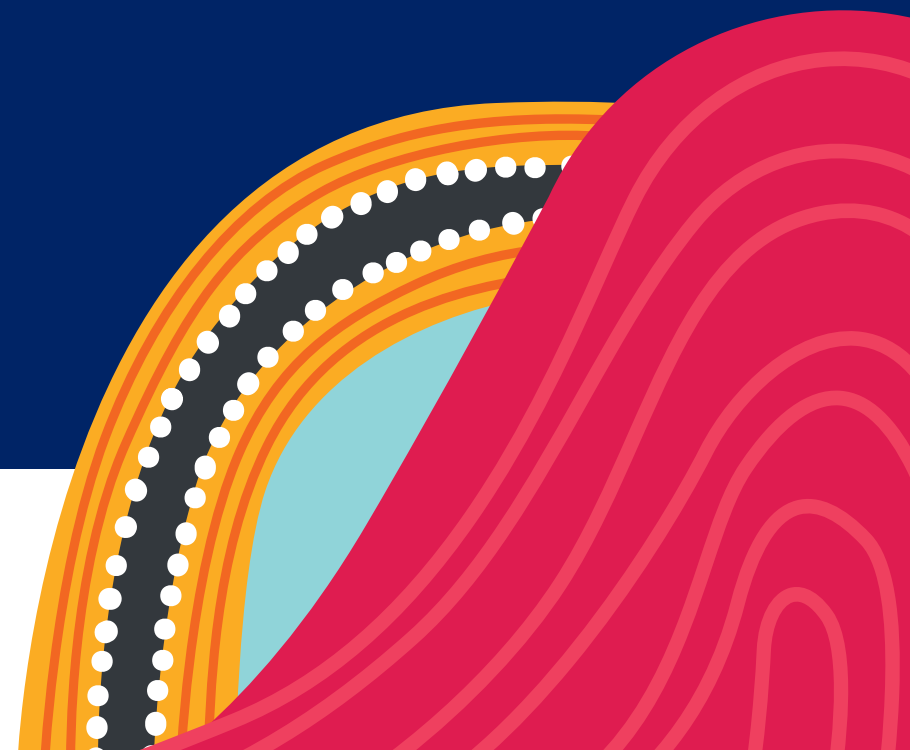


Standards Management Program – Program planning

Asset Management Branch

September 2022





Acknowledgement
of Country

Transport pays respect to Elders past and present, and recognises and celebrates the diversity of Aboriginal peoples and their ongoing cultures and connections to the lands and waters of NSW.

