Health Assessment

The PC must have a documented procedure for Health Assessment requirements for workers prior to commencement on the project and/or pre-employment. The Health Assessment procedures must address all workers including RSWs.

13.3.1. Health Assessment for Rail Safety Workers

The PC's Health Assessment procedure must be developed in accordance with the requirements of the National Standard for Health Assessment of Rail Safety Workers. Health assessments for RSWs must be undertaken by an Authorised Health Professional.

The PC's Health Assessment procedure for RSWs must provide for either:

(a) Category 1 medicals for all RSWs such as Protection Officers (POs) Level 1 to 4.

(b) Category 3 medicals for all persons working in the rail corridor.

Category 1 and 3 medicals must be undertaken by an Authorised Health Professional and include a full examination in accordance with the requirements of the national health assessment standard.

Re-examination medicals must occur:

(c) on a 5 yearly basis until 50 years of age;

(d) then 2 yearly until 60 years of age; and

(e) then yearly if over 60 years of age.

Medical examinations may also be required where RSWs are involved in a rail safety incident or where reasonable cause exists, such as returning from long illness when a person may be unable to perform work safely.

The PC's health assessment procedures must include processes to be followed for worker's deemed unfit for rail safety work.

14. Personal Protective Equipment (PPE)

The Principal Contractor (PC) must ensure that the provision of personal protective equipment (PPE) is managed in accordance with the WHS Act and WHS Regulation. The PC must ensure that workers wear the appropriate PPE suitable to the nature of the work

and potential hazard/s associated with the work. For general construction work, this must include:

(a) High-visibility orange clothing (including high-visibility vest or shirt, and wet weather/winter upper body apparel).

(b) Lace up, ankle length, steel capped safety footwear (elastic sided boots are not permitted on site) compliant with AS/NZS 2210.

(c) A safety helmet compliant with AS/NZS 1801 and appropriate to the environment in which they work or enter.

(d) Safety eye wear and/or face protection which is appropriate to the task and environment. Eyewear must be compliant to AS 1337.

(e) Full sleeved shirts (shoulders covered and sleeves buttoned) with collars.

(f) Long trousers.

Full fingered gloves suitable to the task and compliant to AS/NZS 2161 must be worn whilst persons are carrying out construction work. Where persons are not carrying out work (e.g. managers, visitors, etc.), gloves must be readily available (i.e. carried on a clip).

Members of the PC's management team must conduct inspections of the workforce's PPE.

The PC must make available reasonable quantities of clean, serviceable PPE for the use by casual visitors.

14.1. Respiratory Protective Equipment (RPE)

Where RPE is required to control respiratory hazards the PC must:

(a) Develop an RPE program as part of the Occupational Health, Hygiene and Wellbeing Program which addresses:

  i. Correct selection of RPE that is right for the hazardous chemical / substance or mixture, the environment in which it is going to be used, the task and the wearer.

  ii. Information and training provided to RPE users for the correct use, storage and care.

  iii. Supervision of RPE wearers to ensure that they are using the RPE in accordance with manufacturer's instructions and the training provided.

  iv. Maintenance of RPE in accordance with the manufacturer's instructions.

  v. Requirement for pre-use inspections of RPE to ensure the equipment is working correctly before each use.

  vi. Records and documentation.

  vii. Correct storage facilities for RPE.

  viii. Safe disposal of damaged or used RPE and its components, taking note of waste handlers' health and safety.

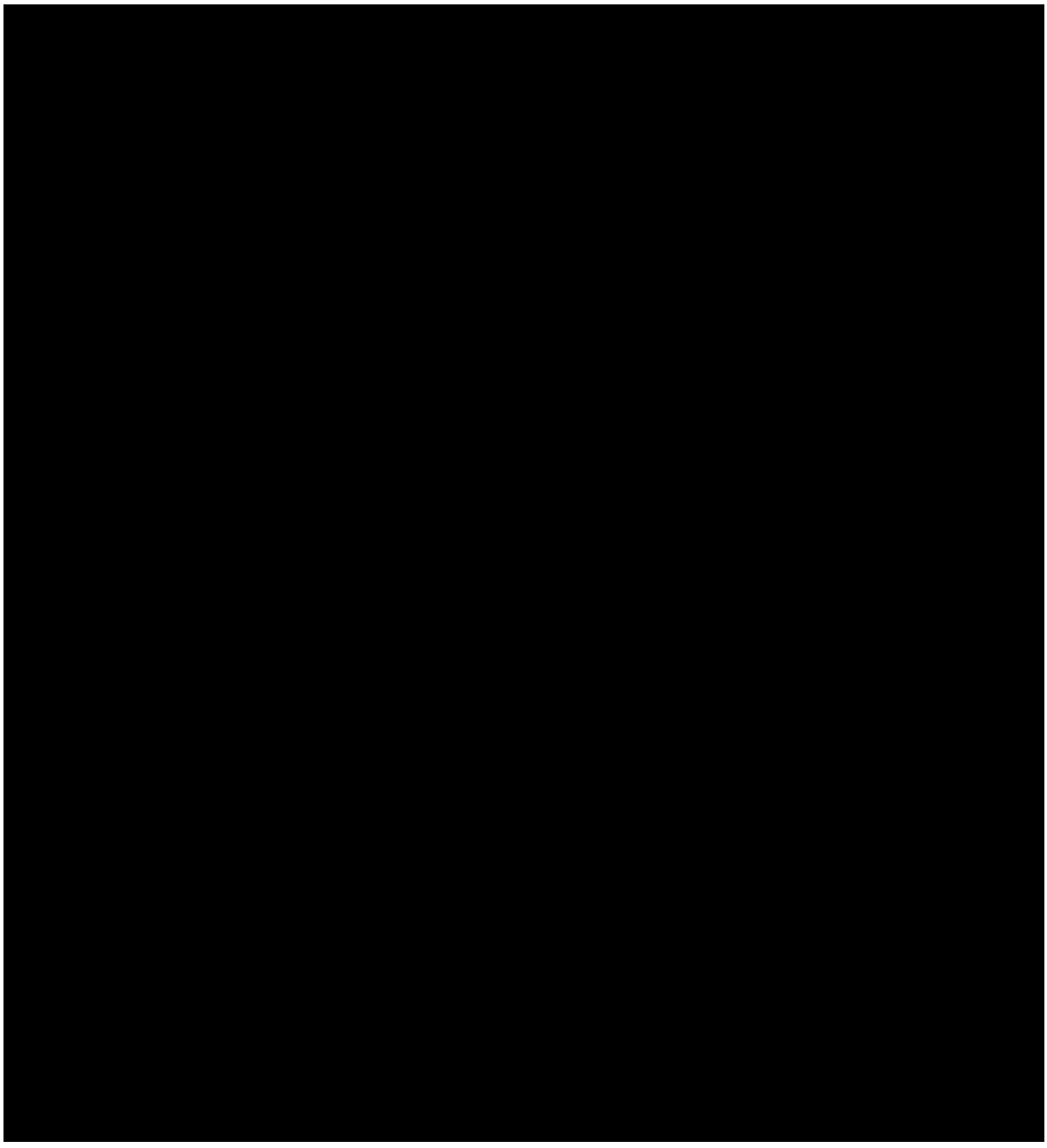
  ix. Compliance with AS1715 Selection, use and maintenance of respiratory protective equipment.

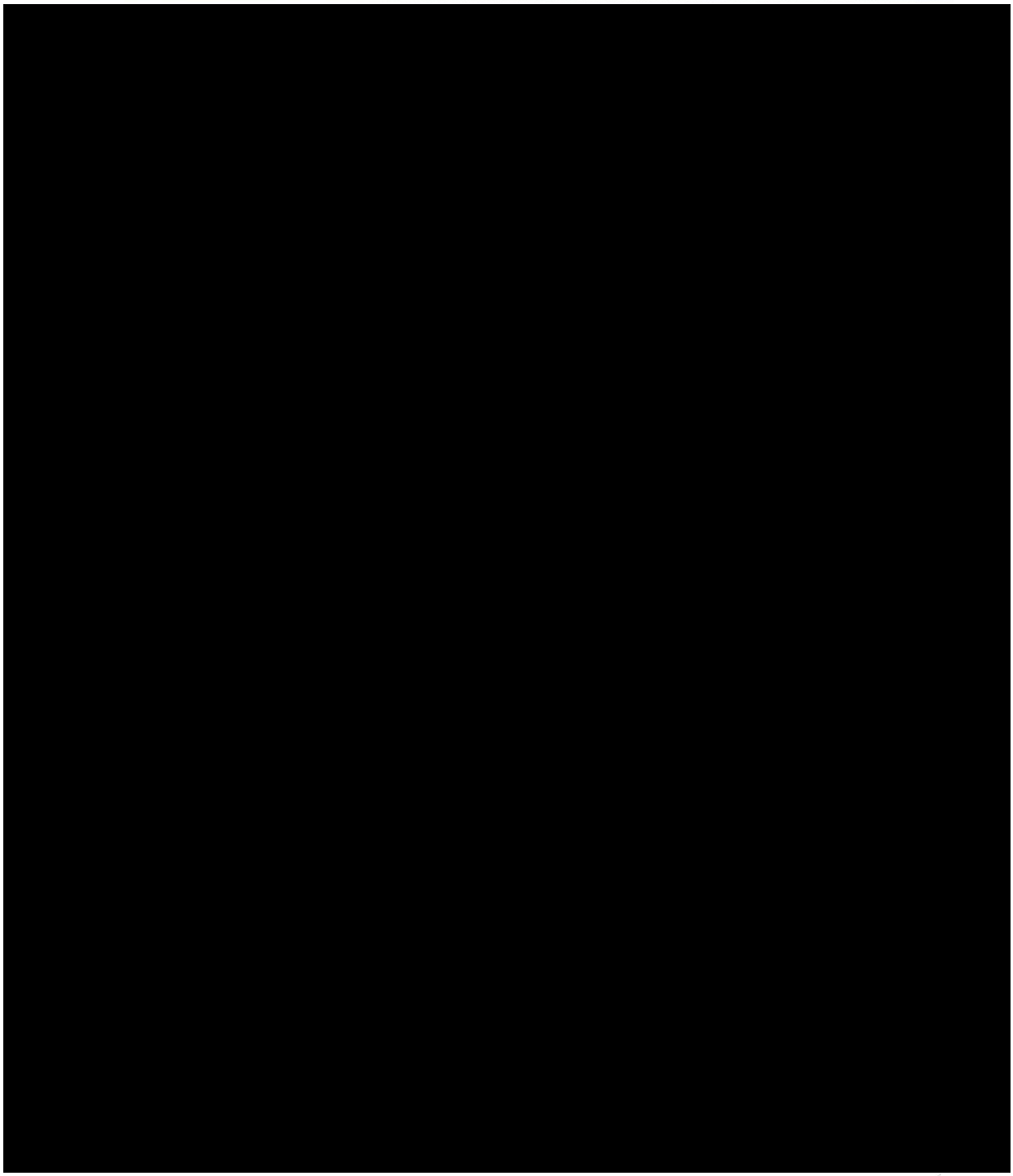
(b) Ensure fit testing for the RPE is conducted by a competent person familiar with the RPE.

(c) Ensure Self-Rescuer units provided for workers are suitable and adequate for the environment, potential exposures and length of time estimated to safely undertake an emergency evacuation.

Except where approved by the PC's Project Director in writing, RPE must be of the type that does not require the implementation and enforcement of a clean shaven policy for it to be effective.

15. Site Security and Access Control





16. Interface Management

The PC must have an interface management plan (applicable to the WHS Act, WHS Regulation and Rail Safety National Law), and must develop a process for managing safety interfaces in consultation with Sydney Metro that contains, as a minimum:

(a) The process for identifying and managing safety interfaces in accordance with the Rail Safety National Law.

(b) The process for identifying and managing construction safety interfaces.

(c) The process for development of safety interface *Risk Registers*, including:

i. Risk Workshops.

ii. Competency of facilitator and attendees (including participation of Sydney Metro and other interface parties).

iii. Use of the Sydney Metro Risk Matrix for Rail Safety Interfaces.

iv. Allocation of responsibility for controls.

v. Monitoring and review of interface risk registers.

(d) The process for coordinating regular safety interface meetings, managing disputes and transfer of *Residual Risks* following handover.

17. Management of Change

The Principal Contractor (PC) must develop and implement a Management of Change (MOC) procedure in accordance with the requirements of the Office of the National Rail Safety Regulator (ONRSR) document Preparation of a Rail Safety Management System Guideline. The procedure must provide a process for:

(a) Identifying what changes need to be assessed for safety impact.

(b) Classification of impacts of changes based on risk.

(c) Subsequent management of impacts based on the rating, where the highest rated safety changes require more rigorous processes.

(d) Ensuring the changes are approved by an authorised person.

