Reference document

Guide to Transport for NSW Framework for Assuring the Safety of Rail Assets and Infrastructure

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1. Executive Summary

1.1. Purpose

This Guide explains how the Transport for NSW (TfNSW) framework for asset configuration management, developed by the Asset Standards Authority (ASA), can assist TfNSW, Sydney Trains and NSW Trainlink (Agencies) meet their safety duties in relation to the safe design, construction, operation and maintenance of rail transport services in NSW across the asset life cycle.

The Guide also demonstrates how the Agencies can exercise due diligence by obtaining assurance from third party stakeholders, including contractors and suppliers to the Agencies, that the asset is safe and fit for purpose.

This Guide does not explain the assurance activities of Agencies with respect to other business objectives such as quality asset management, sound financial management, environmental sustainability and so on.

The Guide:

- describes how the "Fixing the Trains" reforms have changed the nature of the Agencies'[1] functions and, in turn, their safety duties
- explains how safety assurance processes can be used by the Agencies to meet their safety obligations
- describes the supplier assurance framework established by TfNSW's Asset Standards Authority (ASA).

2. Background

TfNSW is accountable for the safe, effective and efficient use of NSW Government owned transport assets throughout the whole of their life cycle. This includes:

- Planning: identifying the demand/need for new or altered assets and planning for their design, construction and use.
- Acquisition: design and constructing new assets, or altering/modifying existing assets
- Operation and maintenance: deploying the assets for use in delivering transport services.
- Disposal: arranging for the safe and environmentally sustainable disposal of assets.

In some stages of the life cycle, TfNSW may retain responsibility for the asset and its configuration and management. At other stages of the asset's life, TfNSW may delegate responsibility for the management of the asset through contract to third parties in the supply chain. This includes operators/maintainers such as Sydney Trains and NSW Trainlink.

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In July 2013, the Asset Standards Authority (ASA) was established as an independent unit within TfNSW. ASA is the network design and standards authority for NSW Government owned transport assets. The ASA's remit initially focused on heavy rail, Its remit is being steadily expanded to include all transport assets including light rail, Sydney Metro, buses and ferries.

3. Context

The "Fixing the Trains" reforms (Reforms) have resulted in significant changes to the structure, roles and responsibilities of the Agencies. This has lead, in turn, to changes in the nature and scope of the Agencies' safety duties under both the Work Health and Safety Act 2011 (WHS Act) and the Rail Safety National Law (NSW) (Rail Safety Law).

These changes are described in detail in Fixing the Trains: Safety Accreditation Context Paper (TfNSW, December 2012).

In sum, the Reforms included:

- establishing Sydney Trains as the operator/maintainer of the Metropolitan Rail Area (MRA) and of Sydney Trains passenger rail services
- transferring accountability for design and engineering standards from RailCorp to the Asset Standards Authority (ASA) in TfNSW[2]
- Sydney Trains retaining ownership and responsibility for the management of the Network Rules
- transferring major rail infrastructure projects from RailCorp to the Infrastructure and Services (ISD) of TfNSW
- establishing NSW Trainlink as the operator of regional and intercity rail services with rolling stock maintenance being procured by NSW Trainlink from Sydney Trains
- RailCorp retaining ownership of certain rail assets, but with effective management and control of those assets shifting to TfNSW, Sydney Trains and NSW Trainlink as the accredited entities for their respective railway operations.

The Reforms focused on the railway operations of RailCorp as the operator of the Metropolitan heavy rail network and of CityRail and Country Link services.

Other rail operations funded by the NSW Government through TfNSW, which are also subject to the TfNSW Rail Safety Assurance Framework, include:

- The Sydney Light Rail network, which is owned by TfNSW and operated and maintained by Altrac Consortium[2]
- The Country Regional Network (CRN) which is owned by TfNSW and operated and maintained by John Holland Rail (JHR).

Prior to the "Fixing the Trains" reforms, the design and construction of major rail infrastructure projects was a shared responsibility between RailCorp and TfNSW (ISD). However, RailCorp

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held accountability for the design standards and, in effect, held the decision-making rights with respect to those activities.

Under the Reforms, the design authority for rail assets transferred to TfNSW (ASA). TfNSW is also now accountable for the design, construction and/or procurement of major rail infrastructure assets used by Sydney Trains and NSW Trainlink. Sydney Trains retains ownership of the rail Network Rules and manages their development and implementation.

The Reforms have allowed Sydney Trains and NSW Trainlink to more closely focus their attention on the delivery of services to customers.

The changes arising from these Reforms are significant and complex. It is important that all managers and staff with a role to play in safety assurance across the Agencies understand these changes and the impact on their roles and accountabilities.

4. Scope

4.1. In Scope

This Guide relates to the **rail** transport functions of the Agencies.

For TfNSW this includes:

- the co-ordination of transport services, transport infrastructure and transport policy and planning in NSW
- Contract and performance management with respect to the procurement of rail infrastructure services from Sydney Trains for the Metropolitan Rail Area (**MRA**) network, John Holland Rail (**JHR**) for the Country Regional Network (**CRN**) and Altrac consortium for the Sydney Light Rail network and, in the future, the operator of Sydney Metro
- the contractual terms and conditions under which Sydney Trains, NSW Trainlink, Sydney Light Rail and, in the future, the operators of Sydney Metro and the Parramatta and Newcastle light rail systems, provide rail transport services[3]
- development of the passenger and freight standard working timetables for the MRA.

For Sydney Trains this includes:

- the operation and maintenance of the Metropolitan Rail Area (**MRA**) network, including management of the Network Rules
- the operation and maintenance of Sydney Trains passenger rail services
- the maintenance of NSW Trainlink rolling stock.

For NSW Trainlink this includes the operation of NSW Trainlink passenger rail services.

RailCorp makes available to Sydney Trains and NSW Trainlink railway assets necessary for them to deliver rail services, and is the lessor or licensor of certain land on which light rail services are operated.

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4.2. Out of Scope

This Guide does not relate to the assurance frameworks or processes used in non-rail transport modes. It also does not include specific guidance in relation to **non-rail** business functions of the Agencies (e.g. NSW Trainlink coach services). However, the general guidance in relation to work health and safety duties of the Agencies applies to those non-rail functions.

5. Definitions

The following terms and definitions apply in this document:

AEO	Authorised Engineering Organisation
Agencies	TfNSW, Sydney Trains and NSW Trainlink
ALTRAC	Altrac consortium
ASA	Asset Standards Authority, TfNSW
AMF Steering Committee	Asset Management Framework Steering Committee Members include: Executive Director Service Delivery and Performance, I & S Executive Director, Asset Standards Authority, FS&P, Executive Director Capital Investments, F & I
Asset Management	The set of coordinated activities that an organisation uses to realise value from assets in the delivery of its outcomes or objectives (ISO 55000).
Assurance	An objective examination of evidence for the purpose of providing an independent assessment of risk management, management control or governance processes for an organisation.
Assurance & Government Plans	During the acquire phase, the Assurance and Governance Plan is maintained by the client agent responsible for the asset at that time. The contracted AEOs are responsible for ensuring that their assurance plans align with the client agents Assurance and Governance Plan.
ARTC	Australian Rail Track Corporation
CCB	Configuration Control Board
CCR	Configuration Control Request
CED	Customer Experience Division, TfNSW (now Customer Services Division - see CSD)
Client Agent	Client agents are those agencies or organisations that have overall accountability for the asset at the particular stage of the assets lifecycle.
CMAAC	Configuration Management & Asset Assurance Committee.
CMP	Configuration Management Plan
Contracted AEOs	Contracted AEOs operating within the remit of an existing client agent do not require a CMP. Rather, they operate under the governance arrangements established by the client agent, as approved by the ASA CCB.
CRN	Country Regional Network
CSD	Customer Services Division
Delivery Offices	Project-specific offices within TfNSW responsible for the delivery of major infrastructure projects (eg Sydney Metro)
FID	Finance and Investment Division

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FS&P	Freight Strategy and Planning Division
ISD	Infrastructure and Services Division
JHR	John Holland Rail
HCF	Harbour City Ferries
MTS	Metro Trains Sydney, a consortia partner of Northwest Rapid Transit and accredited for the construction, operation and design of the NWRL rail systems and operations
NRT	Northwest Rapid Transit, the operating company for the Sydney Metro Northwest
MRA	Metropolitan Rail Area
NWRL	North West Rail Link as the first phase of the Sydney Rapid Transit system. North West Rail Link (now Sydney Metro Northwest - see SMNW)
ONRSR	Office of the National Rail Safety Regulator
PaCS	People and Corporate Services
PCBU	Person Conducting a Business or Undertaking, as defined under Section 5 of the *WHS Act*
Rail Safety Law	*Rail Safety National Law (NSW)*
PBO	Private Bus Operators
Reforms	The *Fixing the Trains Reforms* implemented in 2013. A summary of the Reforms is provided at page 5 of this report
RIM	Rail Infrastructure Manager, as defined under Section 4 of the *Rail Safety Law*
RSO	Rolling Stock Operator, as defined under Section 4 of the *Rail Safety Law*
RSW	Rail Safety Worker, as defined under Sections 4 and 8 of the *Rail Safety Law*
RTO	Rail Transport Operator, as defined under Section 4 of the *Rail Safety Law*
Safety Assurance	Demonstration that all safety risks have been assessed and managed/mitigated SFAIRP and satisfy the risk tolerability criteria in PSMP Standard Safety Risk Management.
SFAIRP	So Far As Is Reasonably Practicable, as defined under Section 18 of the *WHS Act*
Sydney Metro	Sydney Rapid Transit. A new rapid transit rail line running from Castle Hill through Chatswood, under the harbour, through the city and west to Bankstown. The first phase, the NWRL, is currently under construction
STA	State Transit Authority
SMNW	Sydney Metro North West
Transport Asset Management Framework Working Group	The TfNSW Asset Management Framework Steering Committee is supported by the TfNSW Asset Management Framework Working Group. It is supported by the TfNSW Asset Management Advisory Group
Tier 1 CCB	Configuration control boards may be established to facilitate the configuration management, assurance and staged acceptance of transport assets by receiving delegated authority over a defined scope of assets or stage of an asset life cycle. Tier 1 configuration boards can be established by TfNSW and the Asset Standards Authority.
Tier 2 CCB	Configuration boards that reside directly below the CMACC in hierarchy are considered Tier 2 configuration control boards.
Tier 3 CCB	Contracted parties delivering configuration changes and who establish their own CCBs for making network configuration change decisions shall operate in a hierarchy below Tier 2 configuration control boards.
TfNSW	Transport for NSW.

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PaC	People and Corporate Services Division within TfNSW
TfNSW Asset Management Advisory Group	Acts across the different Divisions/Modes of Transport for NSW in alignment with the TfNSW Asset Management Policy Objectives and Business Needs.
TSD	Transport Services Division, TfNSW (now Infrastructure and Services- see ISD)
TPD	Transport Projects Division, TfNSW (now Infrastructure and Services- see ISD)
WHS Act	*Work Health and Safety Act 2011*

6. Safety Duties

Each Agency is regulated under both the Work Health and Safety Act 2011 (WHS Act) and the Rail Safety National Law (NSW) (Rail Safety Law).

6.1. WHS Health and Safety Act 2011

The *WHS Act* places obligations on a number of duty holders.

The primary duty holder under the *WHS Act* is a Person Conducting a Business or Undertaking (**PCBU**). [4]

A PCBU must ensure, So Far As Is Reasonably Practicable (**SFAIRP**), the health and safety of:

- workers engaged, or caused to be engaged, by the PCBU and
- workers whose activities are influenced or directed by the PCBU,

while the workers are at work in the business or undertaking.

A PCBU must also ensure, SFAIRP, that the health and safety of others is not put at risk from work undertaken by the PCBU.[5]

"Workers" are defined broadly in the *WHS Act* to include employees, contractors, subcontractors, trainees and volunteers.

Each Agency is a PCBU. The scope of each Agency's "business or undertaking" will determine those matters that fall within its duty as a PCBU.

Businesses that provide services or goods to the Agencies (e.g. contractors and suppliers) are also PCBUs.

In addition to their primary duty to ensure, SFAIRP, the health and safety of their workers and others put at risk of their business, the WHS Act sets out further duties of PCBUs that may design, manufacture, install or import plant, substances or structures or control work places.[6]

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Other duty holders under the *WHS Act* are:

- Officers of the PCBU who must exercise due diligence to ensure that the PCBU complies with its safety duties[7]
- Workers who must take reasonable care for their own health and safety, and for the safety of others while they are at work[8]
- Other persons (e.g. visitors, customers, the public) who must also take reasonable care for their own health and safety and for the safety of others at a work place.[9]

This Guide focuses on the duties of the Agencies as PCBUs. It does not detail the duties of Officers or Workers.

6.2. Rail Safety National Law (NSW)

The Rail Safety Law effectively replicates the safety duties prescribed in the WHS Act, and applies them specifically to railway operations.

A Rail Transport Operator (RTO)[10] must ensure, SFAIRP, the safety of its railway operations. The “railway operations” of a RTO are akin to the “business or undertaking” of a PCBU.