Discussion points

- 01** **Welcome and Context**

- 02** **Standards Management Program – Program Planning**

- 03** **Program by Engineering Department**

- 04** **Program by Non Engineering Department**

- 05** **Where to next?**

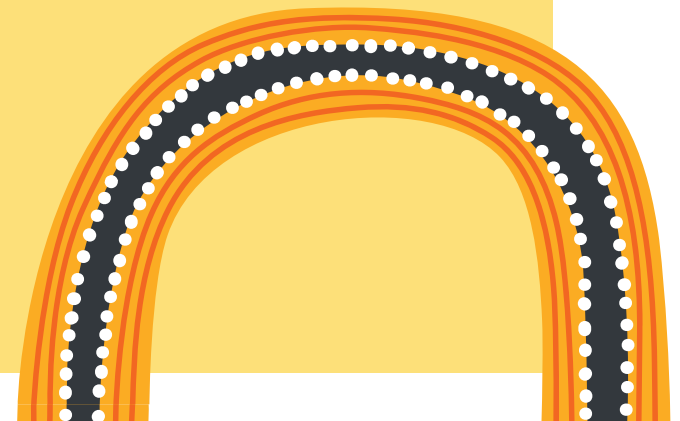
- 06** **Concluding remarks**



01

Welcome and Context

Christian Christodoulou
Director of Engineering



Our network assets

FY2021/22



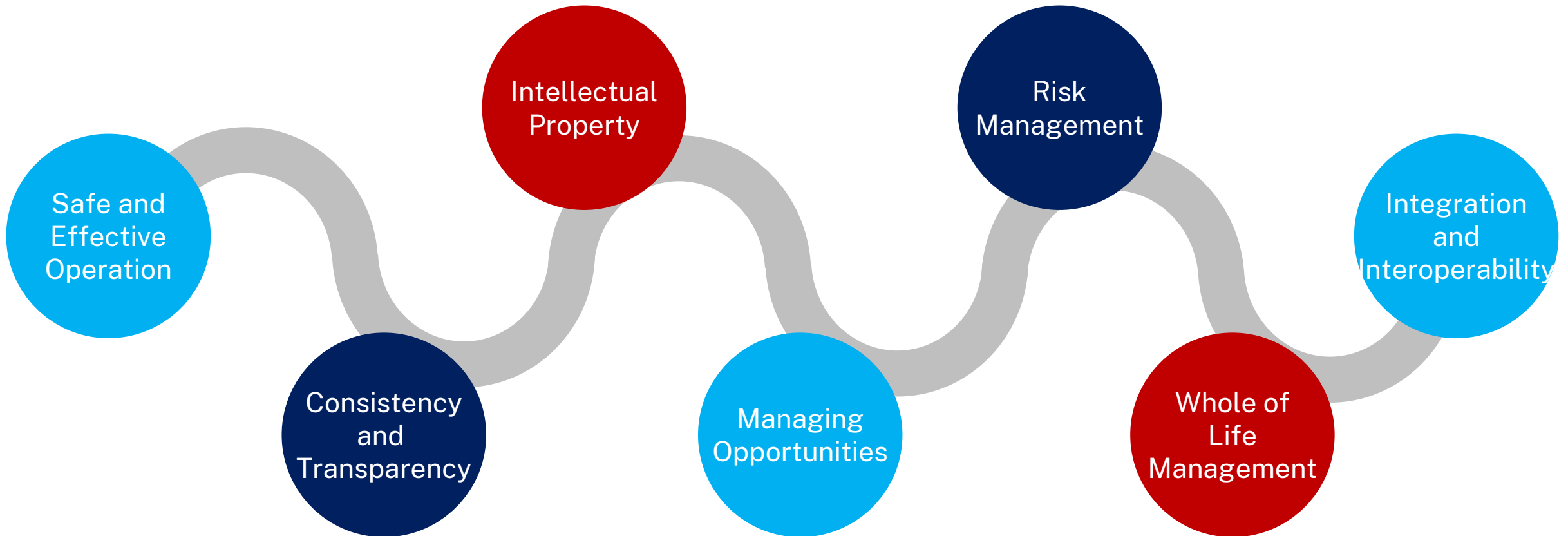
TfNSW manages a diverse and complex transport system

These assets work together to deliver a total service

Patronage on public transport

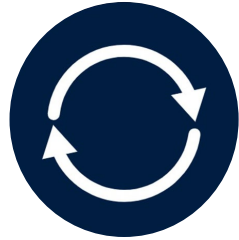
- Train: **222,414,910**
- Metro: **14,376,893**
- Bus: **203,526,532**
- Ferry: **6,905,265**
- Light rail: **19,532,849**

The need for *Standards*



Strategic Purpose

Promotes and supports continuous quality improvement, risk control & organisational effectiveness



Facilitate collaboration and consistency



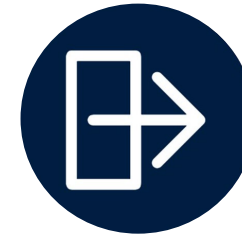
Deliver the appropriate balance of cost, risk and performance across the life of the asset



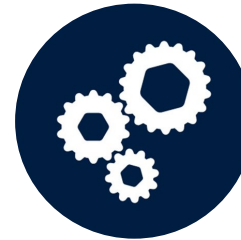
Standards are an asset



Standards should be outcome or performance based where appropriate



Use industry accepted Standards with no or minimal modification



02

Standards Management Program – Program planning

Terry Niemeier
Director – Standards, Process Development &
Publishing

Planning

Overview

Approach taken

- Future planning to take focus from BYs, flatten peaks/raise troughs
- Collaborative approach in providing greater clarity and transparency where standards needs are/should be
- Ability to utilise standards development resources from across cluster
- To assist with alleviating bottlenecks, support function resourcing (risk and publishing teams)
- Focus on enabling innovation, enabling multi-modal consistency and harmonising across jurisdictional boundaries

Prioritisation and Justification Matrix

Value Framework



Safety criticality

**Industry need
(written request)**

**Third party
Standards
alignment**

Whole of life value

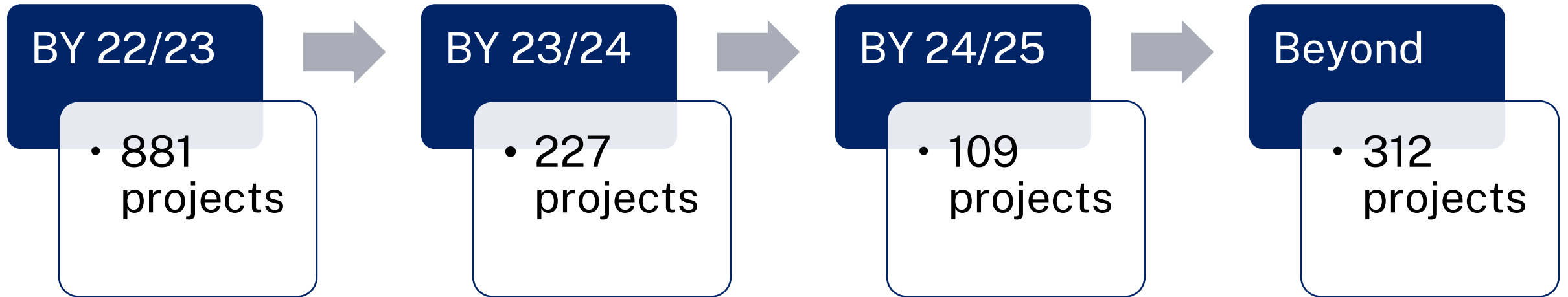
**Updated
legislation**

**Alignment with a
Transport
initiative**

Customer benefit

Planning

Details



03

Program by
Engineering
Department



Civil Engineering Infrastructure

3 Year Outlook

Key projects

- Tunnels
- Bridges and structures
- Heavy vehicle approval/assessment
- Piling standards and earthworks
- Sustainable civil infrastructure and materials