18. Change Control Board

All asset configuration changes must be managed in accordance with the applicable Sydney Metro's Configuration Management Plans (latest revisions of SM EM-ST-213 and SM EM-ST-214) and submissions are to be presented to the Asset Standards Authority (ASA) approved Configuration Control Committees/Boards (CCB), as applicable to each configuration management gate. Submissions to the Sydney Metro Change Control Board (CCB) and Sydney Metro/Sydney Trains Interface Sub-CCB are to be in accordance with the latest revisions of:

- SM EM-FT-411 Configuration Change Request Form (Sydney Metro CCB)
- SM EM-FT-413 Configuration Change Request Form (Sydney Metro Sub-CCB)

Submissions to the Configuration Management and Asset Assurance Committee (CMAAC) must be completed in accordance with the latest requirements published by CMAAC. Submissions to Sydney Metro CCBs are to be approved and signed by the nominated Sydney Metro Configuration Change Manager (CCM) to enable submission to the CCB, at least 6 business days prior to the scheduled CCB Meeting. The PC must attend the CCB/CMAAC meetings as directed by the CCM.

19. Asset Management

The Principal Contractor (PC) must develop an Asset Management Plan that ensures that the railway, including permanent and, where applicable temporary works, will be operated safely. The Asset Management Plan must be developed in compliance with all relevant safety legislation including the WHS Act, WHS Regulation, Rail Safety National Law, Australian Standards, Codes of Practice and the requirements of the Asset Standards Authority (ASA). The Asset Management Plan must be approved by the Principal's Representative.

20. Safety in Procurement

The Principal Contractor (PC) must have processes that address the following:

(a) Identifying risks that could be introduced through the procurement process, inclusive of plant, hazardous chemicals, service providers (i.e. Sub-contractors).

(b) Development of specifications.

(c) Selection of suppliers based on performance, including alignment to the values of Sydney Metro and the PC.

(d) Appropriate processes for checking conformance to specifications and requirements prior to commencement/acceptance/use.

(e) Inspection, testing and monitoring by the PC of the service provider/item.

20.1. Sub-contractor Safety Management Plan

Where a Sub-contractor is engaged, the PC must ensure that the Sub-contractor develops a safety management plan and associated documentation in accordance with the PC's PHSMP. Where a Sub-contractor amends its safety management plan and/or SWMS, the PC must ensure that the Sub-contractor provides it with copies of the amended safety management plan or SWMS (as applicable) before work associated with the amendments commences. Where the PC amends its PHSMP, the PC must provide to its Sub-contractors any relevant sections of the amended PHSMP. The Sub-contractor must undertake a review and revision of its safety management plan as necessary.

20.2. Control of Sub-contractors

The PC must undertake appropriate monitoring of every Sub-contractor's work to ensure that the specified WHS system requirements are effectively implemented and all the activities undertaken by Sub-contractors are carried out without risk. For sub-contracted work, the PC must document in the PHSMP the processes that the PC's will implement to ensure Sub-contractor compliance, including details of:

(a) The duties of each Sub-contractor in order to ensure Sub-contractors comply with the WHS Act, Rail Safety National Law, HVNL and other applicable legislation.

(b) How the PC will retain responsibility for the management of site safety issues.

(c) The PC's surveillance program to monitor and document the effectiveness of each Sub-contractor's safety management plan and SWMS.

(d) The actions the PC will take in the event that the Sub-contractor is found not to be working to the requirements of the PC's PHSMP or Sub-contractor's safety management plan and SWMS.

21. Systems Engineering and RAM

21.1. Systems Engineering

The Principal Contractor (PC) must carry out all engineering design work in relation to Sydney Metro in accordance with ISO/IEC/IEEE 15288:2015 Systems and software engineering – System life cycle processes.

The PC must establish a staged design process in accordance with the requirements of each contract. This must manage development of design solutions for Sydney Metro in a controlled manner that provides progressive assurance of the 'As-built asset'.

The following activities must be carried out for all contracts:

(a) **Design checking:** All design outputs must be checked by competent engineers.

(b) **Verification:** All PCs must ensure appropriate verification takes place at the relevant design and construction stage.

(c) **Validation:** All PCs must ensure that appropriate validation takes place to confirm that the final products delivered meet the intended purpose.

Verification and validation activities must be specifically applied to Requirements as well as being integral to the normal design process.

21.2. Reliability, Availability and Maintainability (RAM)

The PC must follow the Reliability, Availability and Maintainability RAM management process as outlined in EN 50126:1999 Railway Applications – The Specification and Demonstration of Reliability, Availability, Maintainability and Safety (RAMS).

22. Safety Assurance

The Principal Contractor (PC) must carry out *Safety Assurance* activities in accordance with CENELEC standards (EN50126/8/9) and the Asset Standard Authority's Systems Safety Standard for New or Altered Assets TS20001:2013. As a minimum the PC must undertake the following:

(a) Produce a Safety Assurance Plan (SAP) that forms an integral part of the project lifecycle and which aligns with the Sydney Metro Configuration Management gateway process. An initial draft SAP must be provided within 30 days of contract award for review by the Principal's Representative. All SAPs must be maintained and updated as appropriate through the life of the Contract.

(b) Develop a Goal Structuring Notation (GSN) that is incorporated into the SAP that defines the project safety argument and aligns to the overarching TfNSW GSN.

(c) Conduct Preliminary Hazard Analysis (PHA) and reporting. PHA is an initial list of potential hazards that impact operation and maintenance of the railway, including normal, degraded and emergency modes of operation and maintenance.

NOTE: All affected stakeholders, including O&M, shall be engaged as part of the PHA.

(d) Following the PHA, develop a Project Safety Hazard Log (PSHL) in accordance with the Sydney Metro template provided in Appendix H: Project Safety Hazard Log Template.

NOTE: The PHA and PSHL are in addition to the requirements under the section of this Standard, entitled Project Level Risk Assessment. Residual risks shall be converted in a format consistent with the end user's criteria.

(e) Develop an Assumptions, Dependencies, and Constraints (ADC) Register in support of the hazard analysis. The ADC register may form part of the PSHL.

(f) Conduct Detailed Hazard Analysis and reporting following PHA, for those areas requiring detailed examination including subsystem, interface and operating and support analysis. The outputs from the hazard analysis must be incorporated into the PSHL.

NOTE: All affected stakeholders, including O&M, shall be engaged as part of the Detailed Hazard Analysis.

(g) Develop an Assurance Document Management Plan (ADMP) within 30 days of contract award for review and approval by the Principal's Representative. ADMPs must be consistent with the SAP.

(h) The SAP and ADMP must be reviewed and updated regularly at a minimum of annual intervals and updates issued to the Principal's Representative.

(i) Develop Safety Assurance Reports/Safety Assurance Statements (SAR/SAS) at the end of each project lifecycle phase (i.e. design and implementation), consistent with the concept of progressive assurance.

The Safety Assurance documentation must be developed in conjunction with the requirements for AEO as defined under Sydney Metro's Configuration Management Plan.

22.1. Independent Safety Assessment

Where Sydney Metro appoints an Independent Safety Assessor (ISA) under its RIM accreditation obligations, the PC must:

(a) Attend all requested meetings, inspections, audits and reviews undertaken by the ISA.

(b) Respond to comments, queries, recommendations and information requests to the satisfaction to the ISA and/or Sydney Metro.

(c) Make available all of its workers and documentation upon request of the ISA.

23. Human Factors

The Principal Contractor (PC) must carry out Human Factors activities in accordance with Asset Standards Authority (ASA) documents:

- T HR HF 00001 ST Human Factors Integration – Rolling Stock
- T MU HF 00001 ST Human Factors Integration – General Requirements

As a minimum the PC must undertake the following:

(a) Ensure that its Safety Assurance Plan addresses the application of Human Factors through the *Risk Management* process.

(b) Appoint or engage a competent and qualified Human Factors specialist where the project works identify a significant Human Factors component.

(c) Ensure that Human Factors issues are appropriately managed under the Project Safety Hazard Log (PSHL) or equivalent Human Factors register.

(d) Ensure Human Factors outcomes are appropriately documented as part of Safety Assurance Reports/Statements.

24. Incident, Emergency and Crisis Management

The Principal Contractor (PC) must develop management plans that address incidents and emergencies and that are aligned with Sydney Metro's crisis management plans and procedures. The PC must submit draft plans to Sydney Metro for review 15 days prior to site establishment.

24.1. Minimum Requirements for Management Plans

The PC's Management Plans in relation to Incident, Emergency and Crisis Management must as a minimum, contain the following:

(a) Identification of the causes of potential emergency or crisis situations.

(b) Emergency organisation, responsibilities, and emergency evacuation systems.

(c) A list of key personnel with contact details, including all-hours telephone numbers.

(d) Details of emergency and other relevant services (including. ambulance, fire brigade, spill clean-up services).

(e) Communications strategy (internal and external).

(f) Details of where information on hazardous materials is kept, including each material's potential impact to personnel upon exposure and measures to be taken in the event of accidental release.

(g) How First Aid is to be administered on the construction site.

24.2. First Aid Requirements

The PC must develop and implement a procedure for managing the provision of first aid for the PC's activities in accordance with the WHS Act, WHS Regulation and the SafeWork NSW – First Aid in the Workplace - Code of Practice. In addition, the PC must:

(a) Provide Nurse Call stations or equivalent to ensure a quick response to an incident requiring first aid assistance. The number of stations will be determined in

accordance with the PC's Emergency and Crisis Management Plan which will also determine whether SMS and pager notifications are to be incorporated.

(b) Provide an Automated External Defibrillator at each major first aid location and ensure all persons are informed of its location.

(c) Identify and nominate a local medical practitioner equipped to provide appropriate return to work advice based on the Contractor's own return to work programs.

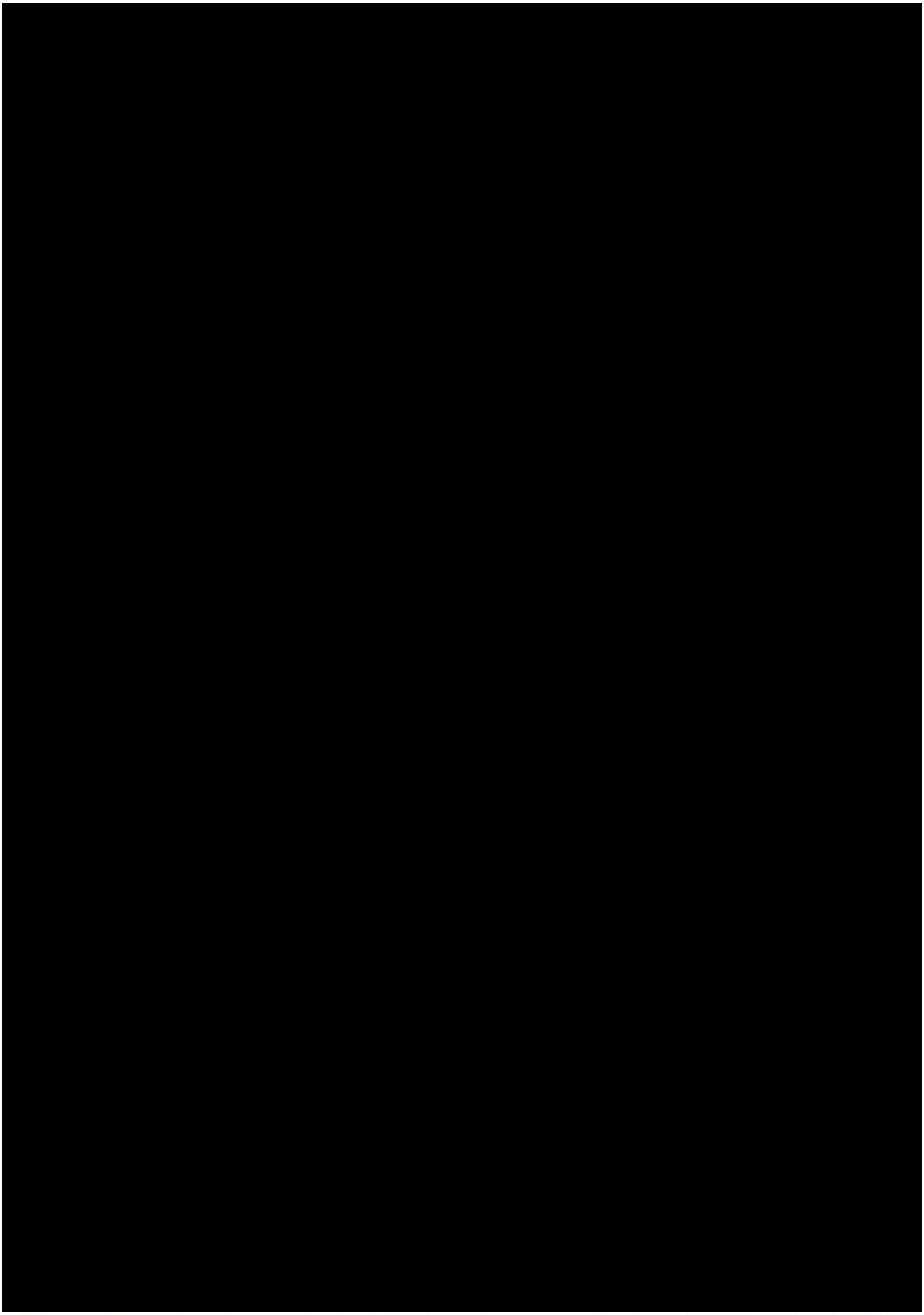
24.3. Site Emergency Co-ordinators

The PC must ensure a competent designated Site Emergency Co-ordinator (Chief Warden) for each site. Responsibilities must be documented.