A key difference between the WHS Act and Rail Safety Law is that RTOs must be accredited in order to carry out their "railway operations". In order to become accredited, the Rail Safety Law imposes various specific requirements on an RTO including requirements to ensure, SFAIRP:

- that safe systems for carrying out operations are developed and implemented
- that Rail Safety Workers (RSWs) are healthy and fit to carry out rail safety work, are competent to do so, and are not impaired by drugs, alcohol or fatigue
- that facilities are provided for the safety of persons at any railway premises under the control and management of the RTO.

The Rail Safety Law imposes similar duties on Officers and Workers as those that are imposed under the WHS Act.

The Rail Safety Law also imposes duties on designers, manufacturers and suppliers who carry out functions in connection to railway infrastructure or rolling stock. Such parties are therefore regulated under the Rail Safety Law, even though they may not be accredited RTOs.

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6.3. Transport safety regulation and assurance

Agencies also have safety obligation under other transport-specific legislation. They also have contractual obligations which relate to safety management eg reporting on safety performance, right of TfNSW to audit etc). This is summarised in the table below.

Contractual Obligations	**Statutory Obligations**	**WHS Act 2011**	**Passenger Transport Act 2014**	**Rail Safety National Law 2012**	**Maritime Safety Act 1998**	**Heavy Vehicle National Law (NSW) 2012**	**Road Transport Act 2005**
	TfNSW	Yes	Yes	Yes			Yes
Memorandum of Understanding	RMS	Yes			Yes		Yes
Metropolitan Bus Services Contract 2012	STA	Yes	Yes		Yes	Yes	Yes
Rail Services Contract 2011	Sydney Trains	Yes		Yes			Yes
Rail Services Contract 2011	NSW Trainlink	Yes	Yes	Yes			Yes

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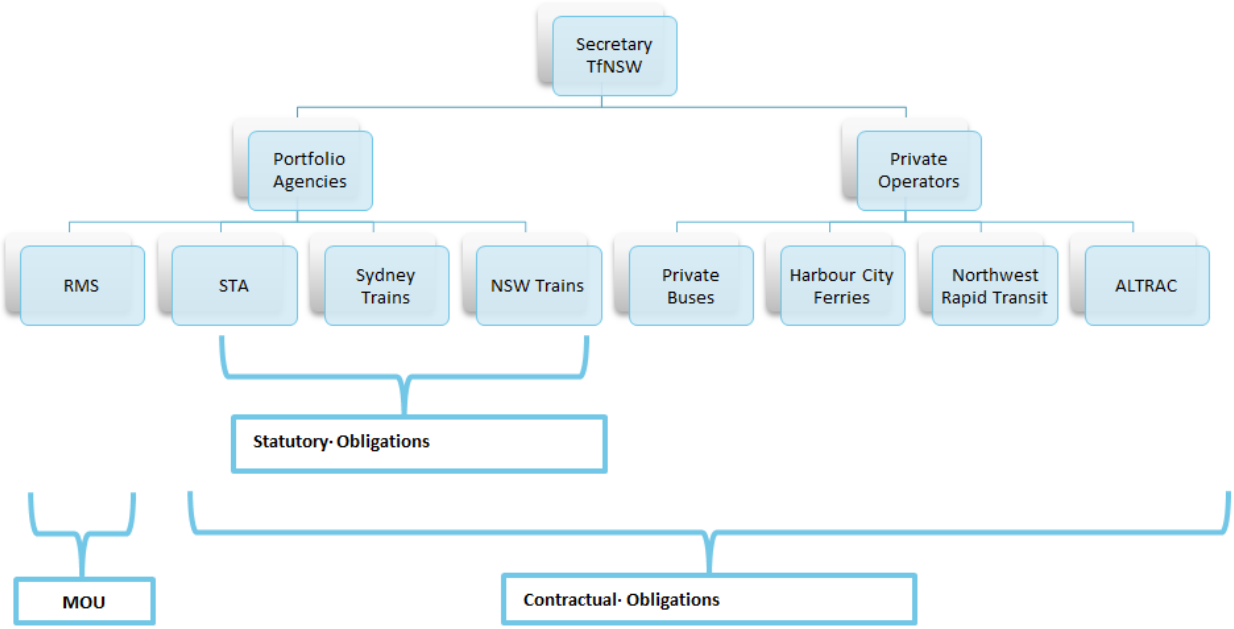
6.4. TfNSW safety governance – portfolio

Public agencies have safety duties under statute law, these may include additional statutory obligations with respect to their relationship with TfNSW that don't apply to private operators e.g. a Chief Engineer appointed by the Secretary may have a statutory obligation to pursue similar objectives and are subject to directions from the Secretary.



6.5. Ensuring Safety, SFAIRP

6.5.1. The Meaning of SFAIRP

SFAIRP means that which is, or was at a particular time, reasonably able to be done to ensure safety, taking into account:

- the likelihood of the hazard or risk occurring
- the degree of harm that might result
- what the person concerned knows, or ought reasonably to know about the hazard/risk and ways of eliminating or minimising the risk
- the availability and suitability of ways to eliminate or minimise the risk
- the cost associated with the means to eliminate or minimise the risk, including whether the cost is grossly disproportionate to the risk.[11]

To determine if a safety measure is reasonably practicable, its safety benefits are compared with its costs. The concept of gross disproportion means that there should be a clear favourability of safety over cost. Capacity to pay is not a determinative factor in determining what is reasonably practicable.

Professional judgement is used to determine whether or not the costs are grossly disproportionate to the safety benefits. The higher the level of risk (likelihood/consequence) the higher the time, trouble and effort (cost) that should be applied to mitigate the risk.

Similarly, the appropriate methods used to exercise professional judgement will be dependent of the level of risk involved in the matter. The higher the likelihood and consequence of the risk, the more sophisticated the assessment methods need to be.

For instance, risks which are well known and of relatively minor likelihood/consequence may be assessed using qualitative judgement and relatively simple analyses. Risks involving more complex issues and that present a higher risk (likelihood and/or consequence) would require more sophisticated quantitative risk assessment methods.

For further guidance, see Meaning of Duty to Ensure Safety so Far as is Reasonably Practicable Guideline, Office of the National Rail Safety Regulator (2014).

6.5.2. Concurrent Duty Holders – Shared Responsibility

Both the WHS Act and the Rail Safety Law expressly acknowledge that ensuring safety may be a shared responsibility among a number of duty holders.[12] This is because different duty holders may conduct activities or have responsibilities that impact on the same matter, such as the safe operation of a rail service.

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Case Study: Shared responsibility for the safety of NSW Trainlink services

The safe operation of NSW Trainlink services is a shared responsibility of:

NSW Trainlink - as the operator of the service.

Sydney Trains - as the maintainer of NSW Trainlink rolling stock and operator/maintainer of the MRA infrastructure on which NSW Trainlink operates.

ARTC and John Holland Rail – as the operators/maintainers of infrastructure accessed by NSW Trainlink on the Defined Interstate Rail Network (**DIRN**) and the Country Regional Network (**CRN**) respectively.

TfNSW - as a supplier of any infrastructure and rolling stock assets used by NSW Trainlink, and as the procurer and contract manager of the service.

Other companies that design, construct, manufacture or supply plant and equipment to the Agencies that may impact on the safety of NSW Trainlink services.

6.5.3. Capacity to Influence and Control

Where there are concurrent duty holders, the WHS Act provides that each person must discharge their duty to the extent that they have the capacity to influence and control the matter.[13]

Similarly, the Rail Safety Law provides that “managing risks associated with the carrying out of rail infrastructure operations or rolling stock operations is the responsibility of the person best able to control those risks”.[14]

In interpreting the provisions of the WHS Act, Australian courts have acknowledged that there is a clear connection between the conduct of a duty holder's undertaking, control and what is reasonably practicable.

The extent of the safety duties owed by each Agency (and any other duty holder) will therefore be determined by the nature and scope of its “business or undertaking”.

For something to be within an Agency’s “business or undertaking”, the Agency must be able to exercise control over the relevant matter. If an Agency does not have control over a matter it will not be reasonably practicable for the Agency to make it safe.

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7. Railway Operations in NSW

7.1. The Changed Nature of the Agencies' Rail Operations/Business Undertakings

The "business or undertakings" of each Agency and its capacity to influence and control matters, is determined by a number of factors:

- the limits of its statutory functions as set out in the Transport Administration Act 1988 (TAA) and Regulation
- Government policy and Ministerial direction
- contractual arrangements
- the scope and nature of its accredited railway operations
- its policies and practices.

The Reforms saw a fundamental shift in Government policy with respect to the delivery of rail operations in NSW, which resulted in amendments to the TAA and the development of new Rail Services Contracts between the Agencies.

Under the Reforms:

- RailCorp remains the owner of most major rail assets used by Sydney Trains and NSW Trainlink, but the management and control of those assets has transferred to TfNSW, Sydney Trains and NSW Trainlink via contractual arrangements.[15] Sydney Trains and NSW Trainlink have obligations, on behalf of RailCorp, under their respective Rail Services Contracts (RSCs) with TfNSW with respect to the maintenance and use of those assets.

RailCorp does not undertake any railway operations as defined under the Rail Safety Law.

TfNSW's rail functions include:

- The co-ordination of transport services, transport infrastructure and transport policy and planning in NSW
- Contract and performance management with respect to the procurement of rail infrastructure services from Sydney Trains for the MRA, John Holland Rail for the CRN and Altrac consortium for the Sydney Light Rail network and Northwest Rapid Transit for the SMNW formerly known as NWRL (currently under construction)
- Contract and performance management with respect to procurement of transport passenger services by Sydney Trains, NSW Trainlink, Sydney Light Rail and, in the future, the operators of the Sydney Metro City and Southwest and Parramatta and Newcastle light rail systems, and the establishment of the terms and conditions under which they operate[16]
- the design and construction and/or procurement of certain new major railway assets
- development of the passenger and freight standard working timetables for the MRA.

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Not all of these rail related functions are defined as “railway operations” that require accreditation under the Rail Safety Law. TfNSW is accredited for railway operations relating to the construction, modification and repair of rail infrastructure.

Sydney Trains’ rail operations include:

- the operation and maintenance of the Metropolitan Rail Area (MRA) network and management of the Network Rules
- the operation and maintenance of Sydney Trains passenger rail services
- the maintenance of NSW Trainlink rolling stock
- a limited role in the design and construction of rail infrastructure in order to fulfil its function as a maintainer (e.g. Major Periodic Maintenance) and to assist TfNSW with the delivery of projects as needed.

NSW Trainlink’s rail operations include the operation of NSW Trainlink passenger rail services.

The exercise of these functions define, in part[17], the nature and scope of each Agency’s business or undertaking (for the purposes of the WHS Act) and Railway Operations (for the purpose of the Rail Safety Law).

As explained in Section 6 above this, in turn, impacts on the extent of each Agency’s safety duty.

7.2. The Ownership and Supply of Rail Assets

The ownership of assets, per se, is not a business function that carries explicit safety duties under the WHS Act or Rail Safety Law. The extent of an owner’s safety duties will depend on the level of on-going control the owner retains over the asset. For example, where an owner leases an asset to another party, and retains no involvement in the business of the lessee, the owner will have limited obligations and responsibilities under relevant safety law to assure itself of the on-going safe operation and use of those assets. This is the case, for example, where RailCorp has provided a lease to the Australian Rail Track Corporation over the Interstate Rail Network

There are obligations imposed on both "importers" and "suppliers" of plant under the safety law. Persons who import or supply plant, including rolling stock, must ensure, so far as is reasonably practicable, that the plant they import or supply is safe and without risks to the health and safety of persons who use or assemble the plant or whose health or safety may be affected by its use or assembly.

The duties that are imposed on importers and suppliers in the safety law enable the recipients of plant to gain satisfaction that they are receiving a safe product. Agencies that accept plant which is imported or supplied by TfNSW can be satisfied that the plant is safe without reconstructing it if warranties about TfNSW's compliance with the relevant safety laws are given. Receiving agencies will still need to carry out inspections of the plant and ensure that the plant

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is compatible with their networks; however, a failure by a recipient to identify a latent defect will not necessarily result in a breach of the safety law by the agency. Instead, the onus to ensure, so far as is reasonably practicable, that no latent defects exists will rest with the importer / supplier.

Under the Fixing the Trains reforms, the on-going management and control of RailCorp assets have effectively been transferred to other parties. RailCorp therefore retains little obligation, as the owner of the asset, to assure itself of the on-going safe use of those assets.

7.2.1. Existing Assets

As noted above, management and control of existing assets owned by RailCorp prior to the Reforms were transferred by contract to other Agencies in the Transport Cluster. In broad terms, the use of the majority of all real assets held by RailCorp were transferred to Sydney Trains, with the exception of:

- Rolling stock operated by NSW Trainlink
- Certain office premises located within or near Central Station occupied by NSW Trainlink
- Stations on the NSW rail network outside the Sydney Trains network and associated car parks and interchanges that have been transferred to NSW Trainlink
- The learning and organisational development assets associated with the Petersham training centre, which has transferred to TfNSW.

Certain assets, such as crew facilities, have been designated as shared assets between Sydney Trains and NSW Trainlink. Sydney Trains has accountability under its RSC to maintain those shared assets.