558

Standards under management (In scope)



44

Documents identified for review



29

Harmonisation projects



12

New Standards proposed



5

Projects to address tolerable or intolerable safety risks



1

Standards of moderate or high commercial value



Civil Engineering Infrastructure

Roadmap

Suite	2022/23	2023/24	2024/25
Tunnels	ESC 340 - Tunnels Standard	ESC 340 – Supporting Standards	
	Dangerous Goods through Tunnels		
Structures & Bridges	Track Drainage Manual	B152 – Incrementally launched Prestressed Concrete Girders	New Standard Initiative – Bridge Design Standard
	6 TDs: Design of Integral Bridges, Under bridges, Collision load on piers, strategies for enhancing the durability of post-tensioned concrete bridges,		Air Space and External Developments
	New Standard Initiative – Heavy Vehicle Approval / Assessment		Durability Requirements for Civil Infrastructure
	Austroads Harmonisation		
Materials: Concrete & Steelwork	ATS 5420 / B240 Bolts, Nuts & Washers	ATS 5410 – Steel Fabrication	ATS 5450, 5451 & 5452– Steel Coating Specifications
	ATS 5350 Waterproofing of Concrete Bridge Decks	B80 related – ATS 5305 Formwork, ATS 5306 Supply and Installation of Void Former, ATS 5315 Supply of Special Class Concrete, ATS 5320 – Placement of Concrete, ATS 5321 – Accelerated Curing of Concrete, ATS 5316 – Cementitious Mortar and Grout, ATS 5317 – Coring of Hardened Concrete,	
	ATS 5390 Cathodic Protection of Reinforced Concrete Structures	ATS 5335 – Normal Class / General Use Concrete, ATS 5340 – Cementitious Patch Repair of Concrete	
	Concrete Specs: ATS 5310, 5340, 5341 and 5343		
Geotechnical	Piling Standards and Earthworks Specifications		
	Testing of Cast-in-Place Concrete Piles	R44 Earthworks for Structures	

Civil Engineering Infrastructure

3 Year Program – Key Projects

Project Name	Value Creation
Heavy Vehicle Approval / Assessment	<ul style="list-style-type: none">• Standardisation and strategic value – Consistent and sensible approach for heavy vehicle approval and assessment.• Working closely with freight branch on assessment methodology and managing the residual risk using SFAIRP framework.• Reduces significant travel time costs and ultimately have huge economic benefit through the life cycle.
Piling standards and earthworks specifications	<ul style="list-style-type: none">• Collaborate across the cluster on Piling standards incorporating technical notes, updating content and consistency• Cost savings associated with improved design and construction efficiency and consistent multimodal approach• Updating earthworks specification R44
Sustainable civil infrastructure and materials	<ul style="list-style-type: none">• To support the Sustainable Procurement in Infrastructure initiative• Triple bottom line savings associated with improved design efficiency and sustainable materials
Austrroads ATS Harmonisation	<ul style="list-style-type: none">• To support the harmonisation of Austrroads specifications relating to bridges, concrete, steelwork, geotech and tunnelling
Air Space and External Developments	<ul style="list-style-type: none">• This standard will be updated to reflect the multimodal network and best practice
Bridge Design Standard	<ul style="list-style-type: none">• Consolidate existing technical documents into a consistent integrated Bridge Design Standard• Value creation associated with improved design efficiency and consistent multimodal approach
Transport of Dangerous Goods through Tunnels	<ul style="list-style-type: none">• Consistent and sensible approach for the risk assessment methodology
Tunnels – ESC 340	<ul style="list-style-type: none">• Revise the standard incorporating the technical notes, update content and consistent with other standards.• Cost savings associated with improved design efficiency and consistent multimodal approach

Corridor Infrastructure Engineering

3 Year Outlook

Key projects

- Traffic control at worksites
- Turnout and special track works (ESC 250)
- Scour estimation manual

1459

Standards under management (In scope)