24.4. Simulated Emergency Exercises

PC emergency response plans must be tested to ensure that the plan is suitable to provide an effective and efficient response to reasonably foreseeable emergencies and to ensure employees and contractors are competent to undertake their emergency functions. A program of tests must be developed and implemented by the PC.

25. Incident Reporting & Investigation



26. Corrective Action Management

The Principal Contractor (PC) must develop procedures in its PHSMP for the management of Corrective and Preventative Actions. These must identify a time frame for closure, nominated person responsible for implementing and monitoring, monitoring requirements to ensure closure (e.g. periodic review of corrective action register), and monitoring for effectiveness of controls (i.e. for actions arising from *Significant Incidents*).

PC Corrective Action Procedures must address the following triggers for corrective action:

(a) Audit.

(b) Inspections.

(c) Task Observations.

(d) *Risk Assessment*.

(e) Incident Investigation.

(f) Management Review.

27. Injury Management and Return to Work

The Principal Contractor (PC) must develop and implement Injury Management and Return to Work processes in accordance with the:

- Workers Compensation Act 1987
- Workplace Injury Management and Workers Compensation Act 1998
- Workers Compensation Regulation 2010
- SafeWork NSW – Guidelines for Workplace Return to Work Programs.

The PC's Injury Management and Return to Work processes must also include provision for the PC's subcontracted workforce.

28. Monitoring, Inspections and Audits

28.1. Inspections

The Principal Contractor (PC) must develop a procedure for conducting regular health and safety inspections across all of its sites to assess compliance with legislation, conformance to this standard and identify safe/unsafe acts, conditions and behaviours. Health and safety inspections must be prioritised based on the level of risk associated with the work, task, activity, exposure to the public, etc. For instance, the inspections of temporary works in public areas (e.g. scaffolding, hoarding, fencing, safety barriers, etc.) may need to be carried out at a higher frequency than the minimum timeframes specified in Australian Standards. The PC must develop a register of inspections incorporating scheduled frequencies, standards, and competencies required for undertaking inspections as a minimum.

The PC's procedure for conducting regular health and safety inspections must include the requirement to analyse inspection findings/results and identify any positive or negative trends. Where negative trends are identified, improvement plans must be developed by the PC to outline how the PC will prevent further negative trends.

The PC must allow Sydney Metro to carry out surveillance inspections at any time. Access must be provided to workplaces, people and supporting documentation to enable the conduct of the surveillance inspection. In carrying out surveillance inspections, Sydney Metro will comply with induction and *Risk Management* requirements of the PC. In the event of issues identified on site, these will be communicated to the PC's site management representative for actioning and recorded appropriately for monitoring of closure.

28.2. Audits

The PC must:

(a) Allow the Principal's Representative to conduct an audit following the provision of five days' notice on any or all aspects of the PHSMP.

(b) Make available all resources including documentation and personnel to support these audits as well as make suitable facilities available at the Construction Site to accommodate an audit team.

(c) Make available all relevant information and records, including those of Sub-contractors and suppliers for the purposes of an audit.

(d) Provide all reasonable assistance to the Principal Representative's nominated audit team.

(e) Develop in its PHSMP, procedures for the conduct of its own audit program.

(f) Perform safety and health audits in accordance with its own procedures and make these available to the Principal's Representative as required.

(g) Participate in Sydney Metro's Compliance Working Group.

28.3. Compliance Working Group (CWG)

For each major delivery contract a Compliance Working Group (CWG) or equivalent will be established to oversee the audit and compliance activities for the delivery of the contract. The CWG consists of personnel from the PC, Independent Certifier and Sydney Metro personnel. The operation of the CWG is defined in the Terms of Reference established for each contract. The CWG will establish a Contract Assurance Framework that has been developed to identify areas that warrant a formal audit process to be carried out. The CWG will determine where audits are required for any element of the delivery of the project, and who will undertake the audit.

Audits may be undertaken by the PC, Independent Certifier, Independent Safety Advisor or Sydney Metro. The scope of the audit is agreed through the CWG meetings, which are generally held monthly. The nominated auditors must be agreed through the CWG process.

28.4. Performance Management

Where a non-conformance, breach, infringement, hazard, etc. is identified, Sydney Metro will implement a tiered performance management process. The tiered performance management process will require a level of actioning by the PC based on the nature and severity of the issue identified.

29. Related Documents and References

Related Documents and References
Refer to Appendix I: References and Related Documents

30. Superseded Documents

Superseded Documents
There are no documents superseded as a result of this document.

31. Document History

Version	Date of approval	Notes
1.0	20 May 2016	New IMS document consolidating all PSMP Principal Contractor requirements into one Standard.
2.0	10 August 2016	**12. Rail Safety -** Aligned more closely with Rail Safety Standard to include construction requirements for work in corridor, including worksite protection, works around electrical infrastructure and Hi-rail rolling stock requirements. **16. Interface Management -** Created as separate heading to ensure applies to all construction works, not just where doing rail work. **11.14.4 – Importation of Asbestos Products -** Introduced requirements for supply chain to address recent concerns and safety alert surrounding importation of asbestos materials. **11.17. Heavy Vehicles (Chain of Responsibility)** - Better alignment to PSMP CoR Standard in relation to minimum contents of CoR Management Plans and clarified expectations for mass measurement. **15. Site Security -** Improved wording regarding Security Management requirements. Strengthened requirements for security risk assessment process. **Public Safety** (addressed in **11.2 Temporary Works** and **28. Monitoring, Inspections and Audits**) - Amendment regarding need to take a risk based approach to inspection and maintenance frequency of temporary works impacting on public safety. **11.19 Working in and around live traffic** - Added requirements around use of hierarchy of controls to protect workers (including traffic controllers) working in roads, including temporary traffic lights, safety barriers and crash attenuators. **General** - Improvement of wording of some requirements to improve clarity and better align to WHS laws, codes and standards. Changes made generally in the Communication consultation and cooperation and Occupational Health/Hygiene sections

Appendix A: Operational Readiness Review Checklist

Action No.	Action Description	Responsibility	Purpose	Scope/Method	Activity Complete	Further Action Required	Status
1	Verify an agreed Health and Safety Organisational chart is in place	PC	To ensure Company Officers & Health and Safety roles have been identified and responsibilities and accountabilities are agreed and understood and provision has been made for contingency coverage	Organisational chart is in place and roles/responsibilities are detailed, and Health and Safety coverage is maintained			
2	SM approved PC Health and Safety PHSMP and any specific management plans associated with the scope of works	PC	To verify the PC Health and Safety requirements within PHSMP and management plans comply with Legislative and SM requirements	PHSMP and associated plans reviewed by SM Health and Safety Group			
3	SM approved PC OHHWMP	PC	To verify PC Health, Hygiene and Wellbeing requirements comply with Legislative and SM requirements	OHHWMP review by SM Health and Safety Group			
4	SM approved PC *CoR* Management Plan	PC	To verify PC *CoR* requirements comply with Legislative and SM requirements	*CoR* Management Plan review by SM Health and Safety Group			
5	SM approved PC Crisis Management Plan	PC	To verify the Crisis Management Plan is compliant with Legislative and SM Requirements	Crisis Management Plan review by Sydney Metro			
6	Provision of PC Site Security Management Plan	PC	To ensure all site security risks have been identified and adequate processes and controls are in place	Review of the PC Site Security Management Plan by SM Health and Safety Group			
7	Provision of site access requirements	PC SM	To provide SM with the requirements set by the PC that align with SM requirements for site access	Verification of site access requirements by SM Health and Safety team			
8	PC to provide SM with statutory equipment inspections and plant and equipment inspections	PC	To comply with regulatory and SM requirements	Verify inspection check list against PC provided list of proposed Plant and Equipment			
9	Provisional list of site plant and equipment register	PC	To comply with regulatory and SM requirements	Verification of site approval request forms			
10	Provisional list of site light vehicle register	PC	To comply with regulatory and SM requirements	Verification of site approval request forms			
11	Provision of list of Hazardous Materials/Chemicals register	PC	To ensure Materials/Chemicals are approved to enter site and appropriate information and storage requirements are in place	Review of hazardous materials/chemicals register			

Action No.	Action Description	Responsibility	Purpose	Scope/Method	Activity Complete	Further Action Required	Status
12	Provision of list of Primary Emergency Response Equipment	PC	To ensure specific Crisis Management that covers all foreseeable scenarios and meets all SM requirements have been identified	Review PC list of Emergency Response Equipment against scope of work and all foreseeable risks			
13	Provision of PC implementation process, to ensure fitness for work requirements and provision of employee assistance are met	PC	To ensure compliance with SM Fitness for Work requirements	Review of PC Fitness for Work process for mobilisation and Health and Safety PHSMP			
14	Provision of PC injury management and rehabilitation process	PC	To ensure PC has in place the required process and resources to manage injuries and illness both on and off the worksite	Review of the PC PHSMP by Sydney Metro Health and Safety Group			
15	Review of the PC's *Risk Register* by Sydney Metro	PC	To ensure all applicable risks and hazards associated with the PC's scope of works has been identified by the PC, prior to the workshop and appropriate controls have been identified	Review by SM to ensure that *Risk Register* covers foreseeable hazards, risks and controls. Including procedures used to identify them are compliant with SM requirements.			
16	Review of key personnel who attended and participated in *Risk Register* workshops	PC	To ensure appropriate and competent personnel have had the required input into the *Risk Register*	SM to review attendees list against personnel identified in the Terms of Reference			
17	Close out of specific Health and Safety risks that are 'Critical' or 'Catastrophic'	PC	To ensure project specific hazards are managed to ALARP	Formal verification of close out of 'Critical' or 'Catastrophic'. In accordance with SM Risk Assessment and Control requirements			
18	Review Health and Safety Risk Register Actions that are unable to be closed out proper to scheduled mobilisation date and enter action into the Project Manager's Action Plan for post-mobilisation completion	PC SM	To ensure the PC's site Health and Safety Manager is aware *Risk Register* actions are not closed out and agrees for transfer of close out to site	Transmittal of register of actions not closed out by risk workshop facilitator for inclusion in action plan			
19	SM to provide PC with Health and Safety performance reporting requirements	SM	To provide ensure weekly and monthly Health and Safety reporting requirements for the PC are understood prior to mobilisation date are understood	Provision of SM Health and Safety reporting requirements			

Action No.	Action Description	Responsibility	Purpose	Scope/Method	Activity Complete	Further Action Required	Status
20	Provision of the PC site specific induction presentation	PC	To provide SM with the assurance that the PC personnel are provided with specific information related to the project and can safely carry out work	PC to provide SM with their site specific Health and Safety Induction presentation for review against SM requirements prior to pre-mobilisation kick off meeting			
21	Provision of PCs training needs analysis and competence systems and procedures are in place	PC	To ensure the PC has identified all competency requirements for all roles. The TNA must also identify all RSW, safety critical roles and workers/supervisors required to participate in the SMIC	Verify by review of prepared training plan which outlines the activates to be implemented, timeline and target audience to ensure compliance with SM requirements			
22	Conduct a Health and Safety pre-start workshop between SM and PC	PC SM	To ensure all parties are aligned and have a clear understanding of the strategies/initiatives to be implemented to ensure an incident free project	Conduct workshop focusing on how all parties are to achieve the best Health and Safety outcomes			
23	Provision of dangerous goods licence, if required	PC	To provide evidence compliance with regulatory requirements have been achieved	Provision of Dangerous Goods Licence			
24	Provision of PC proposed strategy for alignment of Sub-contractors to achieve Health and Safety goals	PC	To provide SM with assurance that Sub-contractors are provided with all relevant project documentation and are effectively managed by the PC	PC to provide list of Sub-contractors at pre-mobilisation kick off meeting and ensure attendance of relevant parties during risk workshops			
25	Pre-mobilisation kick off meeting	SM	To verify the PC has all the Health and Safety requirements in place and is compliant to mobilise to site	Verify through sign off of all line items in the this verification plan			

Appendix B: Sydney Metro Industry Curriculum

Stream	Curriculum
Demolition	Demolition Abridged Introduction Skills
	Demolition Introduction Skills
	Demolition Experienced Worker
	Demolition Nominated Supervisor
Tunnelling	Tunnelling Introduction Skills
	Tunnelling Experienced Worker
	Tunnelling Introduction to Leadership
Civil Construction	Civil Construction Introduction Skills
	Civil Construction Introduction to Leadership
Heavy Vehicle Road Transport	Heavy Vehicle Introduction Skills
Rail Industry	Rail Introduction Skills
	Rail Introduction to Leadership

Note: Refer to SM ES-FT-428 SMIC Guidance Document for detailed guidance of meeting requirements for the Sydney Metro Industry Curriculum.