7.2.2. New Assets

Accountability for delivery of major new assets has transferred from RailCorp to TfNSW. Depending on the delivery model adopted for each project, the construction activities may be managed under TfNSW's accreditation; or the accreditation of a third party contracted by TfNSW to design and construct the asset.

For example:

- the South West Rail Line extension and the Inner West Light Rail extension were both delivered under TfNSW's accreditation
- civil infrastructure (tunnels, station boxes, and viaducts) for the Sydney Metro Northwest (SMNW) component of the Sydney Metro network[18] is being delivered under TfNSW's accreditation. All other rail infrastructure will be designed and constructed by the SMNW operator, Northwest Rapid Transit (**NRT**), under the accreditation of NRT's consortia partner, Metro Trains Sydney (**MTS**)

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- the light rail extension to the CBD and South East will be delivered by a Public Private Partnership which has been awarded to the Altrac. Construction, operation and maintenance will all be managed under the PPP's accreditation.

TfNSW also has accountability for the procurement of new rolling stock for operation by NSW rail operators. Future rolling stock acquisition for Sydney Trains and NSW Trainlink (with the exception of the new Waratah trains[19]) will be managed by TfNSW. Rolling stock for the SMNW and Sydney Light Rail networks will be designed and constructed by the PPP partners, or their contractors.

Case Study: The supply of infrastructure and other major assets to Sydney Trains

It is a statutory and contractual function of Sydney Trains to operate railway passenger services and to hold, manage, maintain and establish rail infrastructure facilities[20].

It is a statutory function of TfNSW to deliver rail infrastructure and prioritise expenditure and projects across the transport system[21].

It is the policy of the NSW Government that any new major rail assets to be operated by Sydney Trains will be supplied by TfNSW[22]. Sydney Trains, in accordance with Government policy, cannot choose to procure such infrastructure or assets from other parties.

It is a requirement of the Rail Service Contract between TfNSW and Sydney Trains that Sydney Trains operate and maintain infrastructure and rolling stock supplied by other parties, including TfNSW.

Given the statutory, policy and contractual arrangements in place, it is not within the scope of Sydney Trains business or undertakings, nor within its control, to design or construct major infrastructure or rolling stock assets, or to procure such assets from third parties.

In accordance with Section 50 of the *Rail Safety National Law,* TfNSW is in a better position than Sydney Trains to control the risks associated with the design and construction of the major assets used by Sydney Trains.

Specifically, TfNSW has an obligation to ensure the safety of those assets, to consult with stakeholders (including Sydney Trains as the operator and maintainer) in the design and construction of the assets and to provide appropriate assurances to Sydney Trains that the assets are safe and fit for purpose.

Sydney Trains will need to discharge its safety duties with respect to the safe operation and maintenance of those assets. The ways in which Sydney Trains can discharge those duties are discussed in Section 8 below.

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7.3. Obligations of Operators/Maintainers who are not the RIM for Construction

The Rail Safety Law provides that a Rail Infrastructure Manager (RIM) must ensure, SFAIRP, that any design and construction of the manager's rail infrastructure is done or carried out in a way that ensures the safety of railway operations[23].

Similar provisions exist for Rolling Stock Operators (RSOs) in relation to the design and construction of rolling stock[24].

As noted above, it is not within the business or undertakings of Sydney Trains or NSW Trainlink to provide, design or construct their rail assets.

Rather, many of the rail assets used by Sydney Trains and NSW Trainlink will be designed and constructed by third parties under contract to TfNSW. This is sometimes done under TfNSW's accreditation as the Rail Infrastructure Manager for construction purposes. In other circumstances, it may be done by another party who has been contracted by TfNSW to supply the asset and who is the accredited RIM for construction purposes.

The degree of control that Sydney Trains and NSW Trainlink have over these processes will therefore be limited. This is relevant to determining the reasonably practicable measures available to Sydney Trains and NSW Trainlink to ensure that the design and construction is carried out in a way that ensures the safety of their respective railway operations.

TfNSW, as the accredited RIM for the construction of assets supplied to Sydney Trains and NSW Trainlink, must provide appropriate assurances to those operators with respect to the safety of those assets. The way in which TfNSW does so, and the obligations of the operators in accepting those assets into service, is governed in part by the Asset Assurance Framework established by the ASA, and described in further detail in Section 8 below.

7.4. The Operation and Maintenance of Rail Assets

Having accepted an asset into service, operators and maintainers of the asset assume safety duties with respect to the safe management of these assets.

As the Agency accountable for the long term planning for, and sustainability of, transport assets, TfNSW is responsible for determining the high level strategies with respect to the on-going management of the asset. TfNSW manages this process through the development, in consultation with operator/maintainers, of an Asset Management Plan (AMP) for all existing and new rail assets on the NSW network. The AMP sets out the short, medium and long-term strategies for asset management across the TfNSW portfolio, and is approved by the NSW Treasury.

Sydney Trains and NSW Trainlink are responsible for the development of Asset Maintenance Plans (AMPs) for the assets within their control, noting that NSW Trainlink Rolling Stock is

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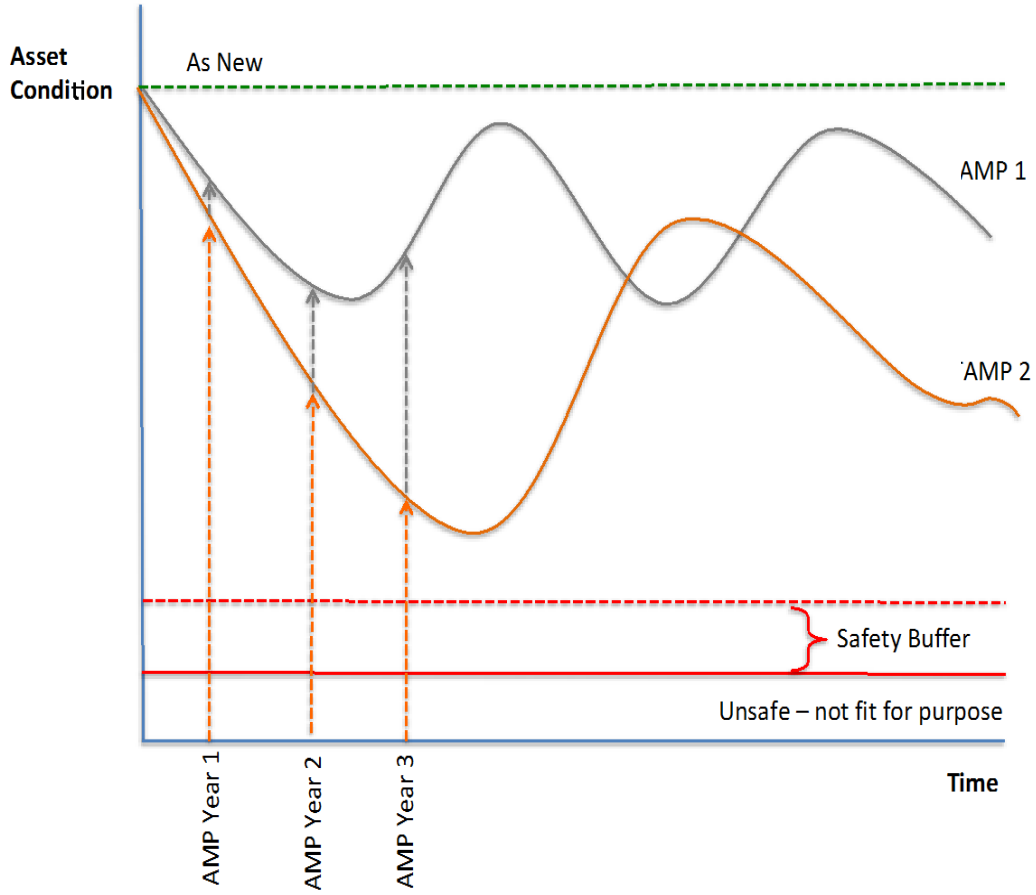
maintained by Sydney Trains. AMPs are detailed plans for the work to be carried out in respect of the assets.

It is a matter for TfNSW to determine whether the condition of the asset is to be sustained "as new" within short and frequent maintenance cycles, or allowed to deteriorate at a greater rate with less frequent, but more interventionist strategies to restore the asset to an "as new" state. Indeed, TfNSW may determine to run down an asset toward the end of its useful life.

However, at no point should the AMPs allow the asset to deteriorate to a point where it is not safe to operate. The primary responsibility for ensuring that the asset does not deteriorate to such an extent rests with the accredited operator and maintainer. This is because the operator/maintainer has greater knowledge and control over the condition of the asset. If it considers that the resources provided or available to it are insufficient to safely operate the asset, the operator/maintainer has an obligation at law to cease operating the asset.

The relationship between the AMPs is depicted in Figure 1 below.



Under AMP 1, TfNSW has adopted an asset management strategy that aims at keeping the asset in very good condition at all times. AMP 2 reflects a strategy that allows the asset to deteriorate to a greater degree before remediation works are undertaken.

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The AMPs put in place by the operator/maintainers reflect the works required to meet the asset condition specified under the AMP.

Under both strategies, the asset must be maintained so that it remains safe and fit for purpose.

8. TfNSW's Framework for Assuring the Safety of Rail Assets and Infrastructure

Transport for NSW is the NSW Government agency responsible, amongst other things, for the planning, oversight and delivery of transport infrastructure and contracting for the delivery of transport services.

TfNSW is therefore responsible for holding, managing and maintaining transport infrastructure and other assets on behalf of the State[25].

TfNSW manages this responsibility in partnership with other agencies and private companies that may play a part in designing, constructing, operating or maintaining NSW transport assets.

To ensure the effective, efficient and safe delivery of rail services, TfNSW has established a framework for the management of NSW rail assets throughout the whole of their life. That framework is described in this Guide and comprises a range of policies and standards developed by the ASA in relation to the management of NSW rail transport assets. Other government and industry partners who design, construct, operate or maintain those assets are required, usually through contractual arrangements, to comply with the ASA's requirements.

This Section explains the Safety Assurance Framework governance and the high-level standards or requirements for safety assurance. Assurance, in this context, is a positive declaration to give confidence about the quality of the work done and hence the technical integrity of the NSW transport network.

8.1. The Asset Standards Authority

The Asset Standards Authority (ASA) is an independent unit within TfNSW that was established in July 2013. It is the network design and standards authority for NSW government-owned transport assets[26].

As at 1 July 2013, responsibility for the development, ownership and management of standards and other technical documentation for rail transport assets transferred from the operators of the NSW Government-owned railways to the ASA. That included standards relating to the former RailCorp heavy rail network and the Country Regional Network (CRN) managed by the John Holland Group (JHG).

ASA took on responsibility for light rail standards in July 2015. It also has ownership of standards being developed for the new Sydney Metro network.

It is intended that the ASA will become the asset standards authority for all NSW government-owned public transport assets, including buses, ferries, and ferry wharves.

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8.2. The Asset Life Cycle

The ASA has developed an engineering governance framework that reflects a whole of life cycle approach to asset management. This approach aims to clarify those parties responsible for asset management during the life of the asset, and describe how those parties contribute to the safe design, build, integration, acceptance, operation, maintenance and disposal of rail assets.

The ASA framework therefore embraces all stakeholders involved in the management of TfNSW transport assets including each of the TfNSW Divisions, transport agencies such as Sydney Trains and NSW Trainlink, other private operators of NSW transport assets as well as private sector contractors who may provide engineering or technical services to TfNSW or rail operators.

The asset assurance framework is designed to ensure that each party who takes over control of the asset during its life cycle can be provided with the appropriate assurances (including all related documentation) that the asset is safe and fit for purpose.

8.2.1. Asset Management Policy requirements

TfNSW, through the ASA, has adopted the AS ISO 55001 Asset Management - Management Systems: Requirements approach which describes the life cycle of an asset in three main stages:

- demand/need
- plan
- acquire
- operate and maintain (O&M)
- dispose

ASA has also adopted the AS/NZS ISO/IEC 15288 Systems and Software Engineering - System life cycle process and the INCOSE Systems Engineering Handbook that supports it. These provide further detail about the system life cycle stages.

ASA is aiming to standardise the systems engineering approach by applying a tailored INCOSE approach to the TfNSW model. The systems engineering approach considers life cycle outcomes measured by performance, reliability, availability, and safety (RAMS) and cost-effectiveness.

The TfNSW Systems Engineering Standard incorporates these international engineering standards and establishes the mandatory requirements for systems engineering management for the planning, acquisition and delivery of new or altered assets owned or managed by TfNSW. It also identifies key responsible parties throughout each of the stages of the asset life cycle.

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The Standard applies to all agencies in the Transport cluster, as well as Authorised Engineering Organisations (AEOs)[27] in its supply chain.

8.2.2. Configuration Management

Configuration Management means coordinated activities to direct and control the configuration of an asset[28]. For an asset to be, and to remain, fit for purpose it is important that any changes to the asset (through its design, maintenance or operation) is documented and that the safety implications of these changes are understood and managed by any future parties who may take over control of the use of that asset.

The ASA delegates authority to organisations that have responsibility for the asset's configuration at each point in its life cycle.