547

Documents identified for review



2

Harmonisation projects



14

New Standards proposed



10

Projects to address tolerable or intolerable safety risks



4

Standards of moderate or high commercial value

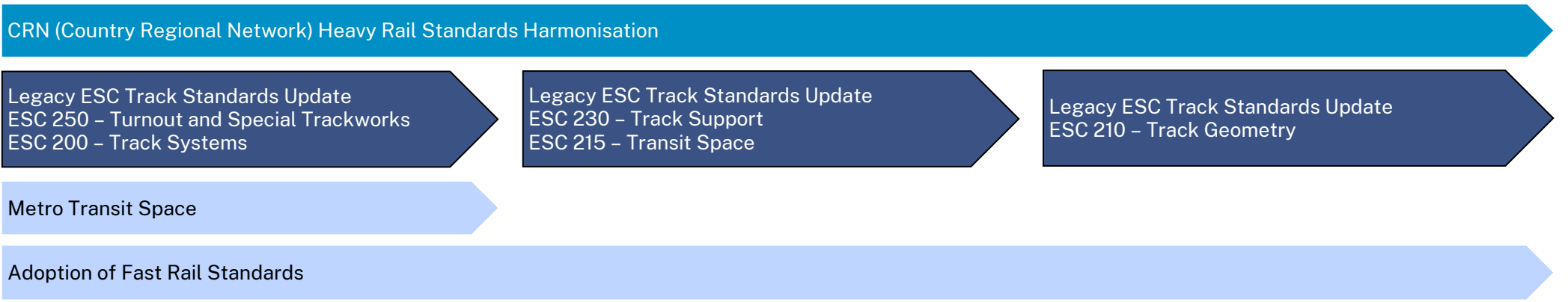


Corridor Infrastructure and Engineering

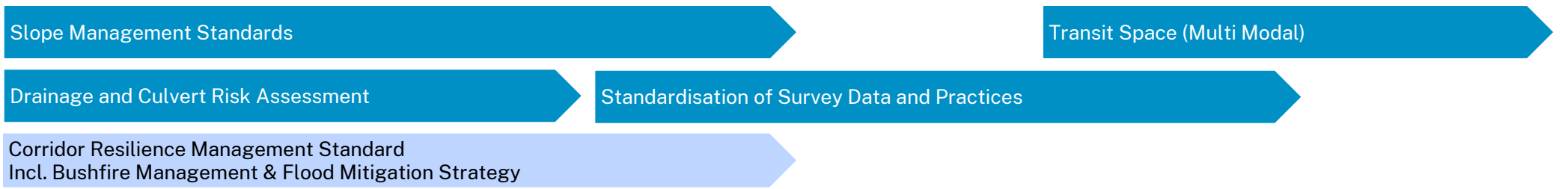


Corridor Disciplines	2022/23	2023/24	2024/25
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Track



Multi Modal



Road



Corridor Infrastructure Engineering

Rail Corridor – 3 year look ahead

- All legacy ESC track standards will be updated
- CRN harmonisation of corresponding standards to take place at the same time
- Harmonisation with Metro Standard – Transit Space
- Adoption of existing worldwide Fast Rail Standards – in collaboration with Fast Rail team

- Initiatives
 - Kinematic envelope parameter optimisation study
 - Turnout degradation



Corridor Infrastructure Engineering

Road Corridor – 3 year look ahead

Road Specific Standards

- Harmonisation of Austroads Guidelines
 - Pavement (6 standards)
 - Road Design (Parts 1 – 7)
- Traffic control at worksites and Safety barrier
- Roads surveying documents G71 and G73

Road Rail Multi-modal Harmonisation

- Slope management standard
- Drainage and culvert risk assessment
- Initiatives
 - Corridor bushfire management
 - FloodMapp



Energy Networks and Systems Engineering

3 Year Outlook

1258

General arrangement drawings



1053

General arrangement drawings for update



125

Standards under management



100

Documents identified for review



9

New Standards Electrical Networks (6); E&B (1) Substations & HV (2)



46

Harmonisation projects



Strategic Projects

Magnetic field requirements – Compatibility / Interference

Tunnel power supply (Rail)

Tunnel power supply (Road)

Zero emission bus depot power supply requirements

Power system modelling

1500v DC Traction Inverter

Intertrip

Network resilience

Energy Networks & Systems Engineering

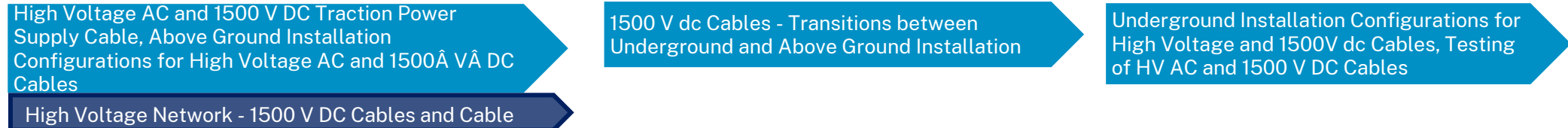


Electrical Sub Discipline	2022/23	2023/24	2024/25
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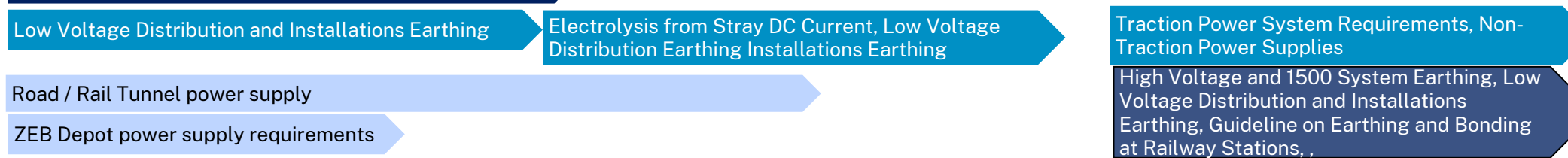
Aerial Lines