Appendix C: Health & Safety Performance Index (HSPI)

Sydney Metro Health & Safety Performance Index				
Leadership				
1	**Visible Senior Leadership Engagement Tours**			**Evidence**
Description	Leadership inspection or tour carried out by Senior Management from the Company. This includes: • Operations Manager/Regional Manager (i.e. Line manager or equivalent) • General Manager/TfNSW General Manager or equivalent • Managing Director/TfNSW Secretary or equivalent *Inspection/tour must include interaction with workers (provide a record) and demonstrate actions to be taken to address areas of concern and/or reinforce positive practices.*		**Actual**	Completed leadership tour
Scoring Criteria	0	Less than 3 leadership tours in the period	0	
	1	At least 3 leadership tours in the period		
	2	At least 4 leadership tours in the period		
	3	6 or more in the period		
Notes	Bonus points are available as follows: • Operations Manager/Regional Manager i.e. PD line manager (external) + *1 per visit* • General Manager/Business unit manager (external) + *2 per visit* • Managing Director (top manager) (external) + *3 per visit*		**Score** 0	
2	**Safety Leadership Executive Meetings**			**Evidence**
Description	The level of leadership attendance at the Sydney Metro Safety Leadership Executive Meeting.		**Actual**	Attendance record
Scoring Criteria	0	No attendance by senior management	0	
	1	Attendance by the Project Director		
	2	Attendance by manager senior to Project Director		
	3	Attendance by Managing Director (MD)		
Notes	Additional points available for delivery of content at meeting (+3)		**Score** 0	
3	**HSR Committee Attendance**			**Evidence**
Description	The number of HSR committee meetings for the period		**Actual**	Attendance record
Scoring Criteria	0	No HSR committee meetings for the period.	0	
	1	At least 1 committee meeting attended by PC ELT.		
	2	At least 2 committee meetings attended by PC ELT.		
	3	At least 3 committee meetings attended by PC ELT.		
Notes	List of senior leadership members to be agreed by Project Manager.		**Score** 0	

4	Frontline Leadership Program			Evidence
Description	Superintendent, Supervisors, leading hands enrolled in the Sydney Metro Frontline Competence Management Program, reported as a percentage. This includes the supply chain.		Actual	n/a
Scoring Criteria	0	Less than 60% of supervisors enrolled in program.	0	
	1	At least 60% of supervisors enrolled in program.		
	2	At least 70% of supervisors enrolled in program.		
	3	80% or more of supervisors enrolled in program.		
Notes	All supervisors engaged in the contract for more than 3 months will complete the Frontline Leadership Program (or pre-approved equivalent by the Principal Contractor) within four weeks of commencement on the project. (Number of supervisors enrolled in Frontline Leadership Program/Rolling average of supervisors for the period x 100).		Score: 0	

Risk

5	Safety in Design			Evidence
Description	Indented to improve the level of communication between designers and construction teams. Number of site tours conducted by senior designers. The tours must focus on design challenges and the chance to identify potential improvements		Actual	Attendance record
Scoring Criteria	0	Less than 4 tours in the period.	0	
	1	At least 4 tours in the period.		
	2	At least 6 tours in the period.		
	3	At least 8 tours in the period.		
Notes	The Project Manager must agree on a list of designer tour members (PC and Sydney Metro). Tours undertaken by these members will be counted. Doesn't include tours/inspections focussed on temporary and/or permanent work design checks. +3 bonus points for safety in design workshops attended by frontline supervisors (leading hand, supervisor, superintendent).		Score: 0	

Occupational Health & Hygiene

6	Toolbox talks – Occupational Health			Evidence
Description	The number of toolbox talk that have had a topic on an occupational health and/or hygiene. The topic will be relevant to the project/industry, lessons learnt or from recent incidents.		Actual	Toolbox Talk record
Scoring Criteria	0	Less than 4 toolbox talks for the period.	0	
	1	At least 4 toolbox talks for the period.		
	2	At least 6 toolbox talks for the period.		
	3	At least 8 toolbox talks for the period.		
Notes	Toolbox talks delivered across multiple sites with the same content is only 1 toolbox talk.		Score: 0	

7	Health Assessments			Evidence
Description	The percentage of pre-employment medicals carried out. This extends to supply chain.		Actual	Plant register
Scoring Criteria	0	Less than 50% of pre-employment medicals complete.	0	
	1	At least 50% of pre-employment medicals complete.		
	2	At least 75% of pre-employment medicals complete.		
	3	At least 90% of pre-employment medicals complete.		
Notes	The health and hygiene monitoring program will outline the groups that require pre-employment and/or ongoing medical assessments for exposure to occupational hygiene hazards. (Number of workers trained/Rolling average of workers for the period x 100).		Score: 0	

Behaviour and Culture				
8	**Hazard reporting**			**Evidence**
Description	The number of hazard and near miss reports submitted for the period. Reports submitted by workers, HSR, and management will be captured. If a hazard/near miss report results in an investigation.		**Actual**	n/a
Scoring Criteria	0	No hazard reports submitted for the period.	**0**	
	1	Hazard reports submitted by management.		
	2	Hazard reports submitted by HSR.		
	3	Hazard reports submitted by worker.		
Notes	The hazard/near miss may result in a formal investigation. The score received will be awarded based on whether submissions were from workers, HSRs or management. If a major hazard/near miss is identified by SM, the score will be moderated and deducted.		**Score** 0	
9	**Incident Investigations**			**Evidence**
Description	The number of incident investigations (ICAM or equivalent) signed off by Executive Leadership Team (ELT) and lessons learned communicated to Sydney Metro.		**Actual**	Incident Investigation
Scoring Criteria	0	No investigations were signed off by ELT.	**0**	
	1	50% of investigations were signed off by ELT.		
	2	70% of investigations were signed off by ELT.		
	3	80% of investigations were signed off by ELT.		
Notes	No investigations carried out signifies an incident requiring an investigation did happen in that period, however, it was not investigated.		**Score** 0	
10	**Incident Reporting**			**Evidence**
Description	Notifications of incidents reported to Sydney Metro as per the Incident Reporting and Investigation Standard in the PSMP and lessons learnt communicated		**Actual**	Incident records
Scoring Criteria	0	Less than 60% of incidents, or, less than 100% of *Significant Incidents* are reported in compliance with PSMP.	**0**	
	1	At least 60% of incidents are reported in compliance with PSMP.		
	2	At least 80% of incidents are reported in compliance with PSMP.		
	3	At least 95% of incidents are reported in compliance with PSMP.		
Notes	The incidents that occurred during the reporting period are considered. Information required is respective to Actual/Potential Consequence Criteria includes; incident entered correctly into, all tabs completed, investigation attached, actions closed out, etc. in Sydney Metro's approved Incident Reporting and Investigation Database		**Score** **0**	

Leading Indicator Performance Score ('Effort' in terms of inputs/activities)	
Gateway Score ('effectiveness' as an output of their activities)	
Total HSPI Score	

Appendix D (i): Consequence & Likelihood Criteria

Consequence Table

Rating	C6	C5	C4	C3	C2	C1
Descriptor/ Impact Area	**Insignificant**	**Minor**	**Moderate**	**Major**	**Severe**	**Catastrophic**
Health and Safety (Injury and Disease)	Illness, first aid or injury not requiring medical treatment.	Illness or minor injuries requiring medical treatment.	Single recoverable lost time injury or illness, alternate/restricted duties injury, or short-term occupational illness.	1-10 major injuries requiring hospitalisation and numerous days' lost, or medium-term occupational illness.	Single fatality and/or 10-20 major injuries/permanent disabilities/chronic diseases.	Multiple fatalities and/or >20 major injuries/permanent disabilities/chronic diseases.
Environment	No appreciable changes to environment and/or highly localised event.	Change from normal conditions within environmental regulatory limits and environmental effects are within site boundaries.	Short-term and/or well-contained environmental effects. Minor remedial actions probably required.	Impacts external ecosystem and considerable remediation is required.	Long-term environmental impairment in neighbouring or valued ecosystems. Extensive remediation required.	Irreversible large-scale environmental impact with loss of valued ecosystems.
Customer Experience/ Operational Reliability	Short duration disruptions affecting part of one transport mode.	Minor disruptions affecting several parts of one transport mode.	Serious disruptions affecting operation of one complete transport mode.	Major disruptions affecting operations of one transport mode with network-wide effects on one or more other modes of transport.	Short duration shutdowns or substantial disruptions affecting multiple transport modes with sector-wide cascading effects.	Extensive shutdowns or extended disruptions with economy-wide effects.
Government/Stakeholder/Public Trust/Confidence	Negative article in local media. No discernible reaction/apprehension. Goodwill, confidence and trust retained.	Unease – Series of negative articles in local/state media. Confidence remains with some minor loss of goodwill or trust. Recoverable with little effort or cost. Some continuing scrutiny/attention.	Disappointment – Extended negative local/state media coverage. Confidence and trust dented but are quickly recoverable at modest cost within existing budget and resources.	Concern – Short-term negative state/national media coverage. Confidence and trust are diminished but are recoverable with time, staff effort and additional funding.	Displeasure – Extended negative state/national media coverage. Confidence and trust are damaged but recoverable at considerable cost, time and staff effort.	Outrage – Material change in the public perception of the organisation. Confidence and trust are severely damaged, possibly irreparably, and full recovery both questionable and costly.
Regulatory or Legal Breach	Low-level non-compliance with legal and/or regulatory requirement or duty by individuals or organisation.	Minor non-compliance with legal and/or regulatory requirement or duty. Investigation and/or report to authority.	Moderate non-compliance. Subject to comment and monitoring from applicable regulator. Small fine and no disruption to services.	Major breach resulting in enforcement action and/or prohibition notices. Substantial fine and no disruption to services.	Substantial breach resulting in prosecution, fines and/or litigation. Licence or accreditation restricted or conditional affecting ability to operate.	Prosecution leading to imprisonment. Loss of operating licence.
Management Effort/Organisational Fatigue	An event, the impact of which can be absorbed as part of normal activity.	An event, the impact of which can be absorbed but some additional management effort is required.	An event, the impact of which can be absorbed but much broader management effort is required.	Major event which can be absorbed, but substantial management effort is required.	Severe event which requires extensive management effort but can be survived.	Catastrophic event with the clear potential to lead to the collapse of the organisation.
Benefit Realisation of Initiative, Program or Project	No time delay with initiative or project but it will incur a slight decrease in the benefits realised.	Minor delay with the initiative and/or a minor decrease in the benefits realised; or minor delay on the project or another project, with no public implications.	Several delays with the initiative and/or moderate decrease in benefits realised; or completion date missed for non-critical path project.	Major delays with the initiative and/or major decrease in benefits realised; or publicly announced portion/milestone missed or final completion date missed with demonstrable mitigating external circumstances.	Severe delays with initiative, which impacts across divisions and/or significant decrease in benefits realised; or publicly announced portion/milestone missed or final completion date missed on critical path project.	Failure to realise benefits of the initiative which adversely affects the enterprise-wide operations of organisation; or publicly announced portion/milestone significantly missed or final completion date significantly missed on critical path project.
Budget, Costs or Revenue	< $100k	$100k – $1m	$1m – $10m	$10m – $50m	$50m – $100m	> $100m

Likelihood Table

Qualitative Expectation	Quantitative Frequency	SM Probability Analysis	LIKELIHOOD	
Expected to occur frequently during time or activity of project	10 times or more every year	>90%	Almost Certain	L1
Expect to occur occasionally during time or activity of project	1-10 times every year	75-90%	Likely	L2
More likely to occur than not during time of activity occur or project	Once each year	50-75%	Possible	L3
More likely not to occur than occur during time of activity of project	Once every 1 to 10 years	25-50%	Unlikely	L4
Not expected to occur during the time of activity or project	Once every 10 to 100 years	10-25%	Rare	L5
Not expected to ever occur during time of activity or project	Less than once every 100 years	<10%	Alost Unprecedented	L6