Depending on the delivery model adopted for the acquisition and operation of an asset, there may be multiple organisations that have delegated authority for configuration management during the life of an asset. However, there will only be one party with responsibility for configuration management at any one point in time.

For railway assets, the organisation delegated with responsibility for configuration management will typically be the organisation that is also accredited by the Office of the National Rail Safety Regulator (ONRSR) for the railway operations associated with that asset.

The number of organisations that may be accountable for configuration management during an asset's life will depend upon the particular delivery strategy proposed for each project.

For example, TfNSW may elect to adopt a delivery strategy that separates responsibility for the design and construction of a new asset from the operation and maintenance of the asset. This was the case for the South West Rail Link Project where TfNSW's ISD managed the design and construction of the new railway link and then handed the asset over to Sydney Trains to operate and maintain.

Alternatively, TfNSW may elect to adopt a delivery strategy that integrates the design, construction, operation and maintenance of the asset within a single entity. This is the proposed strategy for the delivery of the new CBD and South East Light Rail service.

Irrespective of the delivery strategy, each party involved in the stages of the life cycle is expected to comply with the requirements of the ASA's safety assurance framework and configuration management requirements. These requirements include an obligation on all parties that have control of the configuration of an asset at any point in time to actively consult with all relevant stakeholders on configuration change activities (see Section 8.6 for further detail about stakeholder consultation).

These concepts are elaborated on in the remainder of this section.

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8.3. TfNSW Governance

8.3.1. TfNSW Configuration Management Plan

Ultimate accountability for the configuration of TfNSW transport assets rests with the Secretary of TfNSW. As such, the Secretary is the "Client", on behalf of the Government and public, for all work undertaken on NSW transport assets.

The Secretary discharges this accountability by authorising the ASA to set the framework for configuration management.

The TfNSW Configuration Management Plan sets out ASA's arrangements for managing the configuration of TfNSW's transport assets through the asset's life cycle.

The arrangements are designed to provide assurance to TfNSW (and other parties that may take over responsibility for managing assets) that the configuration of assets has been appropriately documented and managed so that it can be demonstrated that each asset is safe, so far is reasonably practical (SFAIRP).

The Secretary has defined the ASA as the owner of asset information, which includes all information about an asset's:

- physical characteristics
- functional characteristics
- performance history
- maintenance requirements
- operational requirements
- Condition, age and remaining life
- documentation that assures the designed configuration, such as design calculations, hazard logs and drawings.

As the owner of this information, ASA defines the requirements for the management of that information.

The governance hierarchy that ASA has established to manage this process is depicted in Figure 2 below. The following sections provide further explanation of the role and functions of each of the parties involved in the governance hierarchy.

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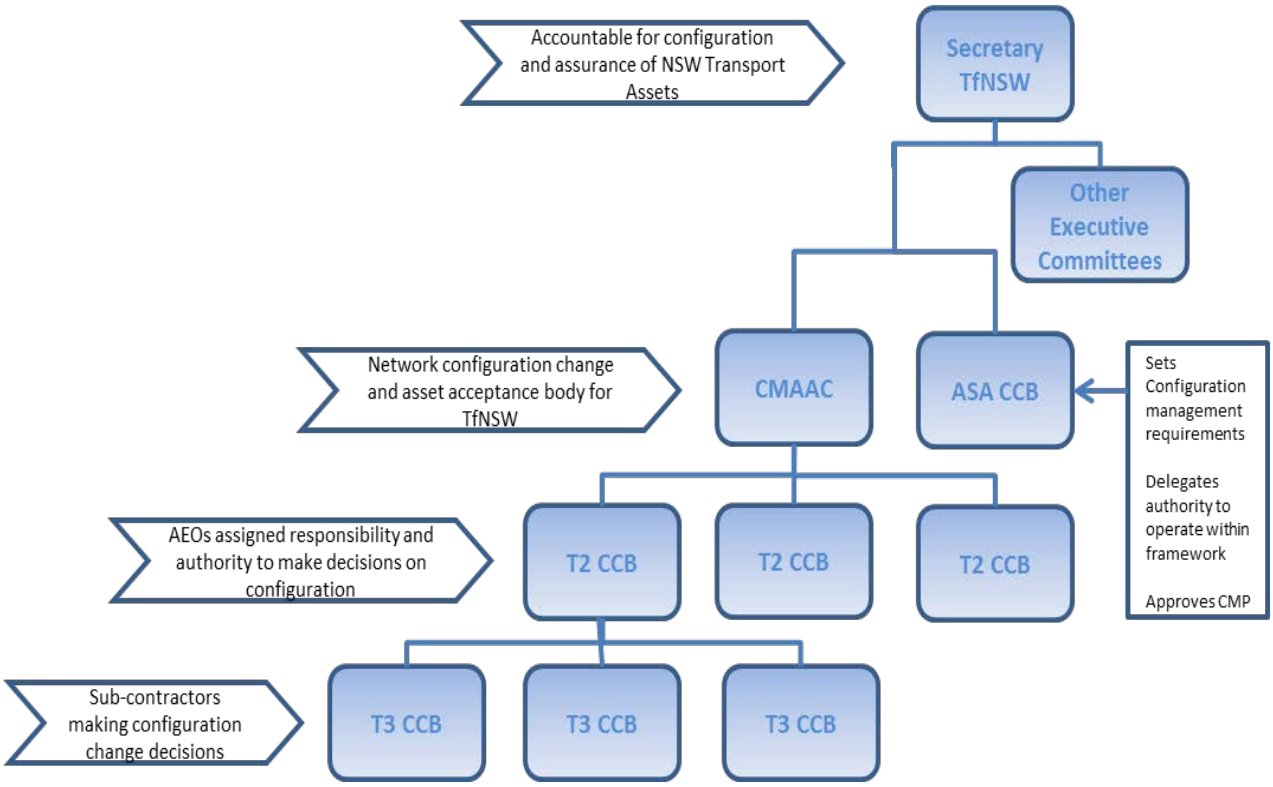
8.3.2. Configuration Control Arrangements



The ASA has established two governance bodies that are considered Tier 1 configuration control boards (CCBs):

- The ASA Configuration Control Board (ASA CCB)
- TfNSW Configuration Management and Asset Assurance Committee (CMAAC).

8.3.3. ASA Configuration Control Board (ASA CCB)

Organisations that have been granted authority to make configuration decisions will usually be authorised as “Client Agent’s”. Client Agents are responsible for providing assurance to CMAAC that appropriate assurance activities have been undertaken and appropriate evidence of that assurance has been documented. This evidence may also be relied upon by other Client Agents who may take over management of that asset (e.g. when a designer/constructor hands an asset over to an operator/maintainer).

The ASA CCB sets the configuration management requirements that must be met by Client Agents seeking authority to make network configuration decisions. Such organisations include other business units of TfNSW (e.g. ISD for the construction of rail assets), rail agencies (e.g. Sydney Trains as the operator/maintainer of rail assets) or private companies (e.g. Northwest Rapid Transit, the PPP contracted to design, construction, operation and maintenance of the Sydney Metro Northwest rail assets).

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Client Agents must establish Configuration Control Boards (CCBs) to manage the assurance process over the assets which they are delegated to manage.

The ASA CCB delegates authority to such third party CCBs to operate within the assurance and governance framework. The ASA CCB holds the authority to approve Configuration Management Plans (CMPs) of these organisations.

The ASA CCB also reviews and approves any new or amended ASA standards. New or amended standards may be initiated by ASA itself, or developed and submitted by third party CCBs that have authority to develop such standards under the ASA framework. For instance, the engineering, technical and operational standards for the Sydney Metro Northwest will be developed by Sydney Northwest Rapid Transit, subject to the approval of the ASA CCB.

8.3.4. TfNSW Configuration Management and Asset Assurance Committee (CMAAC)

CMAAC is the network configuration change and asset acceptance body for TfNSW. That is, CMAAC is the body responsible for accepting the assurances made by Client Agents, through their CCBs, with respect to the asset, including safety risk acceptance.

CMAAC oversees the application of network configuration management and asset assurance, including safety risk management on TfNSW transport assets.

CMAAC is chaired by the Executive Director of the ASA. Its members include senior representatives of each of the operational Divisions of TfNSW.

Parties responsible for managing TfNSW assets are required, through their own CCBs, to submit Configuration Change Requests (CCRs) to CMAAC for its review and approval.

Where a CCB is established within TfNSW, the CCB may also be delegated asset acceptance authority for the network configuration changes within its scope of activity.

Where the CCB is established external to TfNSW, the CCB may provide asset acceptance and safety risk acceptance, but it is subject to confirmation by the CMAAC or a delegated TfNSW CCB.

Risk acceptance by CMAAC is required at specified “gates” in the life of the delivery of a project (see Section 8.6 below).

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8.4. Authorised Engineering Organisations (AEOs)

Organisations that provide engineering services for the NSW rail network or use standards under ASA control can seek authorisation from ASA as an Authorised Engineering Organisation (AEO). Once authorised, AEOs are able to undertake design and engineering work on NSW rail assets without needing to demonstrate their competence to do so each time they begin work on a new activity or project[29].

In certain circumstances, TfNSW, may require tenderers for certain projects to demonstrate that they are authorised AEOs[30] in order to compete for the tender.

The aim of the AEO process is to provide TfNSW with assurance about the quality of the systems, competence and capacity of organisations undertaking work on TfNSW transport assets. It also aims to improve the ability of the Agencies to deliver and maintain NSW rail assets faster, more efficiently, and safely by removing the need for private engineering organisations to establish their engineering capability each time they tender for work in relation to a transport project.

Safety and its assurance is the most significant element associated with the AEO authorisation governance framework. The safety risk associated with “safety in design” and the changes in responsibility for competence assurance and engineering assurance is managed as part of the AEO’s safety management system.

The scope of an AEO’s authorisation will be dependent on the type of engineering services it performs according to engineering disciplines and asset life cycle stages.

The authorisation of an AEO may be limited in scope or breadth depending on the range of services the AEO provides. It is the responsibility of any party engaging an AEO to satisfy itself that the scope of the authorisation is appropriate for the task under contract, i.e. that the AEO has sufficient capacity to undertake the task, and has put in place appropriate governance and management arrangements to complete the project. The authorisation of an AEO by ASA does not, of itself, attest to those matters.

The AEO will be accountable for ensuring it has the systems, tools, capability and capacity to deliver engineering services for any contracted scope of work.

There are two broad types of AEOs:

- AEOs that have been delegated authority for network configuration control during any phase of the asset’s life cycle. These are referred in this Guide as “Client Agents”. Client Agents may be responsible for a Tier 2 or Tier 3 CCB
- Other AEOs that are authorised to perform engineering services, but do not have delegated authority from the ASA for network configuration decisions.

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8.4.1. Client Agent's Configuration Control Boards (CCBs)

Only AEOs that have been delegated authority for network configuration control (i.e. Client Agents) are required to demonstrate the capability to perform configuration management activities, and are required to establish CCBs to manage that process.

Client Agents are those organisations that have overall accountability for the asset at the particular stage of the assets life cycle.

Client Agents are accountable to CMAAC for the management of the assets under their control. They must implement the Configuration Management Plan (CMP) approved by the ASA CCB and establish a Tier 2 CCB. They must also appoint a Configuration Control Manager.

The CMP, which is prepared by the Client Agent, must identify how the delegated authority will be exercised and how assurances will be provided to CMAAC that configuration decisions have been managed properly. That is, the CMP, together with the AEOs Assurance and Governance Plan (see below), must detail the governance arrangements for the assurance of the asset, the membership and skills requirements of their CCB, processes to ensure appropriate Subject Matter Expert (SME) input and stakeholder consultation and engagement strategies while the asset is under the management of the Client Agent.

Other contracted AEOs operating within the remit of an existing Client Agent do not require a CMP. Rather, they operate under the governance arrangements established by the Client Agents, as approved by the ASA CCB.

A Tier 2 CCB may establish Tier 3 CCBs to manage the configuration of substantive sub-elements of the transport assets under its management.

Tier 2 CCBs are required to provide regular reports to CMAAC. Information that should be included in those reports is set out in the TfNSW Configuration Management Plan.

Such reports are required monthly, or as otherwise agreed with the ASA.

CCB reports are reviewed by subject matter experts within ASA who provide advice to CMAAC about the adequacy of the submissions and any issues that should be referred back to the CCBs for further attention.

Representatives of the Client Agent CCBs are invited to attend CMAAC meetings to present their reports and respond to any questions/concerns that might be raised by CMAAC members.

As at January 2015, the following Client Agents had established CCBs under the ASA framework:

- Infrastructure & Services CCB: responsible for the reference design, detailed design, testing, commissioning and completion of ISD rail projects
- Sydney Metro CCB: responsible for the project approval, reference design, detailed design, and the construction, testing, commissioning and completion of Sydney Metro Northwest (SMNW) civils works. A CCB will be established by the SMNW PPP, Northwest Rapid

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Transit, to manage the design, construction, testing, commissioning and completion of the SMNW railway infrastructure and systems

- Sydney Trains CCB: responsible for the operation and maintenance of assets within Sydney Trains' control (as per the Rail Services Contract). Sydney Trains has established the following Tier 3 CCBs for the following sub-systems:
  - Central regional infrastructure
  - Illawarra region infrastructure
  - North region infrastructure
  - West region infrastructure
  - Facilities
  - Rolling stock (including maintenance of NSW Trainlink rolling stock).