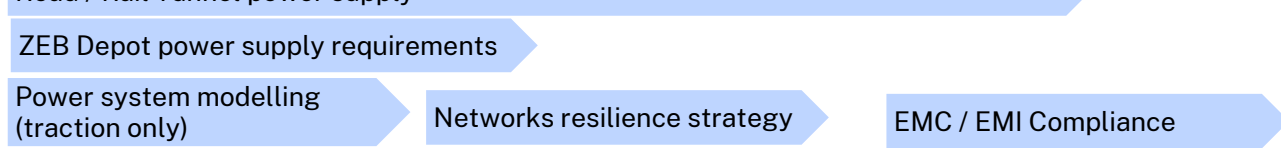
Cables



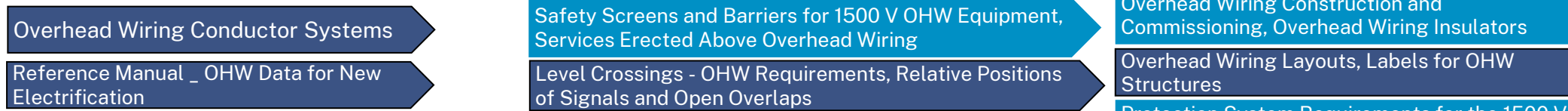
Earthing and Bonding



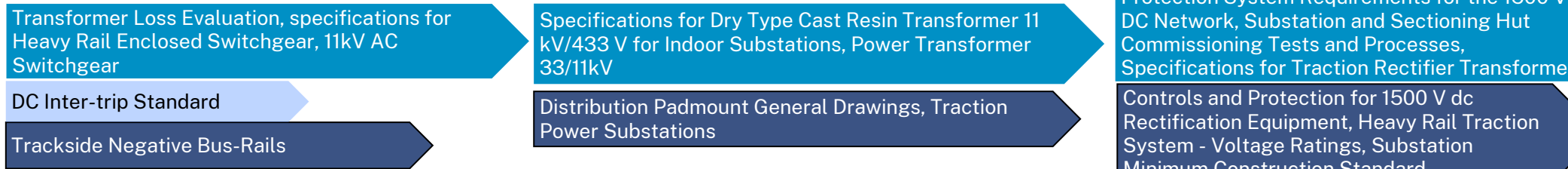
Electrical Networks



Overhead Wiring



Substations



Fleet Engineering

3 Year Outlook

Key projects

- Vehicle fire safety standards
- Zero emission bus standards
- Light motor vehicle fleet standard
- Asset certification and acceptance
- Heavy motor vehicle fleet standard
- Autonomous vehicles standard

1037

Standards under management (In scope)