Appendix D (ii): Risk Matrix

Risk Rating A – Very High B – High C – Medium D - Low			Consequence					
			Insignificant	Minor	Moderate	Major	Severe	Catastrophic
			C6	C5	C4	C3	C2	C1
Likelihood	Almost certain	L1	C	B	B	A	A	A
	Likely	L2	C	C	B	B	A	A
	Possible	L3	C	C	B	B	A	A
	Unlikely	L4	C	C	B	B	B	A
	Rare	L5	D	C	C	B	B	A
	Almost unprecedented	L6	D	D	C	C	B	B

Appendix E: Monthly Health & Safety Report Measures

Area		This Month	To Date
WORKFORCE			
1	Number of Principal Contractor Workers.		
	Number of Sub-contractors.		
	Number of Sub-contractor Workers.		
	Total number of Workforce.	0	0
	Number of Hours Worked.		
	Number of Persons Inducted.		
LEADERSHIP			
2	Number of Senior Leadership Engagement Tours.		
	Attendance at Safety Leadership Executive Meeting …		
	by Managing Director (MD);		
	by a manager senior to Project Director (PD);		
	by Project Director (PD).		
	Number of HSR Committee meetings attended by Principal Contractor *Executive Leadership Team* (ELT).		
RISK			
4	Number of site tours by Senior Designers.		
	Number of SiD workshops attended by frontline supervisors.		
TOOLBOX			
5	Total No. of Toolbox Talks Conducted.		
	Number of Toolbox Talks on Occupational Health topics.		
OCCUPATIONAL HEALTH AND HYGIENE			
6	KEY PERFORMANCE INDICATORS		
	Achievement of OHHW KPI		
	ASSURANCE		
	No of SEGs assessed with a Significant Risk to Health that are performing work activities		
	No of persons assessed with a Significant Risk to Health that are performing work activities		
	No. of Level 2 HRAs Planned		
	No. of Level 2 HRAs Performed		
	No. of Level 3 HRAs Planned		
	No. of Level 3 HRAs Performed		
	No. of outstanding actions arising from recommendations from HRA		
	No. of HRAs communicated to the relevant SEG (e.g.: toolbox talk)		
	No. of HRAs yet to be communicated to the relevant SEG (e.g.: toolbox talk)		
	No. of persons participating in medical assessment and health surveillance		
	No. of persons requiring preclusion or management as a result of abnormal findings from medical assessment or health surveillance		
	% of workforce participation in health and wellbeing program		
	CONTROL		
	No. of SEGs with Critical Control Audit Tools Developed		
	No. of Critical Control Audits Planned		
	No. of Critical Control Audits Completed		
	No. of outstanding actions arising from recommendations made as part of Critical Control Audits		
	TRAINING AND COMPETENCE		
	No. of COHs working under this Contract Package		

Area		This Month	To Date
	No. of Occupational Hygienists working under this Contract Package		
	No. of persons who have undertaken training in the basic principles of occupational hygiene (e.g.: Course OHTA. W201).		
	No. of persons who have received training in the occupational hygiene hazards relative to their work package.		
	Health Assessments (%).	0	0
BEHAVIOUR AND CULTURE			
	Number of Safety Inspections Planned.		
	Number of Safety Inspections Performed.		
	Hazard reports submitted (points) …	0	0
7	by workers;	0	0
	by a HSR or the committee;	0	0
	by management.	0	0
	% of *Significant Incident* Investigations signed off by ELT.	#REF!	#REF!
DRUG & ALCOHOL TESTS			
	Number Pre Sign-on Drug Tests.		
	Number Random Drug Tests.		
	Number Post Incident Drug Tests.		
	Number Drug screen tests conducted by an *authorised person*.		
	Number Drug confirmatory tests directed by an *authorised person* (lab).		
	Total number of drug tests.	0	0
	Number of Positive Drug Tests returned from laboratory.		
	Number Pre Sign-on Alcohol Tests.		
8	Number Random Alcohol Tests.		
	Number Post Incident Alcohol Tests.		
	Number Alcohol tests conducted by an *authorised person*.		
	Number Breath Alcohol Analysis tests conducted by an authorised person (i.e. Police).		
	Total number of Alcohol Tests.	0	0
	Number of Positive Alcohol Tests.		
	Total number of Drug and Alcohol Tests.	0	0
	Total number of Positive Drug and Alcohol Results.	0	0
	% Negative Drug and Alcohol Tests.	0.0%	0.0%
HVNL *CoR* REPORTING			
	Number of *Heavy Vehicle* Movements.		
	Number of *Heavy Vehicle* Incidents (including infringements and warnings issued).		
9	*CoR* Surveillance Inspections/Observations Undertaken.		
	CoR Training Completed.		
	Number of *Heavy Vehicle* Haulage Contractors Audited.		
	Number of contractor's with NHVAS Accreditation.		
INCIDENT BREAKDOWN			
	Date of Last Lost Time Injury.		
	Number of Lost Time Injuries.		
	Number of Restricted Duties Injuries.		
10	Number of days on Restricted Duties.		
	Number of Medical Treatment Injuries.		
	Number of First Aid Treatments.		
	Number of Work Hours Lost.		

Area		This Month	To Date
	Number of Property/Infrastructure Damage.		
	Number of *Significant Incidents*/Near Misses.		
	Percentage of injuries where a full investigation is undertaken.		
CORRECTIVE ACTIONS			
11	Corrective actions closed out in agreed timeframe.		
SAFETY STATISTICS			
12	LTI Frequency Rate.		0.0
	Average Time Lost Rate.		0
	LTI-Free Days Since Last LTI or Start of Contract.		0
	RDI Frequency Rate.		
	MTI Frequency Rate.		0.0
	FAI Frequency Rate.		0.0
	Significant Incident Rate.		#REF!
NOTIFICATIONS			
13	*HVNL* Breaches or Infringements from RMS.		
	Number of safety alerts generated and shared.		
	Number of Reports to WorkCover.	0	
	Number of WorkCover Prohibition Notices.	0	0
	Number of WorkCover Improvement Notices.	0	0
	Number of WorkCover Notices per Million Hours Worked.	0.0	0.0
Sign Off			
Prepared by: Principal Contractor WHS Manager			
Endorsed by: Principal Contractor Project Director or Manager			
Reviewed by Sydney Metro Representative (i.e. Sydney Metro IG Health and Safety Manager)			

Appendix F: Health Risk Assessment Checklist

This checklist has been designed to assist the Principal Contractor (PC) in assessing the adequacy of their Health Risk Assessments. It may also assist service providers in developing their Health Risk Assessment Process Plans.

Key to symbols to be used in check-boxes is: ✓ = Yes ✗ = No **n/a** = Not applicable

1 BASELINE HEALTH RISK ASSESSMENT

- ☐ Have the nature of the occupational hazards relative to the work to be performed been documented?
- ☐ Have the exposure pathways, or the mechanism by which the occupational hazard exerts its toxic effect, been documented for each hazard?
- ☐ Have the adverse health effects produced by each occupational health hazard been documented?
- ☐ Have synergistic or additive exposures been documented?
- ☐ Have the acceptable workplace exposure standard and associated trigger limits for each health hazard been documented?
- ☐ Have the criteria for exposure risk acceptability been documented e.g.: statistical assessment?
- ☐ Have the processes by which the workforce is organised and staffed, including shift work patterns been documented and considered when reviewing exposure?
- ☐ Have significant sources of exposure, taking into consideration processes, operations, work tasks and work practices been documented?
- ☐ Has the duration (minutes, hours) and frequency of exposure (continuous, seasonal or intermittent) been documented?
- ☐ Have the number of persons likely to be involved in the work tasks where the potential for exposures exist been documented?
- ☐ Have the nature of tasks and potential variations in procedure been documented?
- ☐ Have *Similar Exposed Groups (SEGs)* been identified and the process by which they were created documented?
- ☐ Has occupational exposure risk been estimated for each hazard and each *SEG* in accordance with the processes in the Occupational Health, Hygiene and Wellbeing Management Plan?
- ☐ Have the necessary exposure controls been identified that will minimise the risk to below acceptable targets as per HIRAC SFAIRP, and in all cases below the *Acceptable Workplace Exposure Standards*?
- ☐ Have Critical Control Measures (CCM) crucial to prevent the event or mitigate the consequence of the adverse health effect been identified and an audit process documented?
- ☐ Have medical assessment, health surveillance and health monitoring requirements been identified and documented?
- ☐ Have risk owner(s) including resources required to manage the risks on an ongoing basis been assigned?
- ☐ Have the reference source(s) of information used to inform baseline assessment outcomes been documented?

- ☐ Has a respiratory protection program in accordance with AS1715 been documented in circumstances where controls, higher in the control hierarchy do not control exposure concentrations below 50% *TWA-WES*?
- ☐ Has a hearing conservation program in accordance with AS1269 been documented in circumstances where controls, higher in the control hierarchy do not control occupational noise exposure concentrations below 80 dB, LAeq,8hour?
- ☐ Has the Baseline HRA been approved by an *Independent Certified Occupational Hygienist (COH)* in accordance with the Occupational Health, Hygiene & Wellbeing Management Plan?
- ☐ Has a copy of the *COH*-approved Baseline HRA been provided to Sydney Metro?

2 SIMILARLY EXPOSED GROUP (SEG) HEALTH RISK ASSESSMENT (HRA)

- ☐ Has a walkthrough assessment been conducted by the independent *COH* in consultation with relevant stakeholders that verified the information contained in the Baseline HRA?
- ☐ Has a *SEG* HRA been performed by an independent *COH* to document the characteristics of *SEG* exposures?
- ☐ Have estimates of exposure in the Baseline HRA been updated following a site walkthrough by the *COH*?
- ☐ Has the *SEG* HRA been performed within one month, for those *SEGs* estimated to have a significant exposure risk; and three months, for those *SEGs* estimated to have a non-significant exposure risk?
- ☐ Have assessment results been documented to inform occupational health risk(s) for each *SEG* to include exposure control plans, the evaluation of the presence, functionality, and performance of critical controls nominated in the Baseline HRA, and systems and methods for the ongoing assessment and evaluation of critical controls?
- ☐ Have formal recommendations made by the *COH* been recorded, tracked, and implemented?
- ☐ Has a copy of the *COH*-approved *SEG* HRA been submitted to Sydney Metro?

3 QUANTITATIVE HEALTH RISK ASSESSMENT

- ☐ Has an exposure assessment strategy been developed and approved by the *COH* where the *SEG* HRA identifies a *Significant Risk to Health*?
- ☐ Has an exposure assessment strategy been submitted to Sydney Metro within one month of the *SEG* HRA?
- ☐ Are personal exposure sampling activities planned to be performed in accordance with the relevant Australian Standard using validated test methods with monitoring performed by a *COH* or occupational hygienist (MAIOH/FAIOH)?
- ☐ Have personal exposures been measured and evaluated in line with the *COH*-approved exposure assessment strategy?
- ☐ Where personal exposure is measured for quartz, has it been performed by a NATA laboratory as per NHMRC (1984) via X-ray diffraction?
- ☐ Have formal recommendations made by the *COH* been recorded, tracked, and implemented?

Appendix G: Health Risk Matrix

The risk assessment must be performed in accordance with local legislative requirements and the requirements listed in this Standard. Occupational health risks shall be evaluated by:

- Assigning the consequence (Table G2).
- Determining the likelihood of exposure[2] (Table G1).
- Establishing the risk rating by applying the consequence and likelihood to the *Risk Assessment Matrix* (Table G3).

Assessment of health hazards shall be performed taking into consideration both acute and chronic exposures, therefore the risk of both exposure scenarios shall be evaluated separately.

The risk evaluation shall be concluded by identifying whether or not action is required based on the risk acceptability criteria presented in Table G4.

Table G1: Occupational Health Likelihood Criteria

Likelihood Table						
Rating	**L6**	**L5**	**L4**	**L3**	**L2**	**L1**
Occupational Hazard	**Almost Unprecedented**	**Rare**	**Unlikely**	**Possible**	**Likely**	**Almost Certain**
Qualitative Exposure Expectation	Exposure is not expected to ever occur during time of activity or project	Exposure is not expected to occur during the time of activity or project	Exposures are more likely not to occur than occur during time of activity of project	Exposures are more likely to occur than not during time of activity occur or project	Exposures are expected to occur occasionally during time or activity of project	Exposures are expected to occur frequently during time or activity of project
Quantitative Exposure Frequency **(e.g.: Exposure to an acute health hazard)**	Less than once every 100 years	Once every 10 to 100 years	Once every 1 to 10 years	Once each year	1-10 times every year	10 times or more every year
Probability Analysis **(e.g.: Probability of experiencing a chronic health effect)**	<10%	10-25%	25-50%	50-75%	75-90%	>90%

[2] The COH may nominate more conservative consequence and likelihood descriptors at the approval of the Program Director.