The SMNW and Sydney Trains CCBs have also established a joint Tier 3 CCB for the management of the ECRL conversion works for the SMNW.

8.4.2. Assurance and Governance Plans

Client Agents that are planning the development of a major project must develop an Assurance and Governance Plan once the feasibility of a project has been established.

During the acquire phase, the assurance and governance plan is maintained by the AEO responsible for the project at that time.

The Assurance and Governance Plan, along with the System Requirement Specification, sets out the acceptance arrangements and the delegated authority for acceptance at each intermediate project gateway.

The *TfNSW Assurance and Governance Plan - Guidelines* provide further detail about the purpose and requirements of the Plan.

8.5. Other Executive Committees

While ASA "owns" transport standards and configuration information, it does not determine what assets should be procured or the delivery strategy for procuring and operating those assets. These decisions are governed through other TfNSW Executive Committees and managed by other business units in TfNSW.

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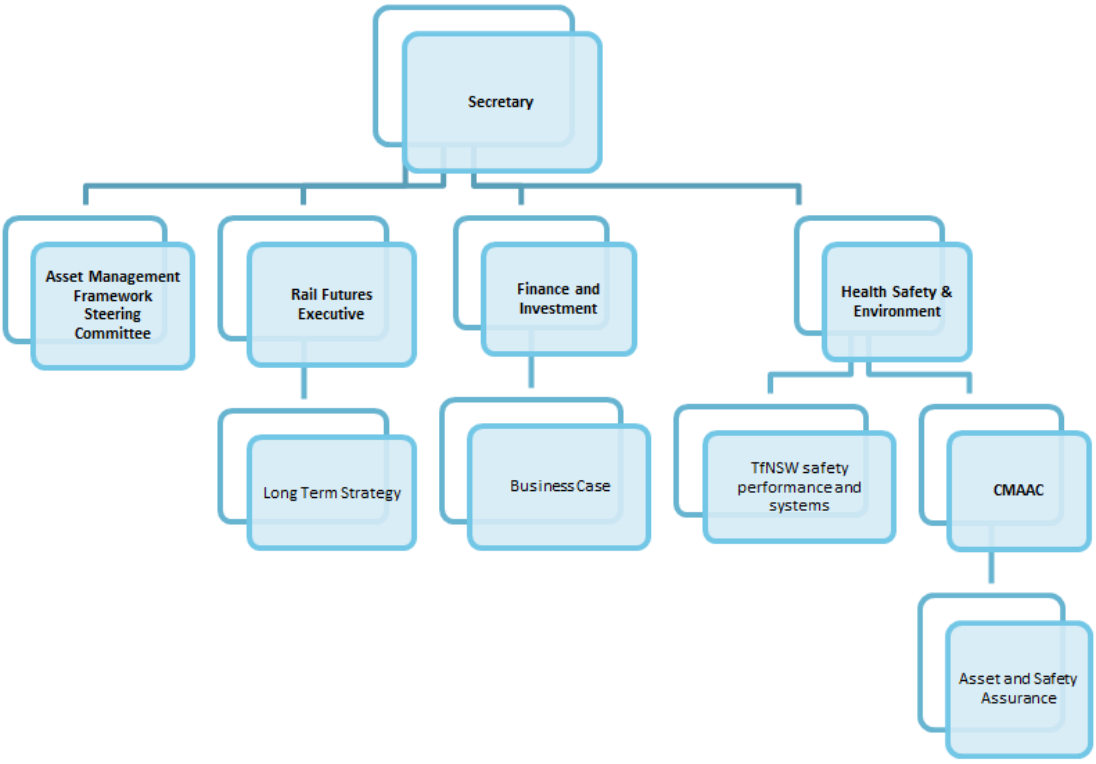
Figure 3: Rail Network Stewardship



As part of the steering of the TfNSW Asset Management Framework, the Asset Management Framework Steering Committee is responsible for enabling the evolution (development, implementation, maintenance and improvement) across TfNSW divisions/cluster modes by providing leadership and commitment, directing resources and by:

- Assuring that the Framework requirements are integrated into the organisation's business processes
- Assuring that the resources for the Framework are available
- Communicating the importance of effective asset management and of conforming to the Framework requirements
- Assuring that the resources for the Framework available
- Communicating the importance of effective asset management and of conforming to the Framework requirements
- Assuring that the Framework achieves its intended outcome(s)
- Directing and supporting personnel to contribute to the effectiveness of the Framework
- Promoting cross-functional collaboration within the organisation
- Establishing a Configuration Management Plan to manage change across the Framework
- Promoting continual improvement

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8.6. TfNSW Assurance 'Gates'

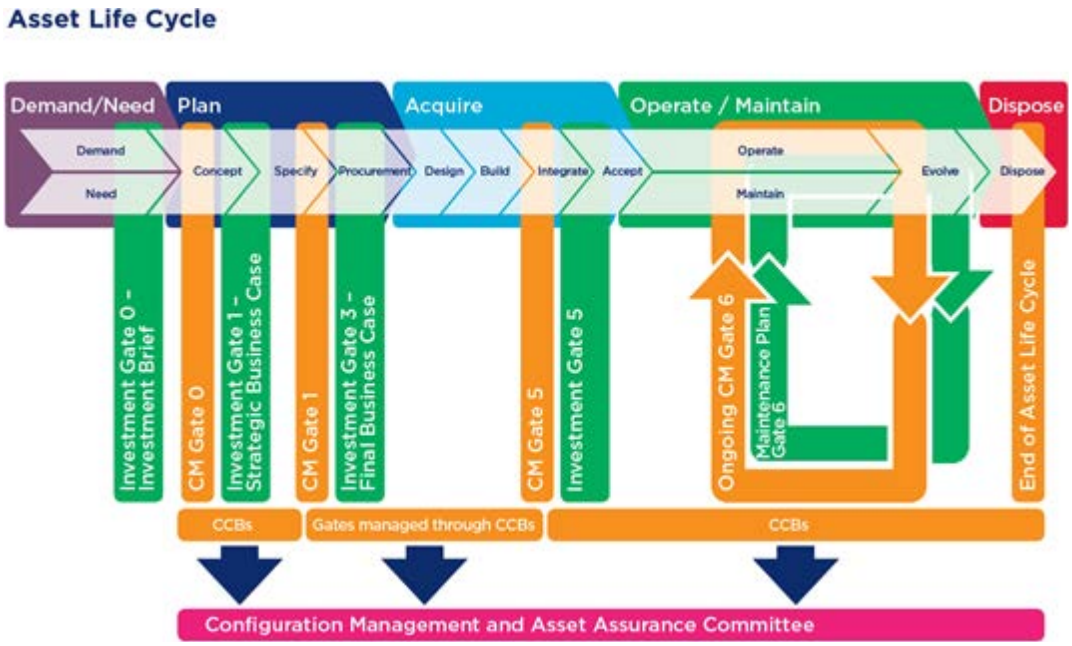
8.6.1. The Business Investment and Safety Assurance Gates

TfNSW has adopted a progressive approval process for the delivery of new or significantly altered assets onto the NSW transport network. This process involves two parallel streams of activity:

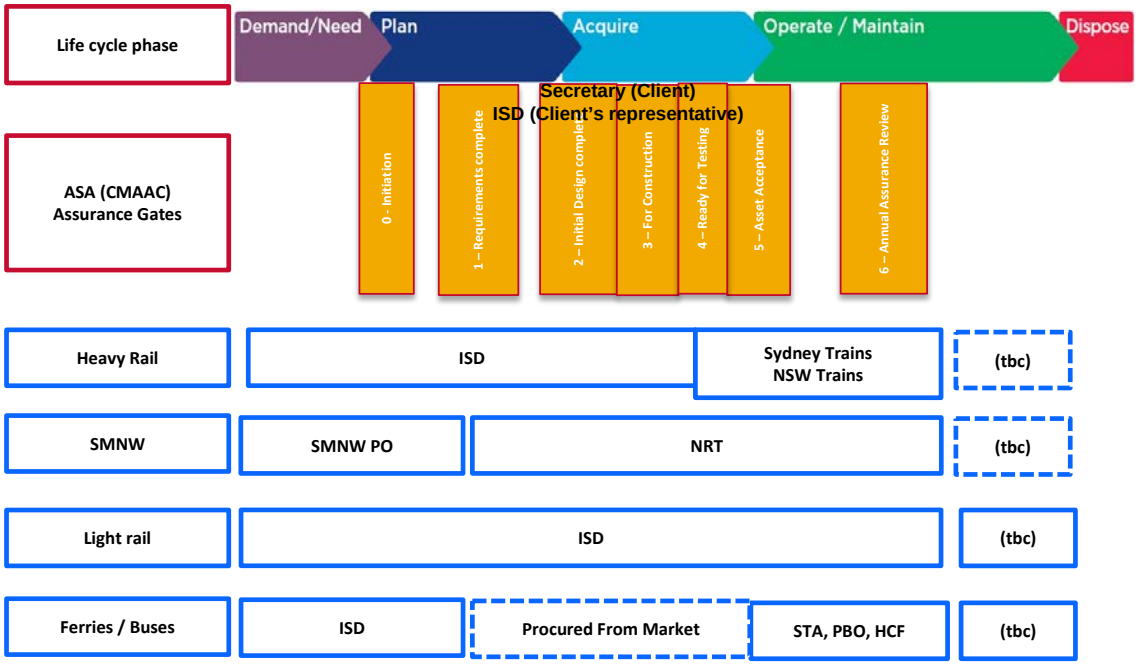
- approval of the business case for investment in the asset. Approval of the investment decision at each gate has been delegated by the Secretary to the Finance and Investment Committee (FIC)
- approval of configuration management and asset assurance which is the responsibility of CMAAC.

Aligning the business case approvals with the configuration and safety assurance approvals ensures that investment decisions are informed by the safety case associated with the design, construction and operation of the asset. This is illustrated in Figure 4 below.

Figure 4: Assurance gates throughout the asset life cycle



Asset standard and assurance – Life Cycle



Seven defined gates have been established for the management of investment and asset configuration changes. Responsibility for submissions for approval through the gates may (and usually will) shift between various parties during the life of an asset.

Assurance to CMAAC (or its delegate) must be provided by the Client Agent at the nominated gates for the project to progress past each gate. That assurance includes a clear argument to support the claim that the asset, if used for the purpose for which it is designed, will be safe, so far as is reasonably practicable.

The detailed requirements of each gate are specified in the TfNSW Configuration Management Plan. Appendix A lists each of the Configuration Management (CM) Control Gates and describes who would be the responsibly party for preparing submissions for each of the gates.

The TfNSW Configuration Management Plan includes a configuration change classification system that defines the scope of a configuration change as Significant, Moderate or Minor.

Significant configuration change requests at gates 1 and 5 must be presented to the CMAAC, unless otherwise determined on a case by case basis by the CMAAC.

Decisions for all other configuration change requests may be delegated to a CCB in accordance with the Configuration Control Plans approved by the ASA CCB.

8.6.2. Roles of TfNSW Divisions with respect to Rail Safety Assurance

The general functions of each of the TfNSW Divisions and their role with respect to asset assurance is set out at Appendix B. In sum:

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Office of the Secretary is the Client for all works undertaken on NSW transport assets and provides a range of services including general business and Cabinet support, audit and risk, and corporate planning and reporting to provide overarching corporate governance.

Finance and Investment is the Client's Agent for the purposes of consolidated and integrated planning and overall investment advice for all modes. FID provides financial and management accounting for total budget control, facilitates investment governance and act as a challenger in decision-making, providing strong commercial capability and property management.

Infrastructure & Services (ISD) is the Client's Agent responsible for providing integrated end-to-end planning, development, delivery of transport assets, and operations of transport services that customer's value. They transform strategy into seamless transport networks and services, efficiently and effectively. ISD acts as the Client's Representative throughout the life-cycle of the asset, and is the Client's Agent for the purpose of contracting with Transport Services.

Customer Services Division (CSD) and Freight, Strategy and Planning (FS&P) are the internal advocates for the transport systems customers (passengers and freight respectively).

- FS&P develops strategy, policy and planning for freight, public transport and roads networks, ensuring close alignment to TfNSW priorities as well as managing safety and standards for the whole of TfNSW. It consolidates transport data collection, model development, modelling and custom research and surveys.
- CSD sustains strong focus on the customer and the end-to-end customer journey experience and manages public affairs, stakeholder and community engagement and delivers customer relations and government services, including pricing and revenue

8.6.3. Concurrent Duty Holders and Stakeholder Consultation

As explained in Section 6.3 of this Guide, there are numerous parties that may contribute to the safe use of a transport asset. Each of these parties hold safety duties in relation to the scope of activities they undertake, and as such are considered "concurrent duty holders" under the law. Such duty holders include, but are not limited to those parties that might design, construct, operate and/or maintain transport assets.