283

Documents identified for review



3

Harmonisation projects



24

New Standards proposed



37

Projects to address tolerable or intolerable safety risks



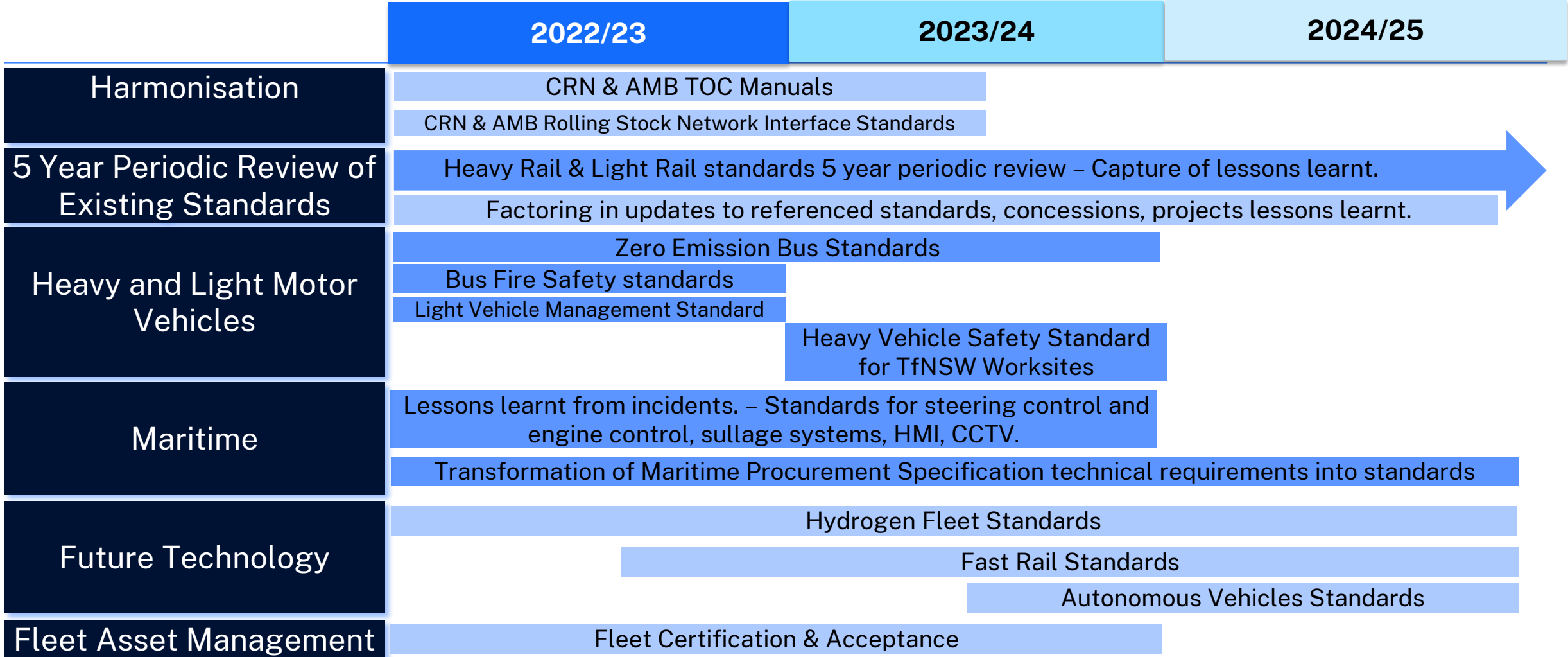
15

Standards of moderate or high commercial value



Fleet Engineering

Roadmap



Interchanges and Buildings

3 Year Outlook

Objectives

- Multimodal outcomes
- Rationalisation
- Coverage of asset classes
- Coverage of lifecycle stages
- Risk based prioritisation of standards development

53

Standards under management (In scope)