Table G2: Occupational Health Consequence Criteria

Consequence Table							
Rating		C6	C5	C4	C3	C2	C1
Occupational Hazard		Insignificant	Minor	Moderate	Major	Severe	Catastrophic
Health and Safety (Injury and Disease)		Illness, first aid or injury not requiring medical treatment.	Illness or minor injuries requiring medical treatment.	Single recoverable lost time injury or illness, alternate/restricted duties injury, or short-term occupational illness.	1-10 major injuries requiring hospitalisation and numerous days lost, or medium-term occupational illness.	Single fatality and/or 10-20 major injuries/permanent disabilities/chronic diseases.	Multiple fatalities and/or >20 major injuries/permanent disabilities/chronic diseases.
As per Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	Acute Toxicity		Acute Toxicity (Oral, dermal or inhalation) Category 5	Acute Toxicity (Oral, dermal or inhalation) Category 4	Acute Toxicity (Oral, dermal or inhalation) Category 3	Acute Toxicity (Oral, dermal or inhalation) Category 1 or 2 < 20 workers	Acute Toxicity (Oral, dermal or inhalation) Category 1 or 2 > 20 workers
	Skin corrosion/Irritation/Sensitisation		Skin irritation Category 3 Skin germ Category 1 Skin Sensitisation Category 1	Skin irritation Category 2	Skin Corrosion Category 1A/1B/C		
	Eye Damage/irritation		Eye Irritation Category 2B	Eye Irritation Category 2A	Eye Damage Category 1		
	Respiratory Sensitisation			Respiratory Sensitisation Category 1			
	Carcinogenicity /Reproductive Toxicity				Carcinogenicity Category 2 Mutagenicity Category 2 Toxic to Reproduction Category 2 Effects on or via lactation	Carcinogenicity Category 1A, 1B Mutagenicity Category 1A, 1B Toxic to Reproduction Category 1A, 1B < 20 workers	Carcinogenicity Category 1A, 1B Mutagenicity Category 1A, 1B Toxic to Reproduction Category 1A, 1B > 20 workers
	Specific Target Organ Toxicity		Specific Target Organ Toxicity Category 3	Specific Target Organ Toxicity Category 2	Specific Target Organ Toxicity Category 1		
	Aspiration Hazard			Aspiration hazard Category 2		Aspiration hazard Category 1	
Other Chemical Hazards[3]	Airborne Particulates and gases			Headache, nausea, vomiting, dizziness (e.g.: Phosphine) Cyanosis, hypoxia, (e.g.: Nitric Oxide) Reduced pulmonary function (e.g.: Ozone) Neurobehavioural changes (e.g.: CO) CNS Impairment (e.g.: H_2S)	Dust-induced diseases including pneumoconiosis, COPD (e.g.: respirable dust) Pulmonary oedema, emphysema (e.g.: Phosgene) Pulmonary oedema (e.g.: Nitrogen Dioxide, Ozone) Respiratory sensitiser (e.g.: Diisocyanates)	Asphyxiants Carcinogens (e.g.: respirable crystalline silica, diesel particulate matter, friable asbestos) < 20 workers	Asphyxiants Carcinogens (e.g.: respirable crystalline silica, diesel particulate matter, friable asbestos) > 20 workers
	Metal particulates including Welding Fumes		Irritants of the mucous membranes (e.g.: Mo, CrIII)	Metal Fume Fever (e.g.: Cu, Zn) Pulmonary siderosis (e.g.: Fe) Bronchitis, pneumonia (V)	Haematological disturbances (e.g.: Pb) Manganism (e.g.: Mn) Pneumoconiosis (e.g.: Elemental Ni) Occupational asthma (e.g.: Al) Fluorosis (F-)	Carcinogens (e.g.: Be, Cd, CrIV, Insoluble Ni) < 20 workers	Carcinogens (e.g.: Be, Cd, CrIV, Insoluble Ni) > 20 workers
Physical Hazards			Hypothermia, chilblains, frostbite Hyperthermia, heat rash	Sunstroke, frostbite Musculoskeletal injury; Vibration-induced disorders of muscles	Noise induced hearing loss	UV radiation < 20 workers	UV radiation > 20 workers
Biological hazards			Hepatitis A	Hepatitis B/C	Legionellosis	HIV/AIDs; fatal viral diseases and vector borne diseases < 20 workers	HIV/AIDs; fatal viral diseases and vector borne diseases > 20 workers
Chronic health effects not otherwise classified above		No chronic health effect requiring medical treatment	Chronic health effect requiring medical treatment for <1% of the population at risk	Chronic health effect requiring medical treatment for 1-2% of the population at risk	Chronic health effect requiring medical treatment for 2-5% of the population at risk	Chronic health effect requiring medical treatment for 5-10% of the population at risk	Chronic health effect requiring medical treatment for 10-15% of the population at risk

[3] Not otherwise included in the GHS e.g.: hazardous substances that are generated as part of performing work activities.

Table G3: Risk Matrix

Risk Rating A – Very High B – High C – Medium D – Low			Consequence					
			Insignificant	Minor	Moderate	Major	Severe	Catastrophic
			C6	C5	C4	C3	C2	C1
Likelihood	Almost Certain	L1	C	B	B	A	A	A
	Likely	L2	C	C	B	B	A	A
	Possible	L3	C	C	B	B	A	A
	Unlikely	L4	C	C	B	B	B	A
	Rare	L5	D	C	C	B	B	A
	Almost Unprecedented	L6	D	D	C	C	B	B

Table G4: Risk Acceptability Criteria

Class A – Very High	Risks that significantly exceed the risk acceptance threshold and need urgent and immediate attention.
Class B – High	Risks that exceed the risk acceptance threshold and require proactive management.
Class C – Medium	Risks that lie on the risk acceptance threshold and require active monitoring.
Class D – Low	Risks that are below the risk acceptance threshold and do not require active management.

Examples:

1. Spotter exposed to respirable crystalline silica (RCS) when working adjacent to heavy plant ripping sandstone:
   - Consequence = C2
   - Likelihood = L3
   - Risk rating = Very High (without the use of PPE)
2. Boilermaker exposed to welding fume when welding galvanised stainless steel:
   - Consequence = C2
   - Likelihood = L4
   - Risk rating = High (without the use of PPE)
3. Workers exposed to thermal stress while working outdoors undercover for a 8-hour shift, taking into account long sleeved PPE and rest brakes etc.:
   - Consequence = C5
   - Likelihood = L4
   - Risk rating = Medium
4. Workers exposed to hand-arm vibration whilst using hand held tools on precast carousel:
   - Consequence = C4
   - Likelihood = L2
   - Risk rating = High (without the use of PPE)

Appendix H: Project Safety Hazard Log Template

Risk Identification												Safety Requirements		Design Information			
Hazard Reference	Sydney Metro Project Phase Hazard may First Occur	Project Phase Hazard may First Occur	Project/Area/Site Location	System	Sub-system	WHS?	Operating Mode	Hazard	Hazard Source Reference	Potential Causes	Potential Consequence(s)	Existing Safety Controls (which are considered when determining risk rating)	Safety Requirement Text	DOORS ID	Owner	Safety Control Reference (Technical paper/Design Document, etc., reference)	Owner	Safety Control Reference (Technical paper/Design Document, etc., reference)

Exposed Groups					Hazard Status	Comments/Remarks	Initial Risk Analysis (Sydney Metro Risk Matrix)			Additional Safety Controls			Residual Risk Analysis (Sydney Metro Risk Matrix)			ALARP Justification			Verification & Validation					
Public	Passenger	Staff	Construction Worker	Maintenance Worker	1 – 7	Include reference to items transferred to other registers	Likelihood	Consequence	Risk rating	Additional Safety Controls (Design)	Additional Safety Controls (Operations and Maintenance)	Additional Safety Control Reference	Likelihood	Consequence	Risk rating	ALARP Justification Reference, benefit Analysis or Description of Tasks Required to achieve ALARP	Hazard Status/ALARP Achieved	Responsibility for Task	Safety Control Verified	Additional Risk Control verified	Safety Requirement Verified	Close-out Validation	Validation Date	Contract Hazard Allocation

Appendix I: References and Related Documents

Category	Reference	Sections applicable
Laws and Regulations	Work Health & Safety (WHS) Act 2011: http://www.legislation.nsw.gov.au/#/view/act/2011/10 Work Health & Safety (WHS) Regulation 2011: http://www.legislation.nsw.gov.au/#/view/regulation/2011/674	4, 5, 7, 8, 9, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.19, 11.20, 11.21, 11.22, 11.23, 11.24, 11.25, 11.26, 11.27, 11.28, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27.
	Heavy Vehicle National Law (HVNL) and HVNL Regulations: https://www.nhvr.gov.au/law-policies/heavy-vehicle-national-law-and-regulations	4, 11.16, 11.17, 13.2 and 21.2
	Road Transport Act 2013 (NSW): http://www.legislation.nsw.gov.au/inforce/72c01500-07a9-48f8-a954-a8b0fce13648/2013-18.pdf	11.16, 11.17
	Road Transport (Driver Licensing) Regulation 2008: http://www.legislation.nsw.gov.au/inforce/65d21bf7-34b9-cb0a-87e1-dbc7ade68f82/2008-397.pdf	11.16, 11.17
	Road Transport (Vehicle Registration) Regulation 2007: http://www.legislation.nsw.gov.au/inforce/27089edf-f4a9-c870-cc55-c9b4a12e9eaf/2007-522.pdf	11.16, 11.17
	Road Rules 2014: http://www.legislation.nsw.gov.au/#/view/regulation/2014/758	11.16, 11.17
	Rail Safety National Law (RSNL) No.82a: http://www.legislation.nsw.gov.au/#/view/act/2012/82a	4, 8, 12, 13, 19, 22, 23, 24
	RSNL National Regulations 2012: http://www.legislation.nsw.gov.au/#/view/regulation/2012/617	4, 8, 12, 13, 19, 22, 23, 24
	Rail Safety (Adoption of National Law) Regulation 2012: http://www.legislation.nsw.gov.au/regulations/2012-662.pdf	4, 8, 12, 13, 19, 22, 23, 24
	Corporations Act 2001 (Commonwealth): https://www.legislation.gov.au/Details/C2013C00605	5,
	Contaminated Land Management Act 1997 (NSW): http://www.legislation.nsw.gov.au/#/view/act/1997/140	11.9
	Explosives Act 2003 (NSW): http://www.legislation.nsw.gov.au/#/view/act/2003/39/whole	11.8
	NSW Explosives Regulation 2013: http://www.legislation.nsw.gov.au/#/view/regulation/2013/476	11.8
	Heavy Vehicle National Law (NSW) 2013 No.42a: http://www.legislation.nsw.gov.au/#/view/act/2013/42a	4, 11.17, 11.18, 13
	Heavy Vehicle (Fatigue Management) National Regulation (NSW): http://www.legislation.nsw.gov.au/#/view/regulation/2013/245a	4, 11.17, 13
	Heavy Vehicle (General) National Regulation (NSW): http://www.legislation.nsw.gov.au/#/view/regulation/2013/246a/full	4, 11.17, 13
	Heavy Vehicle (Mass, Dimension and Loading) National Regulation (NSW): http://www.legislation.nsw.gov.au/#/view/regulation/2013/247a	4, 11.17, 13
	Heavy Vehicle (Vehicle Standards) National Regulation (NSW): http://www.legislation.nsw.gov.au/#/view/regulation/2013/248a/full	4, 11.17, 13
	Dangerous Goods (Road and Rail Transport) Act http://www.legislation.nsw.gov.au/#/view/act/2008/95	11.13, 11.17
	Dangerous Goods (Road and Rail Transport) Regulation http://www.legislation.nsw.gov.au/#/view/regulation/2014/398	11.13, 11.17
	Marine Safety Act 1998: http://www.legislation.nsw.gov.au/#/view/act/1998/121	11.21
	Marine Safety Regulation 2009: http://www.legislation.nsw.gov.au/#/view/regulation/2016/308	11.21
	Workers Compensation Act 1987: http://www.legislation.nsw.gov.au/#/view/act/1987/70	27
	Workplace Injury Management and Workers Compensation Act 1998: http://www.legislation.nsw.gov.au/#/view/act/1998/86	27