It is critical that each of these parties is effectively consulted and informed throughout the life cycle of an asset. Such consultation is necessary to ensure that other parties that have had, or will have, roles to play in the management of the asset, are able to make informed decisions with respect to the safety and performance of the asset.

Both the WHS Act and Rail Safety Law explicitly require all parties with control over an asset to actively identify relevant stakeholders and to engage in consultation with them.

Conversely, all stakeholders have an obligation to participate in such consultations and to cooperate with configuration control managers in identifying and resolving issues.

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The TfNSW Systems Engineering Standard and TfNSW Configuration Management Plan also require that primary stakeholders are identified and adequately consulted. Primary stakeholder consent from affected business units (both internal Divisions within TfNSW as well as transport service providers) is a requirement for CMAAC approval of a configuration change request.

The requirement for effective stakeholder consultation applies from the early planning stage of a new project. Such stakeholders include future operators/maintainers of the asset. Where a future operator/maintainer has not yet been identified or selected, it is good practice for those planning and designing new assets to nominate a “shadow operator” to consider operational and maintenance requirements for the future asset.

Configuration management stakeholder consent does not constitute technical approval, even if the stakeholder has the capability to make such an assessment. Accountability for technical approvals remains with the party that has accountability for the configuration management of the asset at each stage of the asset’s life cycle.

8.7. Asset Acceptance and Asset Handover

As outlined above, the responsibility for the management of an asset may transfer between different parties during the asset’s life.

At each stage where an asset is handed over between parties, it is imperative that the party handing over the asset provide sufficient information to allow the other party to be assured of the safety of the asset, and the residual risks associated with the asset that must be managed by the receiving party.

The extent of such assurance will depend on the complexity and risks associated with the asset.

The *TFNSW Asset Handover Requirements* standard provides the basic requirements for asset handover from the AEO who acquires the asset to the AEO who will operate and maintain the asset.

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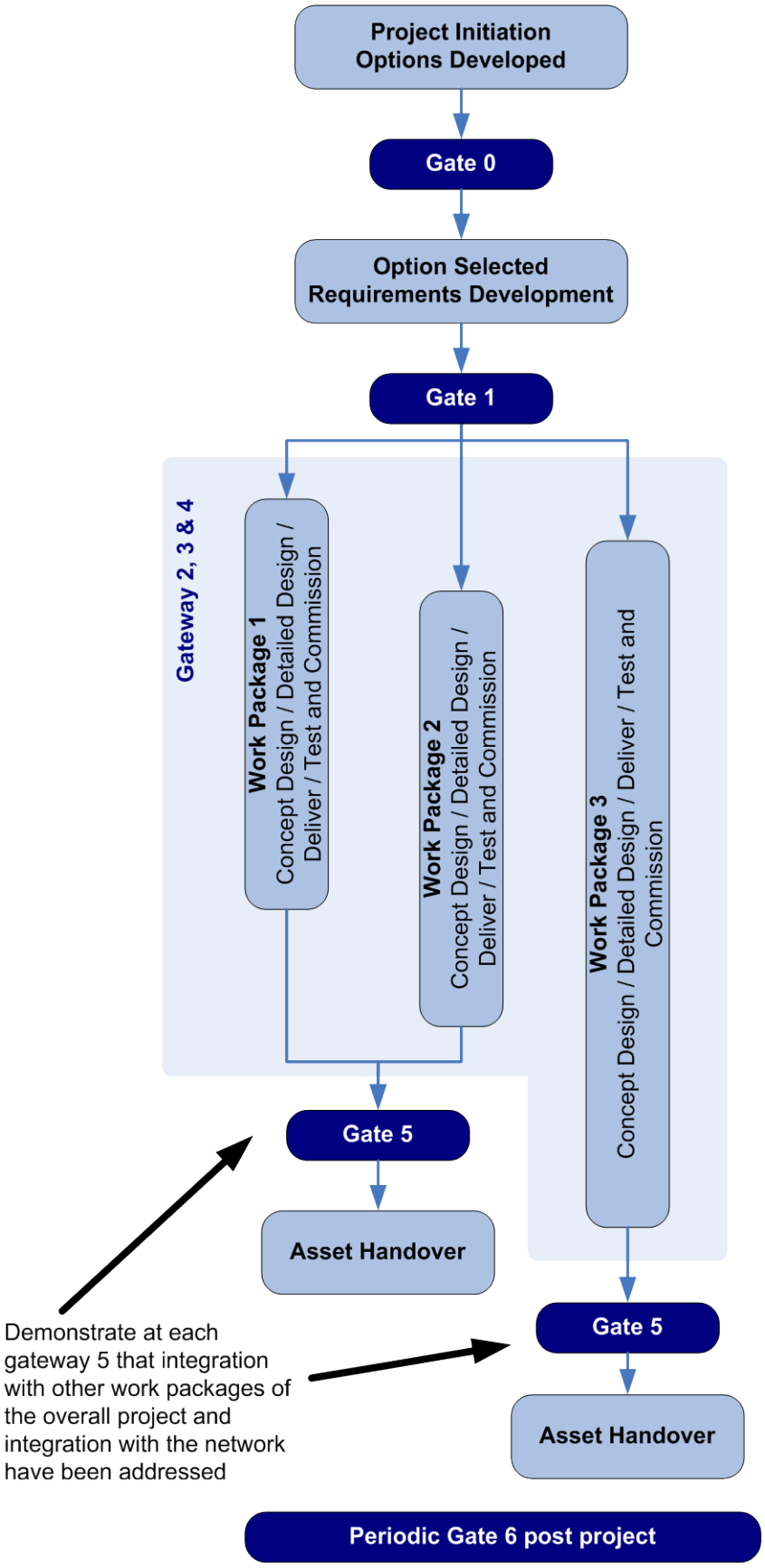
Figure 5 shows a typical timeline for planning asset handover for a new or altered asset.



Under the ASA Framework, the defined term, “Asset Acceptance” at Gate 5 relates to the acceptance of the asset by CMAAC on behalf of TfNSW i.e. TfNSW must accept the asset is safe and fit for purpose before handing it over to an operator/maintainer for use.

In this sense, Asset Acceptance **does not** mean the acceptance of the asset by the operator/maintainer.

However, for CMAAC to accept the asset as ready for service, it must be satisfied that operational matters have been effectively addressed. The *TFNSW Asset Handover Requirements* provides that the delivering party must prepare a safety argument to describe the risks and how they would be controlled to ensure safety, SFAIRP. This information must be made available to the receiving party. Confirmation that the receiving party has this information and can manage and control those risks must be included in the submission to CMAAC at Gate 5.

This concept is illustrated in Figure 6 below, where ISD is the Client Agent for the project acquisition and Sydney Trains is the receiving AEO for operation and maintenance.

In this case, ISD must work in partnership with Sydney Trains to ensure that all operational matters have been considered and that Sydney Trains is satisfied that the asset can be put into service safely. ISD is accountable for submitting the safety argument to CMAAC.

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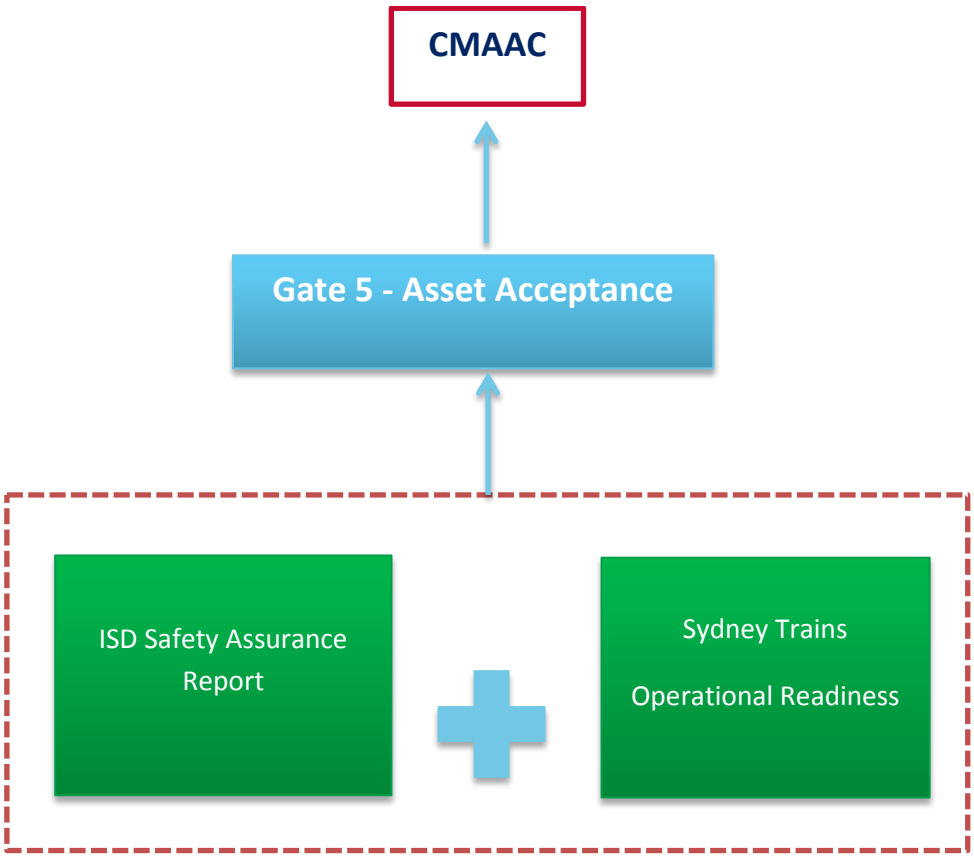
Figure 6: Components of the safety argument at Asset Acceptance Gate 5



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It is expected that organisations involved in the asset handover process would have their own procedures that provide detailed information specific to their situations.

The standards and processes to be followed when ISD hands over control of the asset to Sydney Trains or NSW Trainlink for their operation and maintenance is set out in the TfNSW Asset Handover Standard (4TP-ST-188/2.0). The standard reflects the contractual requirements set out in the Rail Services Contracts between TfNSW and Sydney Trains and NSW Trainlink respectively.

Asset Handover is the point in time at which the control of an asset is transferred from one entity (in this case ISD) to another entity (in this case Sydney Trains) for their on-going operation and maintenance.

Asset Handover relates to the control of assets for their on-going operation and maintenance, and not vesting which concerns the ownership of assets. In Handing over assets to Sydney Trains, TfNSW is not handing over the ownership of the asset.

The Asset Handover process has three key phases:

Planning Phase: ISD is responsible for developing an Asset Handover Strategy, in consultation with the operator/maintainer. The strategy includes, amongst other thing an agreed Configuration Materials Inventory listing the materials to be transmitted and the proposed date of transmittal. The ISD Project Manager for each asset must implement the Asset Handover in accordance with this agreed Strategy

Collation and Provision of Documentation: ISD must provide a Notice to Sydney Trains or NSW Trainlink at least 6 weeks prior to a projected Asset Handover date. A copy of the notice is supplied to TSD to consult with Sydney Trains or NSW Trainlink to determine whether the handover of the new asset may require any amendments to Rail Services Contract.

Prior to Asset Handover, ISD must supply Sydney Trans or NSW Trainlink with:

- The Configuration Materials
- Maintenance & operating manuals
- Asset information, data & drawings
- Financial information
- Certification of conformity to ASA Requirements and assets being safe to operate and fit for purpose. This certification is the approval of the Configuration Change Request by CMAAC at Gate 5 of the assurance approval process

Asset Handover: Prior to Asset Handover, a Handover Certificate is agreed between ISD and Sydney Trains or NSW Trainlink, which includes any conditions that have been agreed between the parties. The Handover Certificate should provide assurance to the recipient that TfNSW has met its obligations as a supplier under the safety law.

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Responsibility for the control of the asset(s) identified in the Handover Certificate is transferred from ISD to Sydney Trains or NSW Trainlink from the handover date on the Certificate. At this time, the ISD CCB ceases to have control of the asset, and the relevant Sydney Trains or NSW Trainlink CCB takes over configuration management of the asset for the purpose of operation and maintenance.

Similarly, Sydney Trains or NSW Trainlink would operate and maintain that asset under their own respective accreditations with the ONRSR[31].

8.8. Assurance Tools

All organisations that have control over the configuration of a transport asset have a statutory duty to ensure the safety of the asset, SFAIRP.

There are various means to discharge this duty, including through a reliance on the assurance activities of other parties who may be in control of aspects of the assets configuration during its life.

The range and nature of assurance tools that might be applied by such duty holders during the life of an asset will vary in range and depth depending of the complexity of the asset and the delivery model for its design, construction, operation and maintenance.

8.8.1. Monitoring, Audit and Inspection

Organisations responsible for the management of TfNSW assets during the life cycle of the asset (Client Agent AEOs) may be subject to surveillance by a number of parties with respect to the safety of the asset, for example through:

- Internal audit
- ASA reporting and auditing
- Transport Services Division (TSD reporting and auditing
- Office of the National Rail Safety Regulator (ONRSR) reporting and auditing.

The scope of any surveillance (e.g. frequency, breadth and depth of audits) by any party may vary according to the perceived risk of the activities being managed by the Client Agent and relevant contractual obligations. The higher the perceived risk, the greater surveillance parties may wish to exercise over the organisation responsible for the asset to be assured of the safety of the asset.