21

Documents identified for review



11

Harmonisation projects



28

New Standards proposed



48

Projects to address tolerable or intolerable safety risks



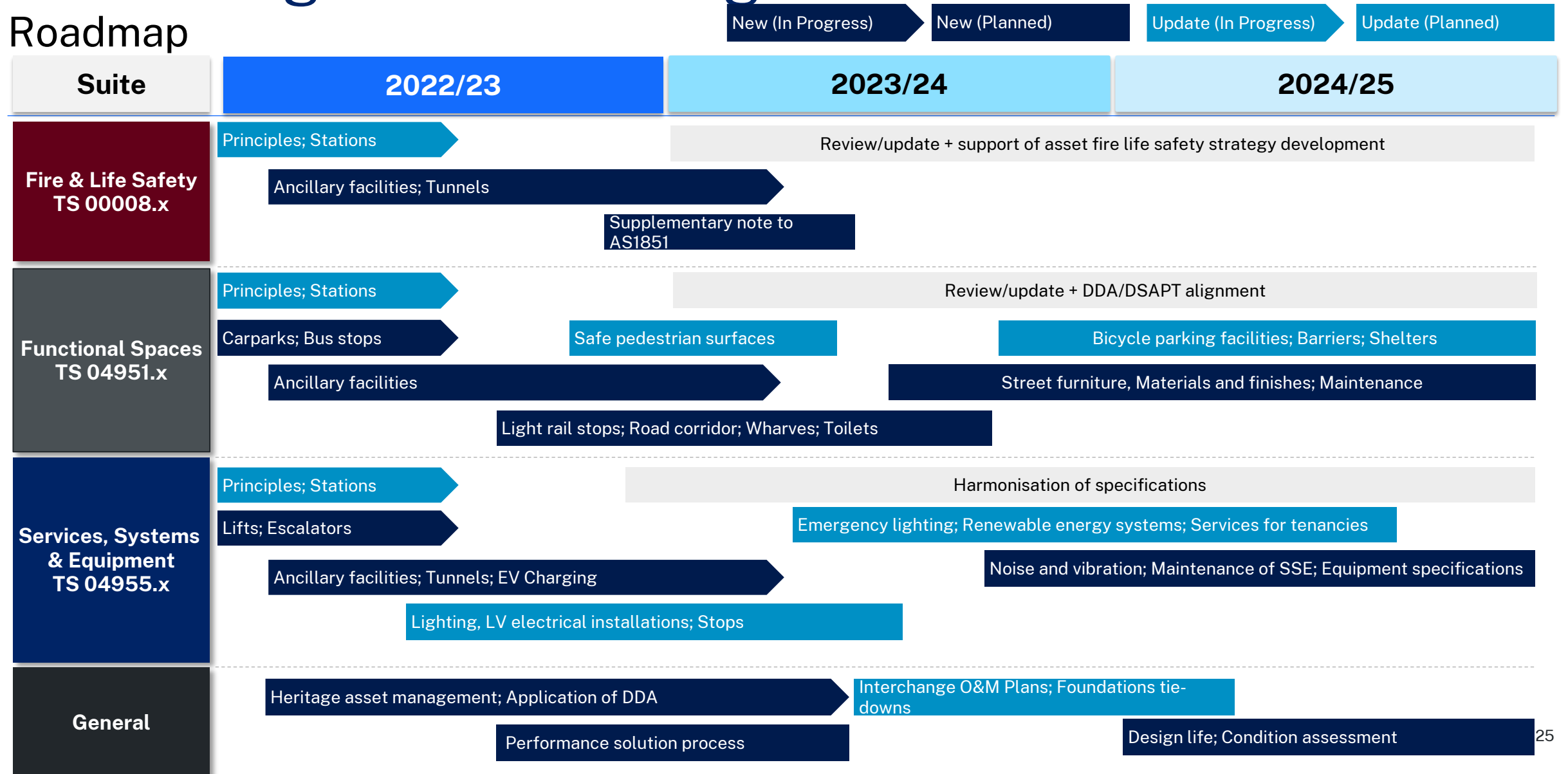
40

Standards of moderate or high commercial value



Interchanges and Buildings

Roadmap



Signals and Control Systems Engineering

3 Year Outlook

Objectives:

Rationalisation across Rail-

- Merging of documents with similar content, TfNSW/CRN/Sydney Trains/Light Rail/Metro
- Signalling Design Handbook

Multi-modal-

- Rationalisation of documentation with similar content across modes, e.g. cables, conduits, lanterns
- Classify ITS hierarchical structure
- Alignment of road and rail signalling vision

505

Standards under management (In scope)



408

Documents identified for review



102

Harmonisation projects



5

New Standards proposed



3

Projects to address tolerable or intolerable safety risks

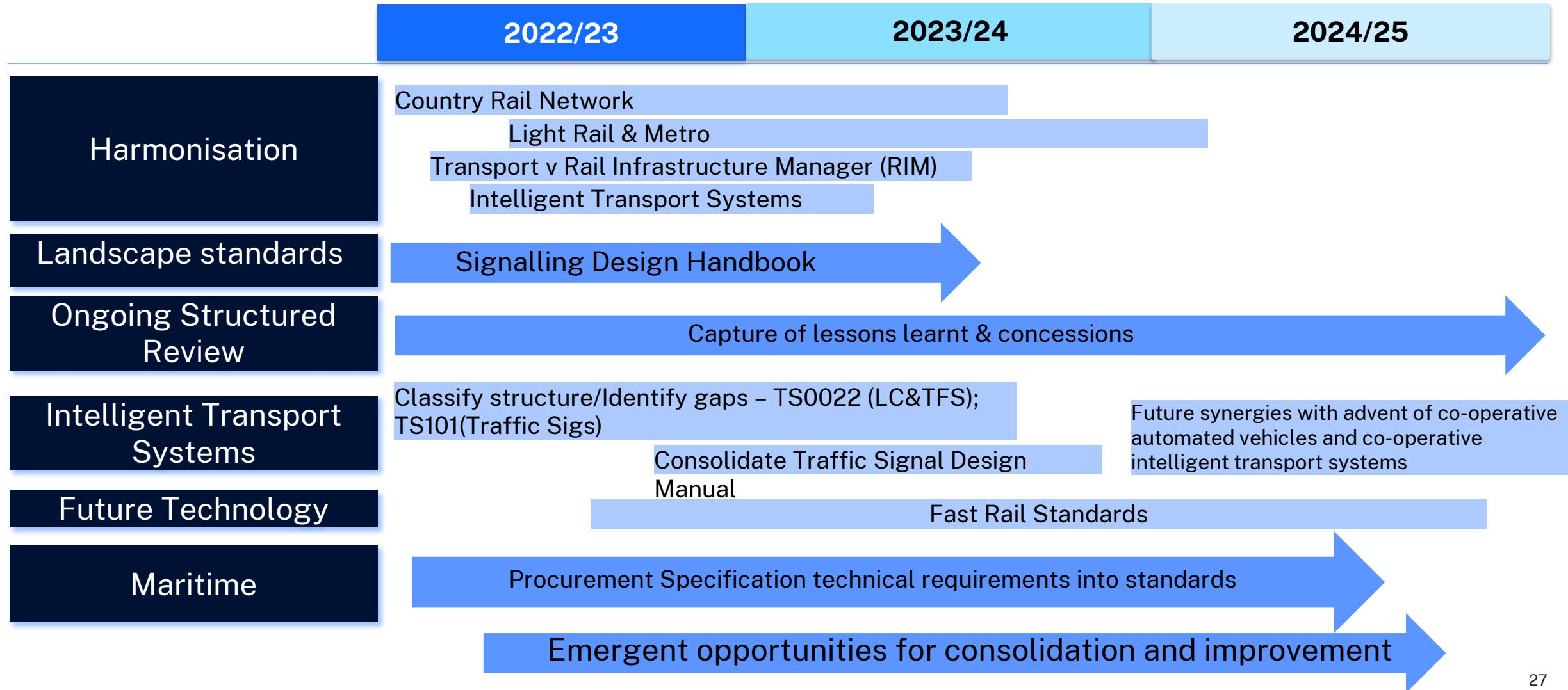


2

Standards of moderate or high commercial value



Signals and Control Systems



Telecommunications Engineering

3 Year Outlook

Key projects

- Harmonisation –Cables & Routes, Network and Applications
- New Standards across Networks, Applications, Cyber Security and SCADA
- **Cyber Security**
- Emergency Telephone - multimodal