Category	Reference	Sections applicable
	Workers Compensation Regulation 2010: http://www.legislation.nsw.gov.au/regulations/2011-37.pdf	27
Government	NSW Government – Work Health & Safety Management Systems and Auditing Guidelines: https://www.procurepoint.nsw.gov.au/before-you-buy/framework-construction/work-health-and-safety-management-systems	4, 7.2.2, 20
	Office of the Federal Safety Commissioner Audit Criteria Guidelines: http://www.fsc.gov.au/sites/fsc/resources/az/pages/auditingcriteria	4, 7.3, 20
	National Transport Commission Load Restraint Guide: http://www.ntc.gov.au/heavy-vehicles/safety/load-restraint-guide/	11.17
	NSW Department of Primary Industries: Guideline for the management of diesel engine pollutants in underground environments MDG29: http://www.resourcesandenergy.nsw.gov.au/__data/assets/pdf_file/0011/419465/MDG-29.pdf	11.9, 11.14
	Australian Dangerous Goods Code: https://infrastructure.gov.au/transport/australia/dangerous/dg_code_7e.aspx	11.8, 11.13
	Asset Standards Authority (ASA) – Systems Safety Standard for New or Altered Assets TS20001:2013: http://www.asa.transport.nsw.gov.au/sites/default/files/asa/asa-standards/ts-20001.pdf	22
	Asset Standards Authority (ASA) – T HR HF 00001 ST Human Factors Integration – Rolling Stock: http://www.asa.transport.nsw.gov.au/sites/default/files/asa/asa-standards/t-hr-hf-00001-st.pdf	23
	Asset Standards Authority (ASA) – T MU HF 00001 ST Human Factors Integration – General Requirements: http://www.asa.transport.nsw.gov.au/sites/default/files/asa/asa-standards/t-mu-hf-00001-st.pdf	23
Safe Work Australia	Safe Work Australia – Model Code of Practice – How to Manage Work Health and Safety Risks: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/manage-whs-risks-cop	7, 11.1, 11.2
	Safe Work Australia – Guide for Tunnelling Work: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guide-tunnelling-work	11.2, 11.9, 11.14, 11.24
	Safe Work Australia – Scaffolds and Scaffolding Work Guidance Material: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guidance-scaffolding	11.3
	Safe Work Australia – Cranes Guidance Material: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guidance-cranes	11.5
	Safe Work Australia – Formwork and Falsework Guidance Material: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guidance-formwork-falsework	11.4
	Safe Work Australia – Working in the Vicinity of Overhead and Underground Electric Lines Guidance Material: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guidance-overhead-underground-electric-lines	11.10
	Safe Work Australia – National Code of Practice for the Storage and Handing of Workplace Dangerous Goods [NOHSC: 2017 (2001)]: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/cp2001storageandhanding	11.13, 11.21
	Safe Work Australia – Guidance Note for the Storage and Handing of Dangerous Goods [NOHSC: 3009 (1990)]: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/gn199006storageandhanding	11.13, 11.21
	Safe Work Australia – Guidance Note for Emergency Services Manifests [NOHSC: 3010(1990)]: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/gn1990emergencyservicesmanifests	11.13, 11.21
	Safe Work Australia – Health Monitoring for Exposure to Hazardous Chemicals: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0005/19580/managing-risks-hazardous-chemicals-code-3837.pdf	11.14
	Safe Work Australia – Workplace vibration guidance material: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/vibration	11.14
	Safe Work Australia – Managing risks of exposure to solvents in the workplace information sheet: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/solvents-information-sheet	11.14

Category	Reference	Sections applicable
	Safe Work Australia – Guide for preventing and responding to workplace bullying: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guide-workplace-bullying	11.14
	Safe Work Australia – Guide for managing the risk of fatigue at work: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guide-fatigue-at-work	11.14
	Safe Work Australia – Guide on exposure to solar ultraviolet radiation (UVR): http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guide-ultraviolet-radiation	11.14
	Safe Work Australia – Guidance on the Interpretation of Workplace Exposure Standards for Airborne Contaminants: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/interpretation-airborne-contaminants-guide	11.14
	Safe Work Australia – Guidance on the Classification of Hazardous Chemicals under the WHS Regulations: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/guidance-classification-whs-regulations	11.14
	Safe Work Australia – Code of Practice, Managing the Work Environment and Facilities: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/environment-facilities-cop	11.14
	Safe Work Australia – Hazardous Substances Information System: http://hsis.SafeWorkaustralia.gov.au	11.14
	Safe Work Australia – National Standard for the Control of Inorganic Lead at Work [NOHSC:1012(1994)]: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/ns199410controlofinorganiclead	11.14
	Safe Work Australia – National Code of Practice for the Control and Safe Use of Inorganic Lead at Work [NOHSC:2015(1994)]: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/cp199410controlanduseofinorganiclead	11.14
	Safe Work Australia – National Code or Practice for Manual Handling NOHSC:2005 (1990): http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/accp1990manualhandling	11.15
SafeWork NSW	SafeWork NSW – Construction Work Code of Practice: http://www.SafeWork.nsw.gov.au/__data/assets/pdf_file/0014/52151/construction-work-code-practice-3842.pdf	7.2.2, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14, 11.15, 11.16, 11.17, 11.18, 11.19, 11.20, 11.21, 11.22, 11.23, 11.24, 11.25, 11.26, 11.27, 11.28, 12, 13, 14, 15, 18, 25, 26, 28
	SafeWork NSW – Safe design of structures code of practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0008/19583/safe-design-structures-code-practice-3839.pdf	7.3, 11.2
	SafeWork NSW – Work Health & Safety Consultation, Coordination and Cooperation Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0010/15202/whs-consultation-cooperation-coordination-code-of-practice-3568.pdf	9
	SafeWork NSW – Managing the Risks of Falls in the Workplace Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0015/15207/managing-the-risk-of-falls-at-workplaces-code-of-practice-July-2015-3566.pdf	11.1, 11.2, 11.3
	SafeWork NSW – Tunnels Under Construction Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0018/20772/Tunnels-Under-Construction-Code-of-Practice.pdf	11.2, 11.9, 11.14, 11.27
	SafeWork NSW – Managing the Risks of Plant in the Workplace Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0006/19581/managing-risks-of-plant-code-practice-3838.pdf	11.5, 11.20
	SafeWork NSW – Expectations for Tower Cranes – Position Paper: http://www.SafeWork.nsw.gov.au/media/publications/health-and-safety/tower-crane-safety/expectations-for-tower-cranes-position-paper	11.5

Category	Reference	Sections applicable
	SafeWork NSW – Demolition Work Code of Practice: http://www.SafeWorkaustralia.gov.au/sites/SWA/about/Publications/Documents/700/demolition-work.pdf	11.7
	SafeWork NSW – Guide for applicants for demolition licences and notifications: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0020/13673/applicants-demolition-licences-guide-8018.pdf	11.7
	SafeWork NSW – General Explosive Licence and Security Clearance Conditions Under the NSW Explosives Act and Regulation: https://www.workcover.nsw.gov.au/media/publications/licences-registrations/general-explosive-licence-and-security-clearance-conditions-under-the-nsw-explosives-act-and-regulation	11.8
	SafeWork NSW – Managing Risks of Hazardous Chemicals in the Workplace Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0005/19580/managing-risks-hazardous-chemicals-code-3837.pdf	11.8, 11.13, 11.14
	SafeWork NSW – Labelling of workplace Hazardous Chemicals Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0017/15218/labelling-of-workplace-hazardous-chemicals-code-of-practice-July-2015-3562.pdf	11.8, 11.13
	SafeWork NSW – Excavation work code of practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0006/19572/excavation-work-code-of-practice-July-2015-3840.pdf	11.9
	SafeWork NSW – Moving Plant on Construction Sites Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0005/20768/Moving-plant-on-construction-sites-Code-of-practice.pdf	11.9, 11.20
	SafeWork NSW – Work Near Underground Assets: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0018/24408/work_near_underground_assets_1419.pdf	11.9, 11.10
	SafeWork NSW Code of Practice – Managing Electrical Risks in the Workplace: http://www.SafeWorkaustralia.gov.au/sites/swa/about/publications/pages/managing-electrical-risks-in-the-workplace	11.10
	SafeWork NSW – Concrete Cutting, Drilling and Masonry Products Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0003/20766/Cutting-and-Drilling-Concrete-and-Other-Masonry-Products-Code-of-Practice.pdf	11.10
	SafeWork NSW – Confined Spaces Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0012/15204/confined-spaces-code-of-practice-3558.pdf	11.11, 11.12
	SafeWork NSW – Welding Processes Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0010/19585/welding-processes-code-practice-3843.pdf	11.12
	SafeWork NSW – How to Manage and Control Asbestos in the Workplace: http://www.workcover.nsw.gov.au/__data/assets/pdf_file/0015/15216/how-to-manage-control-asbestos-workplace-code-of-practice-3560.pdf	11.14
	SafeWork NSW – How to Safely Remove Asbestos: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0016/15217/how-to-safely-remove-asbestos-code-of-practice-3561.pdf	11.14
	SafeWork NSW – Managing Noise and Preventing Hearing Loss at Work: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0014/15206/managing-noise-preventing-hearing-loss-code-of-practice-3563.pdf	11.14
	SafeWork NSW – Hazardous Manual Tasks Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0012/15213/hazardous-manual-tasks-code-of-practice-3559.pdf	11.15
	SafeWork NSW – Managing the Work Environment and Facilities Code of Practice: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0013/15205/managing-work-environment-facilities-code-of-practice-3567.pdf	11.22
	SafeWork NSW – First Aid in the Workplace Code of Practice: http://www.SafeWork.nsw.gov.au/__data/assets/pdf_file/0004/50089/first-aid-code-of-practice-3834.pdf	24,

Category	Reference	Sections applicable
	SafeWork NSW – Guidelines for Workplace Return to Work Programs: https://www.workcover.nsw.gov.au/__data/assets/pdf_file/0017/18305/guidelines_for_workplace_rtw_programs_2872.pdf	27
	A Guide to Managing Heat Stress: Developed for Use in the Australian Environment: http://www.aioh.org.au/onlinestore/publications/a-guide-to-managaing-heat-stress-developed-for-use-in-the-australian-environment	11.14
AIOH	AIOH – Adjustment of Workplace Exposure Standards for Extended Work Shifts, Position Paper: https://www.aioh.org.au/documents/item/14	11.14
	AIOH – Diesel Particulate Matter and Occupational Health Issues Position Paper: https://www.aioh.org.au/documents/item/15	11.14
	AIOH – Dusts not Otherwise Specified (DUST NOS) and Occupational Health Issues, Position Paper: https://www.aioh.org.au/documents/item/16	11.14
AIOH (continued)	AIOH – Occupational Hygiene Monitoring & Compliance Strategies 2014: http://www.aioh.org.au/onlinestore/publications/occupational-hygiene-monitoring-and-compliance-strategies	11.14
	AIOH – Respirable Crystalline Silica and Occupational Health Issues: https://www.aioh.org.au/documents/item/10	11.14
	AIOH – Simplified Occupational Hygiene Risk Management Strategies 2006: http://www.aioh.org.au/onlinestore/publications/simplified-occupational-hygiene-risk-management-strategies	11.14
British Standard	BS EN 16191:2014 Tunnelling Machinery – Safety Requirements	11.9
	BS EN 1889 Machines for underground Mines. Mobile machines working underground. Safety. Part 1 Rubber Tyred Vehicles & Part 2. Rail locomotives	11.9
	BS 6164:2011 Code of practice for health and safety in tunnelling in the construction industry	11.9
Australian/ New Zealand Standards	AS 1319:1994 Safety signs for the occupational environment	11.28
	AS 1418 Cranes (series)	11.5, 11.20
	AS 1418.17:1996 Cranes (including hoists and winches) – Design and construction of workboxes	11.1
	AS 1674:1980 Fire precautions in cutting, heating and welding operations	11.12
	AS 1674:2007 Safety in welding and allied processes	11.12
	AS 1657:2013 Fixed platforms, walkways, stairways and ladders – Design, construction and installation	11.1
	AS 1742:2014 Manual of uniform control traffic devices	11.19
	AS 1742.3:2009 Manual of uniform traffic control devices – Traffic control for works on roads	11.19
	AS 1851:2012 Routine service of fire protection systems and equipment	11.11
	AS 1940:2004 The storage and handling of flammable and combustible liquids	11.13
	AS 2187 Explosives – Storage, Transport and Use	11.8
	AS 2436:2010 Guide to noise and vibration control on construction, demolition and maintenance sites	11.6
	AS 2444:2001 Portable fire extinguishers and fire blankets – Selection and location	11.12
	AS 2550:2011 Cranes, hoists and winches – Safe use	11.5, 11.20
	AS 2550.1:2011 Cranes, hoists and winches – Safe use – Part 1: General requirements	11.5