The perceived risk could be influenced by:

- the complexity of the asset under management and the safety hazards/risks posed by the activity

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- any lack of confidence in the experience of the AEO, or in the maturity of their safety and engineering systems
- evidence of poor performance.

8.8.2. Independent Certification

Where major projects are delivered by a third party (such as under a Public Private Partnership), the parties to the relevant contract may agree to appoint a joint Independent Certifier (IC) for the project to provide independent certification that the parties have applied the appropriate standards and met all relevant specifications in the contract in relation to the design and construction of the asset.

8.8.3. Independent Safety Assessor

Under ASA standards, all AEOs must provide suitable and sufficient assurance that any new or altered assets will be sufficiently safe in operation. Such assurance should be subject to professional critical review to ensure its validity[32].

The acceptance by CMAAC of assets into operation will be dependent on such critical review.

For any "safety significant" changes to TfNSW assets, the requirement for a professional critical review is met by the appointment of an Independent Safety Assessor (ISA)

It is the AEO's responsibility to appoint the ISA. The ISA should be appointed early in the asset life cycle, so that it may provide a summary report at the preliminary design review, a design independent safety assurance report at the critical design review and a final safety assessment report at final acceptance.

Further detail on the ISA process is provided in the *TfNSW Independent Safety Assessor (ISA) Requirements (Interim) 2014.*

8.8.4. Application of Safety Assurance Tools under Differing Delivery Strategies

As noted above, the application of these various assurance tools will differ depending of the delivery strategy adopted for any new major project.

Figure 7 illustrates an example of a safety assurance model for a "design and construct contract" where ISD engages an AEO to design and construct an asset. In this scenario, TfNSW has elected to control and manage the construction of the asset, and therefore remain the accredited RIM under the Rail Safety Law. Both TfNSW and its contractor therefore hold duties simultaneously under both the WHS Act and Rail Safety Law.

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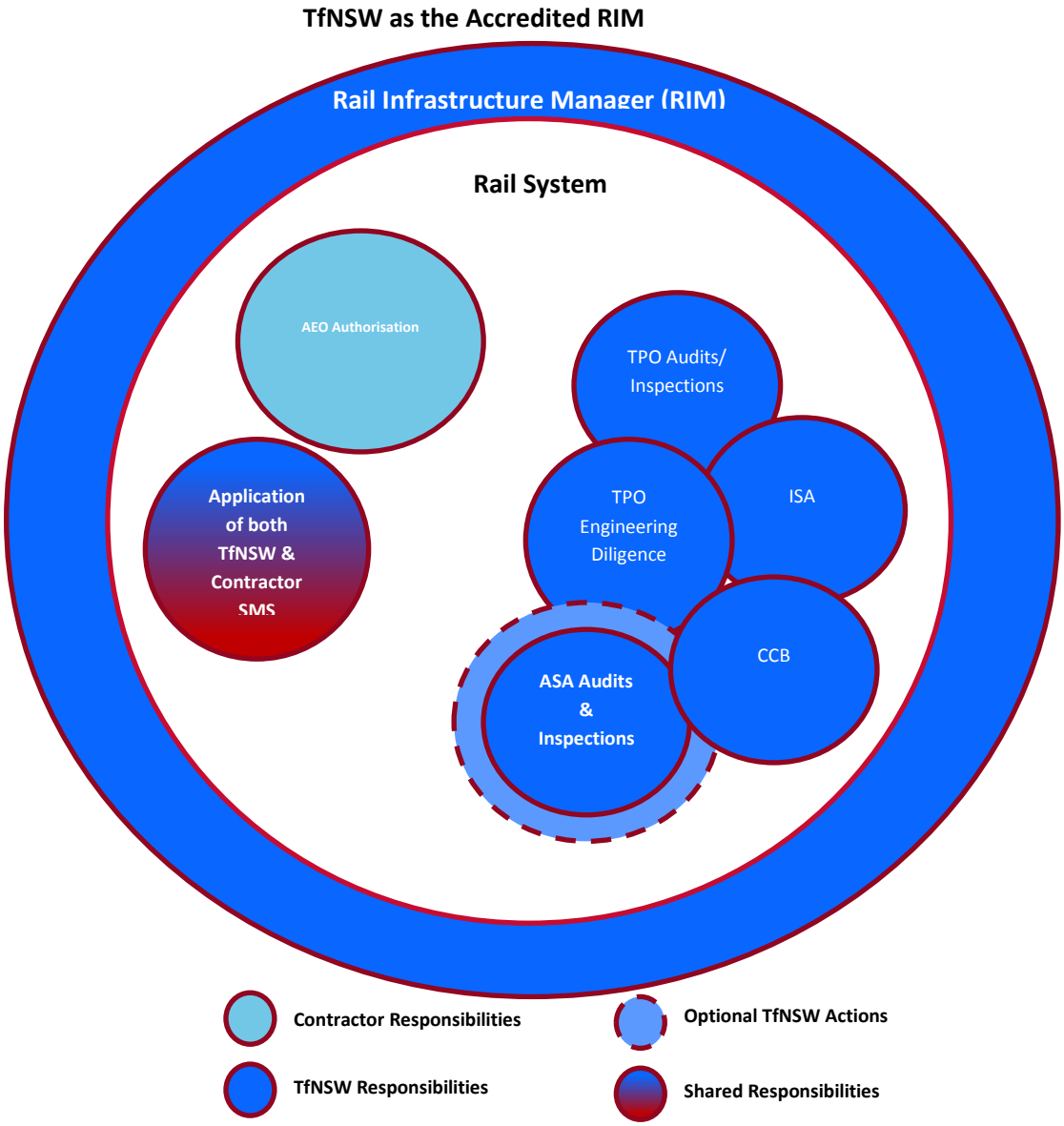
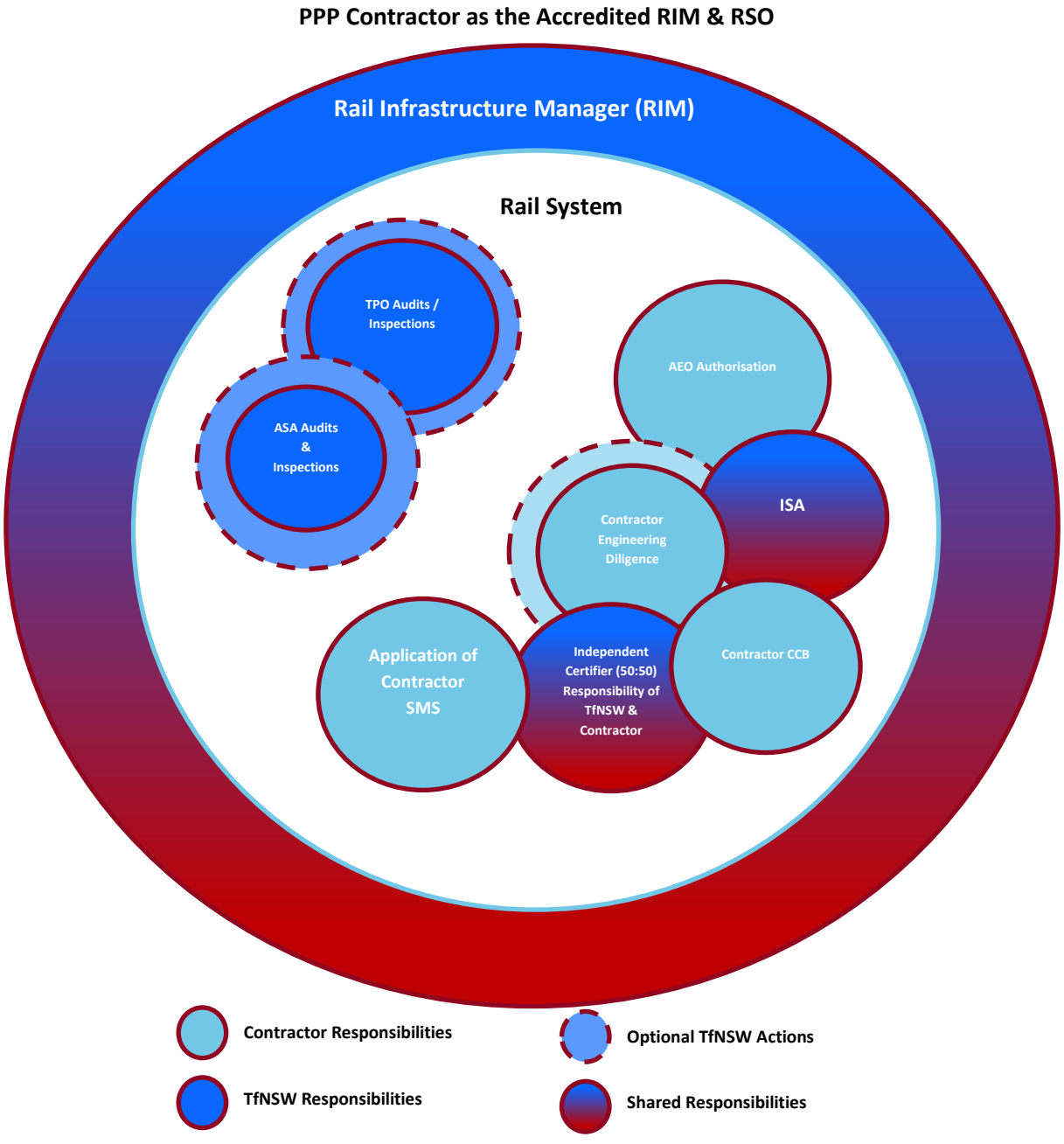
Figure 7: Safety Assurance in a Design and Construct Project with TfNSW as the Accredited RIM (Source Henry Davis York)



In contrast, Figure 8 illustrates an example of a safety assurance model for a PPP Project where TfNSW engages a third party to design, construct, operate and maintain an asset. In this example, the contractor is the accredited RIM for all phases of the project.

Assuming TfNSW undertakes no railway operations on behalf of the accredited PPP, TfNSW will not hold duties under the *Rail Safety Law,* except to the extent that it may participate in the design of the railway. TfNSW will, however, hold duties under the *WHS Act.* Those duties will be commensurate with the degree of control that TfNSW has over the project. In any case, TfNSW will still need to be assured that the project will be safely delivered.

Figure 8: Safety Assurance in a PPP Project with PPP Contractor as Accredited RIM & RSO



As these examples illustrate, the extent of assurance activities that need to be undertaken by each party will vary in each particular project depending on the contractual terms of the project and on the complexity and risk inherent in the project.

8.9. Regulatory Requirements

The Agencies are committed to ensuring compliance with all regulatory requirements of their businesses.

In terms of safety, this means compliance with both the *WHS Act* and *Rail Safety Law.*

The requirements of these Acts are discussed in Section 6 of this Guide.

To facilitate compliance, it is good practice to document a Regulatory Strategy for all major projects early in the planning stages of the asset. For rail assets, this should include an Accreditation Strategy that sets out all Railway Operations that will be associated with that asset, and identifies each duty holder that will need to be accredited to undertake those railway operations.

The *TfNSW System Safety Standard for New or Altered Assets* describes the requirements of Authorised Engineering Organisations (AEOs) to deliver safe changes to the transport network. The requirements are intended to make sure that RTOs and TfNSW can meet their specific duties under the legislation by relying on the assurance and evidence provided by AEOs and the acceptance of those assurances by the CMAAC.

The ONRSR has issued a number of Guidelines designed to assist duty holders understand their safety duties and the expectations of ONRSR on a range of regulatory requirements. Managers responsible for any aspect of configuration management during the life cycle of an asset should familiarise themselves with relevant ONRSR Guidelines:

8.10. Rail Services Contracts (RSC)

TfNSW has obligations to Sydney Trains and NSW Trainlink to supply assets that are safe and fit for purpose. It also has obligations as the procurer and contract manager of Sydney Trains and NSW Trainlink services to monitor and manage the performance of the agencies in achieving safe, secure, fit-for-purpose, customer centred, efficient and coordinated transport services.

Conversely, Sydney Trains and NSW Trainlink have obligations to TfNSW, as the procurer of their services, for the safe operation and maintenance of those assets.

The contractual obligations on Sydney Trains and NSW Trainlink in relation to the performance of their services, including the safety of their operations, is set out in Rail Services Contracts (RSCs) with each agency.

The RSCs include obligations to comply with ASA standards.

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They also provide for the setting of KPIs and the reporting of safety related information, including safety incident and trends. They also provide that TfNSW may seek further information and undertake audits of the agencies' operations.

Infrastructure Services Division (ISD), which manages the RSCs on behalf of TfNSW, meets monthly with both Sydney Trains and NSW Trainlink. Safety matters are reviewed and discussed at those meeting.

ISD also reviews all serious incidents and may request further information from the agencies on any internal investigation, or undertake its own audit or investigation in response to an incident.

ISD is also notified by the Safety Quality and Environment Unit in FS&P of any external investigation of the agencies by the Australian Transport Safety Bureau or Office of Transport Safety Investigations (NSW) and is provided the opportunity to review and comment on draft investigation reports.