68

Standards under management (In scope)



78

Documents identified for review



30

Harmonisation projects



14

New Standards proposed



41

Projects to address tolerable or intolerable safety risks



4

Standards of moderate or high commercial value



Telecommunications Engineering

Roadmap

Suite	2022/23	2023/24	2024/25
ITS	Communications for ITS	ITS Housing	
	Electronic signage		
SCADA	Motorway Control, Electronic Toll system	PLC/RTU	Design Technical Reviews for E-SCADA
	E-SCADA remote terminal unit	E-SCADA System & Interface Requirements, I/O Schedule	
	ESC340 Tunnel Standard incl ITS		
Telecom Networks	Review of CRN & Metro Standards	Investigate for Fast Rail & Future DTRS	
	Industrial IoT	Comms for Rail Signaling	
	LIPD Class, Packet Switched Networks		
	Emergency Telephones		
	Obsolescence Management		Help Points
Telecom Applications	CCTV, Light Rail, Comms for EV Charging, Test Labs/Sandbox		Programmable Equipment
		Test Processes, Equipment Rooms	

Telecommunications Engineering – Cyber Security

Roadmap

Suite	2022/23	2023/24	2024/25
Cyber Security for OT	Top 10 Threat based controls for OT		
	Industrial CS General Overview	Industrial CS Terminology, Concepts & Models	Industrial CS Patch Management
	Industrial CS Programs for Asset Custodians & Stewards	Industrial CS Capabilities of Service Providers	Industrial CS Secure Product Development Lifecycle Requirements
	Industrial CSMS for 3 rd Party Stewards	Industrial CS Risk Management	
	Vendor Security Vetting	Industrial CS Technical Security Requirements	
	CS Incident Management		
	Functional Hierarchy		

04

Program by Non
Engineering Department

Asset Management

3 year look ahead

- Configuration management suite
- Ambient environmental conditions
- System engineering suite
- Operational concept suite
- Asset information standard update
- Integrated CADD standard
- Backlog standard
- Asset condition standard
- M3 road standard
- Interface agreement standard
- Asset rationalisation standard



Security, Safety and Systems

- System safety standard for new or altered assets
- Guide to independent safety assessment
- Independent safety assessor requirements
- Transport security policy / strategy
 - T MU SY 10001 ST Public transport closed circuit television (CCTV) functional requirements standard
 - T MU SY 20001 ST Surface transport fixed infrastructure physical security standard

Supplier Assurance Engagement

- Expansion of TAO Framework
- TS 06199 Glossary of Defined Terms - Competency Management – Cluster wide agreed terminologies
- Guide to Engineering Competence
- TfNSW Competency Standards Guidelines and Glossary

05

Where to next?

Roadmap: Key Areas of Focus



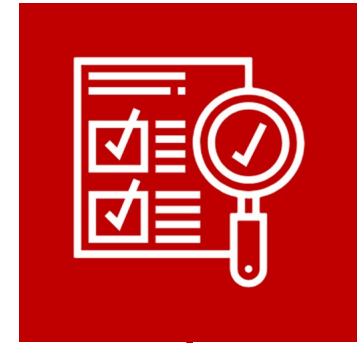
Publication of
Standards



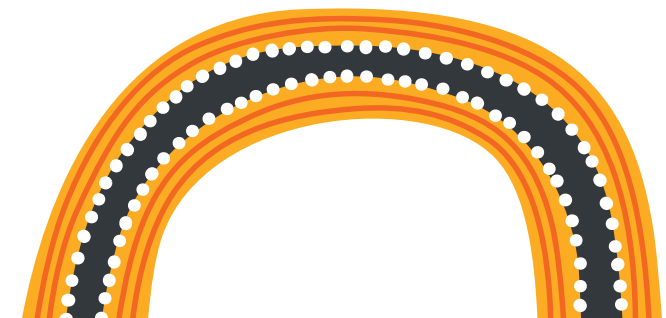
Data
architecture
and metadata



Concessions
process



Type
approvals



Transport Standards

Home for technical and asset management standards for Transport for NSW

Search a standard



Fast track to

[Search standards](#)

[Latest standards](#)

[Open for
consultation](#)

[Asset
Management at
Transport](#)

Where do I go for more information?

If you need to clarify something in any standard, or discuss the need for a concession, please email the enquiry through to:

standards@transport.nsw.gov.au

Our team will be able to connect you to the relevant SME, or the Standards Lead to provide you with an answer.



The primary contact will continue to be your project manager or contract manager

06

Concluding Remarks

A customer - centred program of change



Questions?



Thank you

We would appreciate your
feedback on this
presentation