Category	Reference	Sections applicable
	AS 2550.10:2006 Cranes, hoists and winches – Safe use – Part 10: Mobile elevating work platforms	11.1
	AS 2550.16:1997 Cranes – Safe use – Part 16: Mast climbing work platforms	11.1
	AS 2601:2001 The Demolition of Structures	11.7
	AS 2815.1: Training and certification of Occupational Divers	11.21
	AS 2815.2: Training and certification of Occupational Divers – Air Diving to 30m	11.21
	AS 2815.3: Training and certification of Occupational Divers – Air Diving to 50m	11.21
	AS 2815.4: Training and certification of Occupational Divers – Bell Diving	11.21
	AS 2815.4: Training and certification of Occupational Divers – Diving Supervisor	11.21
	AS 2865:2009 Confined spaces	11.21
	AS 2985:2009 Workplace atmospheres – Method for sampling and gravimetric determination of respirable dust	11.14
	AS 3547:1997 Breath alcohol testing devices for personal use	13
	AS 3610:1995 Formwork for concrete	11.4
	AS 3640:2009 Workplace atmospheres – Method for sampling and gravimetric determination of inhalable dust	11.14
	AS 3853.1:2006 Health and safety in welding and allied processes – Sampling of airborne particles and gases in the operators breathing zone – Sampling of airborne particles	11.14
Australian/ New Zealand Standards (continued)	AS 4142.3:1993 Fibre ropes – Man-made fibre rope for static life rescue lines	11.1
	AS 4260:1997 High efficiency particulate air (HEPA) filters – Classification, construction and performance	11.14
	AS 4326 The Storage and Handling of Oxidizing Agents	11.8
	AS 4744.1:2000 Steel shoring and trench lining – Design	11.9
	AS 4964:2004 Method for the qualitative identification of asbestos in bulk samples	11.14
	AS 5047:2005 Hydraulic shoring and trench lining equipment	11.9
	AS/NZS 1170.2:2011 Structural design actions – Wind actions	11.4
	AS/NZS 1269:2005 Occupational Noise Management	11.14
	AS/NZS 1270:2002 (R2014) Acoustics – Hearing protectors	11.14
	AS/NZS 1336:1997 Recommended practices for occupational eye protection	11.14
	AS/NZS 1337:1992 Eye protectors for industrial applications	14
	AS/NZS 1576 Scaffolding (series)	11.1, 11.3
	AS/NZS 1715:2009 Selection, use and maintenance of respiratory protective equipment	11.11, 11.14, 14
	AS/NZS 1716:2012 Respiratory protective devices	11.11, 11.14, 14

Category	Reference	Sections applicable
	AS/NZS 1801:1997 Occupational protective helmets	14
	AS/NZS 1850:2009 Portable fire extinguishers – Classification, rating and performance testing	11.12
	AS/NZS 1891 Industrial fall-arrest systems and devices (series)	11.1
	AS/NZS 1892 Portable ladders (series)	11.1
	AS/NZS 2161.1:2000 Occupational protective gloves – Selection, use and maintenance	11.14, 14
	AS/NZS 2210.1:2010 Safety, protective and occupational footwear – Part 1: Guide to selection, care and use	14
	AS/NZS 2299.1:2007 Occupational diving operations – Standard operational practice	11.21
	AS/NZS 2648.1:1995 Underground marking tape – Non-detectable tape	11.9
	AS/NZS 3000:2007 Electrical installations (known as the Australian/New Zealand Wiring Rules)	11.10
	AS/NZS 3012:2010 Electrical installations – Construction and demolition sites	11.7, 11.10
	AS/NZS 3845:1999 Road safety barrier systems	11.9, 11.19
	AS/NZS 4308:2008 Procedures for specimen collection and the detection and quantitation of drugs of abuse in urine	13
	AS/NZS 4389:1996 Safety mesh	11.1
	AS/NZS 4488 Industrial rope access systems (series)	11.1
	AS/NZS 4501.1:2008 Occupational protective clothing – Guidelines on the selection, use, care and maintenance of protective clothing	14
	AS/NZS 4576:1995 Guidelines for scaffolding	11.1, 11.3
	AS/NZS 4602.1:2011 High visibility safety garments – Garments for high risk applications	11.19, 14
	AS/NZS 4836:2011 Safe working on or near low-voltage electrical installations and equipment	11.10
	AS/NZS 4994 Temporary Edge Protection (series)	11.1
	AS/NZS ISO 31000:2009 Risk management – Principle and guidelines	7
Australian/ New Zealand Standards (continued)	AS/NZS 60079.20.1:2012 Explosive atmospheres – Material characteristics for gas and vapour classification – Test methods and data	11.11
	AS/NZS 60079.29.1:2008 Explosive atmospheres – Gas detectors – Performance requirements of detectors for flammable gases	11.11
	AS/NZS 60335.2.69:2003 Household and Similar Electrical Appliances – Safety – Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use	11.14
	HB 213:2003 Guidelines for safe working in a confined space	11.11
	ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories: http://www.iso.org/iso/catalogue_detail.htm?csnumber=39883	11.14
International Standards	ISO 6385:2004 Ergonomic principles in the design of work systems: http://www.iso.org/iso/catalogue_detail?csnumber=35885	11.15
	IEC 31010:2009 Risk management – Risk assessment techniques: http://www.iso.org/iso/catalogue_detail?csnumber=51073	7
	CENELEC EN 50126/8/9	21, 22

Category	Reference	Sections applicable
	ISO/IEC/IEEE 15288:2015 Systems and software engineering – System life cycle processes: http://www.iso.org/iso/catalogue_detail?csnumber=63711	21
	Health & Safety in Welding, WTIA Technical Note No.7	11.12
Industry references	Welding Electrical Safety, WTIA Technical Note No.22	11.12
	GP – General Purpose Welding (meets the requirements of AS 1554)	11.12
	SP – Special Purpose Welding (meets the requirements of AS 1554)	11.12
	Truck Industry Council – Voluntary Code of Practice to Ensure an Adequate Field of View: http://www.truck-industry-council.org/res/file/TIC_COP_FieldofView(May2015Update).pdf	11.18
	Australian Trucking Association – Industry Technical Council Advisory Procedure – Australian Heavy Vehicle Visibility	11.18
	Australian Trucking Association – Industry Technical Council Advisory Procedure – Side Under Run Protection	11.18
	Vehicle Standard (Australian Design Rule 14/02 – Rear Vision Mirrors) 2006	11.18
	Vehicle Standard (Australian Design Rule 13/00 – Installation of Lighting and Light Signalling Devices on other than L-Group vehicles) 2005	11.18
	UN/ECE 104 – Uniform Provisions Concerning the Retro-Reflective Markings for Heavy and Long Vehicles and their Trailers	11.18
	NIOSH Method 5040 Diesel Particulate Matter (as elemental carbon): http://www.cdc.gov/niosh/docs/2003-154/pdfs/5040.pdf	11.14
	Worksafe Victoria – Industry Standard – Contaminated Construction Sites: https://www.worksafe.vic.gov.au/__data/assets/pdf_file/0008/13031/construction_contaminated_standard.pdf	11.7
	RMS Traffic Control at Worksites Manual: http://www.rms.nsw.gov.au/business-industry/partners-suppliers/guidelines/complementary-traffic-material/traffic-control-at-worksites-version-4.html	11.19
	National Guidelines for the use of Truck and Trailer Mounted Attenuators (TMAs)	11.19
	National Health Medical Research Council (NHMRC), Methods for Measurement of Quartz in Respirable Dust by Infra-red Spectroscopy and X-ray Diffractometry, NHMRC, Canberra, 1984.	11.14
	Australian Diver Accreditation Scheme (ADAS)	11.21
	NAVSEA Technical Manual – Summary Guidance for Diving in Contaminated Waters	11.21
	ONRSR – Preparation of a Rail Safety Management System Guideline: https://www.onrsr.com.au/__data/assets/pdf_file/0015/1923/Preparation_of_a_Rail_SMS.PDF	12, 17
	ITA WG5 – Health & Safety in Works: Guidance on the Safe Use of Temporary Ventilation Ducting in Tunnels	11.9
	ITA Working Group – Health & Safety in Works: Guidance for Good Occupational Health and Safety Practice in Tunnels	11.9
	ITA Working Group No.5 Health and Safety in Works: Guidelines for the Provision of Refuge Chambers in Tunnels Under Construction	11.9

Appendix J: Work Activity Advice (WAA) Form

Work Activity Advice Register ID:	Revision No:	Date:
Project Name:	RIM/RTO:	
Location(s):		
Activity Scope and Description:		
Project Work Notification (PWN) Registration No: ☐ Required ☐ n/a	PWN Date Approved:	

Contractor Details

Contractor:	Contractor Representative:
Contact numbers of above-listed representative: Phone: Mobile: Fax:	
Comments:	

Review and Endorsement by Principal Contractor

Name:	Position:
Signature:	Date:
Comments:	

Review by Sydney Metro Implementation Group Representative

Name:	Position:
Signature:	Date:
Comments:	

Review by Sydney Metro Safety

☐ n/a ☐ Reviewed and Comments

Name:	Position:
Signature:	Date:
Comments:	

Work Activities

Planned Start Date:	Planned Finish Date:
Possession Scope of Works:	
Non-Possession Scope of Works:	
Potential Scope of Works requiring 0268 Working Around Electrical Equipment approval:	
Have all relevant work activity SWMS been submitted?	☐ Yes ☐ No
Have SWMS been reviewed and endorsed by the Principal Contractor?	☐ Yes ☐ No
Comments and additional details:	

Safety Hazard Identification

Safety Hazard Identification Checklist	No	Yes	If yes, provide comments
Has the Sydney Trains Hazardous Rail Corridor Locations register been reviewed?	☐	☐	
Is the work to be conducted within, or has the potential to impact upon the Danger Zone within the rail corridor?	☐	☐	
Is there a potential for Hi-Rail equipment or rolling stock to be placed on track? If yes, state the nominated Accredited Rolling Stock Operator.	☐	☐	
Will work occur around electrical infrastructure?	☐	☐	
Is work being conducted within Safe Approach Distances (SAD) to live electrical equipment (e.g. plant within 3m of 1500V DC)?	☐	☐	
Are metal ladders or scaffolding being used?	☐	☐	
Is electrical (e.g. 1500V DC overhead wiring) isolation required, and if so has a permit request been submitted?	☐	☐	
Are plant operators trained in the asset owner's nominated course (e.g. Electrical Safety Awareness)?	☐	☐	
Will work affect earthing or bonding of electrical assets (e.g. traction return induction potentials etc.)	☐	☐	
Will work occur near signalling and communication equipment?	☐	☐	
Is access required to these systems? If yes, have arrangements been made to ensure the necessary authorised resources are available?	☐	☐	
Is excavation, surface/ground drilling, boring or grading involved?	☐	☐	
Is hot work involved?	☐	☐	
Will the work take place in rail tunnels (e.g. risk of poor air quality)?	☐	☐	
Will work involve use of mobile plant?	☐	☐	
Is a road traffic control plan required?	☐	☐	
Will plant or equipment be hired for the work? If yes, ensure suitable and sufficient supervision is provided to control the delivery/unloading/loading of this equipment. Please provide details in the comments box.	☐	☐	
Will swing-arm plan be used (e.g. excavators, tele-handlers, etc.)? Equipment must be fitted with height and slew restrictors.	☐	☐	
Will night work be involved?	☐	☐	
Will Daymakers be used? If yes, ensure that their placement does not encroach on the SAD of any electrical infrastructure (i.e. 1500V DC overhead)	☐	☐	
Are there any specific security hazards affecting the work (e.g. vandalism/theft affecting materials and plant stored on site)?	☐	☐	
Will there be work involving bridges and has the potential hazard of falling objects/people been assessed?	☐	☐	
Is there a risk of contamination (e.g. asbestos)?	☐	☐	
Will work occur on station platforms?	☐	☐	
Do critical safety systems need to be isolated (e.g. fire alarms, gaseous deluge fire-fighting systems, CCTV)?	☐	☐	
Will any services belonging to other authorities (e.g. sewer, water, gas) be impacted?	☐	☐	
Other – please provide details, e.g. Impact of late completion; Time available for defect correction, etc.	☐	☐	

Safe working

Please provide details of company providing the Protection Officer (minimum Level 2) services:
How will competency of individual POs be verified?
Please attach evidence.

Planned method of Worksite Protection (hierarchy of controls):			
☐ LPA – Yes ☐ or No ☐	If No, please provide reasons:		
☐ TOA – Yes ☐ or No ☐	Details:		
☐ TWA – Yes ☐ or No ☐	Details:		
☐ ASB – Yes ☐ or No ☐	Details:		
☐ Lookout Working – Yes ☐ or No ☐	Details:		
Work outside and not affecting the Danger Zone?		☐ Yes	☐ n/a
Will Worksite Protection Plan(s) be completed on day of work?		☐ Yes	☐ n/a

Possession Plan

Specific possession planning information (may be revised and upgraded as supplementary information to original WAA, minimum two-week lead time).

Possession Details

Date and 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:

Work Supervisory Details

Name:	Date:	Start Time (24hr)	Finish Time (24hr)	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