TSD may also follow up with the agencies on any findings or recommendations made by investigators and seek advice from the agencies about their processes to address those issues.

8.10.1. Case Study: ASA, Accreditation and Contractual Relationships – ISD Project

Figure 9 below illustrates how the configuration control of an asset will move between parties in the delivery of a project where the design and construction of the asset is managed by ISD under TfNSW's accreditation and the asset is handed over to Sydney Trains for operation and maintenance under its Rail Services Contract with TfNSW. The associated regulatory requirements, including accreditation, and contractual requirements are also depicted.

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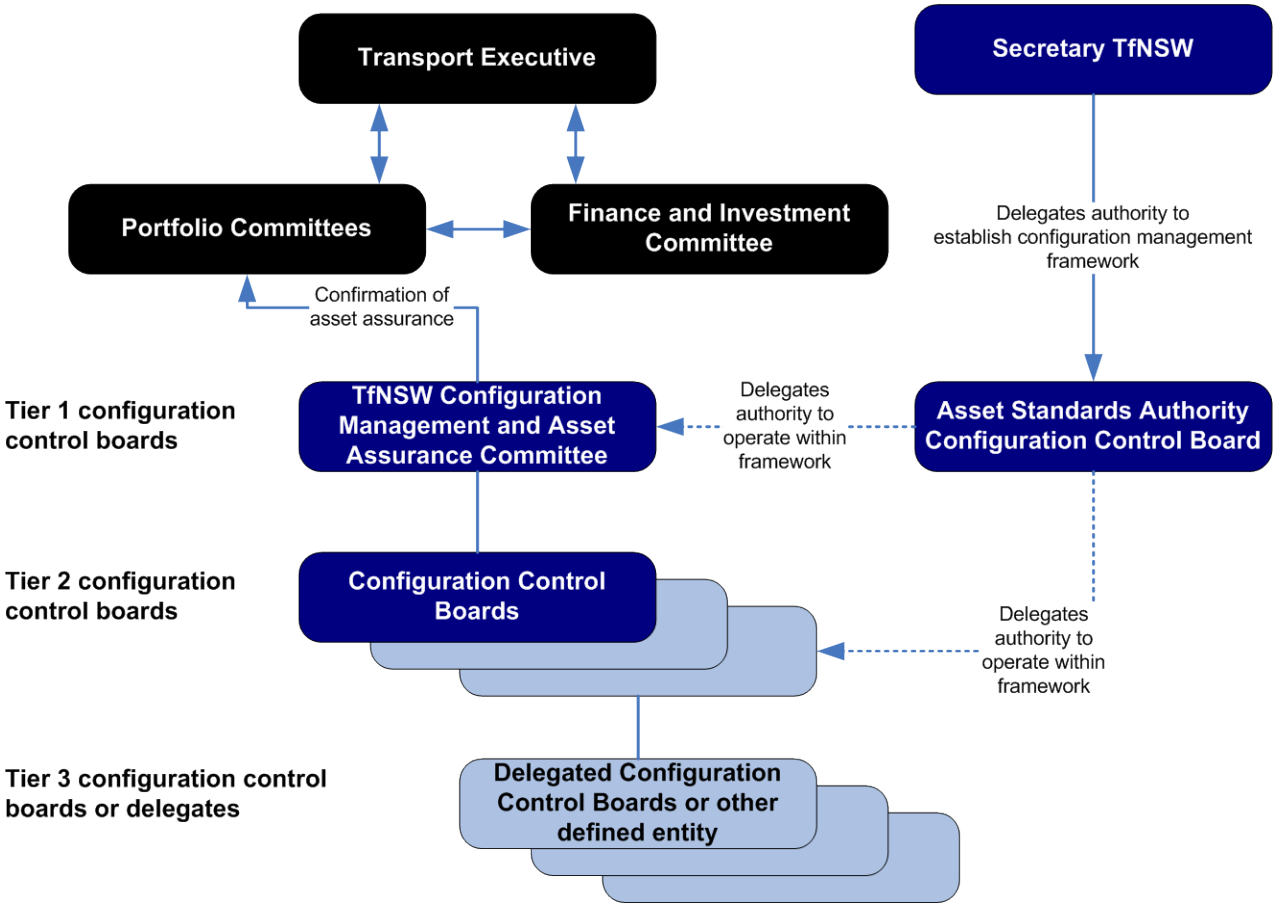
Figure 9: Overview of parties responsible for asset management during the life of an asset delivered by ISD and operated and maintained by Sydney Trains



While different organisations may be involved in these processes under different delivery strategies, the concepts and principles of the asset assurance process remains the same.

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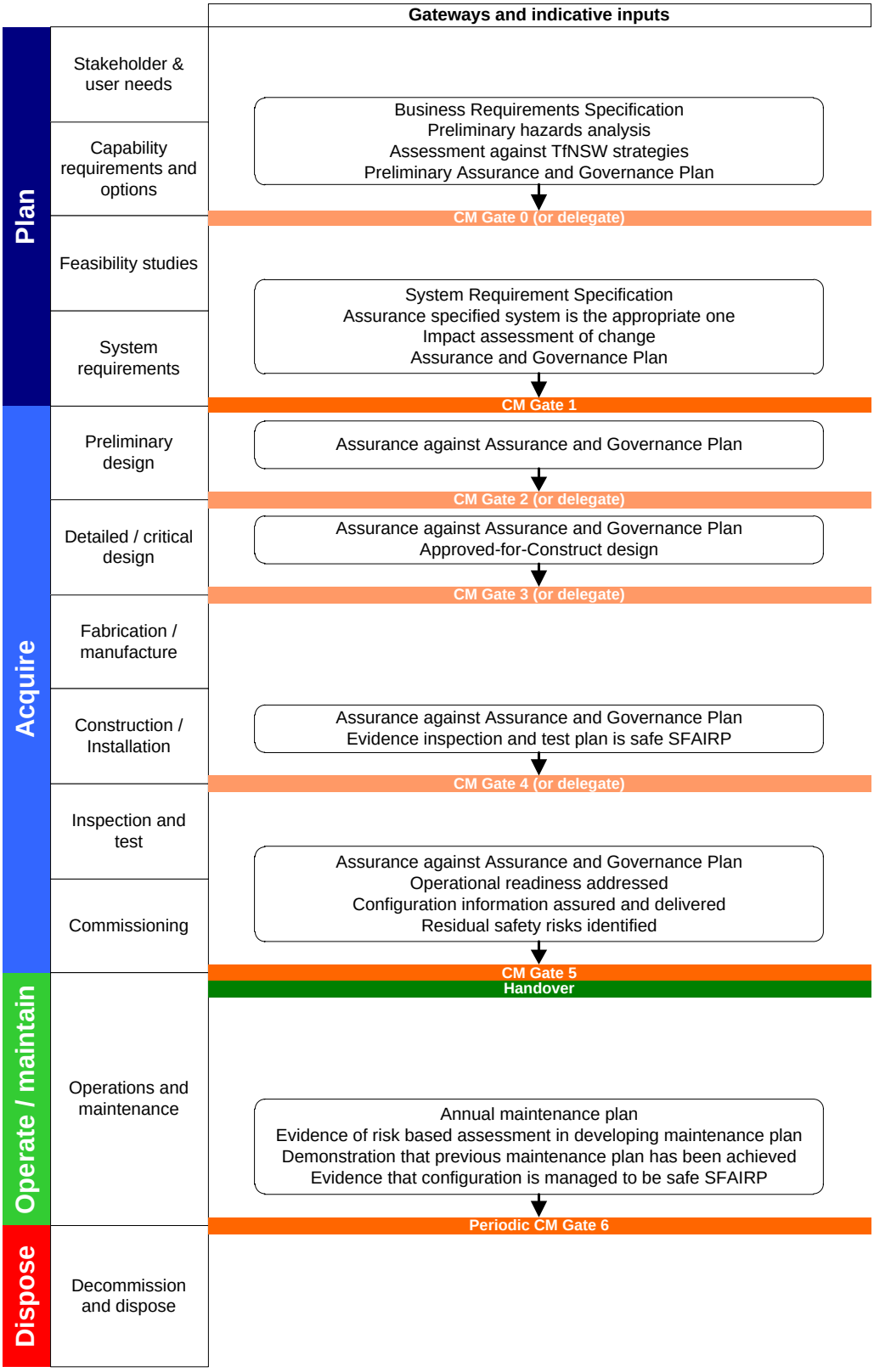
Appendix A Configuration Management Gates and Responsibilities Across the Asset Life Cycle



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Appendix B Division Responsibilities

B.1. Customer Services Division (CSD)

Responsible for ensuring the needs, preferences and opinions of TfNSW customers are paramount in decision-making, planning and action.

May initiate and implement projects involving transport assets. These are usually relatively minor in nature, such as signage for way-finding purposes. Such projects would not normally be subject to the ASA assurance framework. However, CSD would need to make an assessment of safety impacts of the project and comply with TfNSW Safety Change Management Standard.

- Sustains strong focus on the customer and the end-to-end customer journey experience.
- Production of communications materials, marketing, behavioural and education campaigns.
- Manages public affairs, stakeholder and community engagement, including support to projects
- Delivers customer relations and provides government services
- Manages pricing and revenue within the current policy framework

B.2. Freight Strategy and Planning Division (FS&P)

Responsible for integrating freight strategies and programs to meet the current and future needs of the NSW economy and particularly regional economies.

May initiate and implement projects involving transport assets. These are usually relatively minor in nature, such as wayside equipment for noise detection. FS&P would need to make an assessment of safety impacts of each project and comply with TfNSW Safety Change Management Standard. Where the projects involve changes to the configuration of rail assets, FS&P would be subject to the ASA assurance framework.

FS&P develops strategy, policy and planning for freight, public transport and roads networks, ensuring close alignment to TfNSW priorities.

- Manages safety and standards for the whole of TfNSW.
- Create of a clear line of sight for all freight-related stakeholders.
- Consolidates transport data collection, model development, modelling and custom research and surveys.
- Creates a flexible pool to pick up high priority and urgent requests.

FS&P is made up of the following branches:

- Transport Strategy

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- Freight Industry
- Transport Policy
- Innovations, Research and Reform
- Transport Networks
- Asset Standards Authority
- Centre for Road Safety

B.3. Infrastructure and Services (ISD)

ISD have sole accountability for seamless service planning, project development and delivery, and, asset operation maintenance and planning. FS&P are responsible

- for integrating freight strategies and programs to meet the current and future needs of the NSW economy and particularly regional economies.
- for ensuring services across the whole transport portfolio meet the current and future needs of customers.
- enters into contracts with other transport agencies or private partners who operate and/or maintain transport services.

The contracts specify the obligations of the contracted parties to comply with the ASA safety assurance framework, including preparing annual Gate 6 (Asset Assurance review) submissions to CMAAC.

May initiate and implement projects involving transport assets[33]. These are usually relatively minor in nature, such as wayside equipment for noise detection. FS&P would need to make an assessment of safety impacts of each project and comply with TfNSW Safety Change Management Standard. Where the projects involve changes to the configuration of rail assets, FRD would be subject to the ASA assurance framework.

As a Division focused on service delivery to:

- provide integrated end-to-end planning, development, delivery of transport assets, and operations of transport services that customers value.
- transform strategy into seamless transport networks and services, efficiently and effectively.
- drive strategy to ensure the right outcomes and value for money for our customers.
- integrate our services for a seamless customer experience.

The Infrastructure and Division provides integrated end-to-end planning, development, delivery and operations of transport services that customers value to:

- transform strategy into a seamless transport services, efficiently and effectively

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- drive strategy to ensure the right outcomes and value for money for our customers
- provide services that integrated for a seamless customer experience
- deliver service development-focused, safe, fast, quick and easy.

B.4. Finance and Investment (FID)

The Finance and Investment division provides financial and management accounting for total budget control (capex and opex).facilitate investment governance and act as a challenger in decision-making. This division also provides the organisation with strong commercial capability to support high value, complex projects and service model. FID manages transactions and supports commercial development opportunities for public transit real property.

FID is made up of the following branches:

- Finance
- Evaluation and Benefits
- Capital Investments
- Commercial Structuring
- Property

B.5. People and Corporate Services (PaCS)

People and Corporate Services (PaCS) is responsible for human resources, information communication technology and investigative and legal services across the transport cluster.

It aims to drive organisational efficiency through the development, implementation and continuous improvement of business systems and processes.

PaCS also drives the overall reform agenda across the transport cluster to create an efficient, effective and service-oriented workforce.

PaCS is made up of the following branches:

- Human Resources
- Group Information Technology
- Legal Services and Governance
- Organisational Development
- Transport Shared Services
- Information, Corporate Policy and Investigations

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B.6. Office of the Secretary

The Office of the Secretary provides a range of services including general business and Cabinet support, audit and risk, and corporate planning and reporting. The accountabilities are to:

- ensure financial and other relevant risks are reported and managed across the Transport cluster
- provide proactive, strategic, timely information and business support for effective decision-making
- coordinate TfNSW's involvement in Cabinet processes

The Executive Director is responsible for leading and managing the Office of the Secretary, providing timely expert executive and professional support to the Secretary.

The Office of the Secretary is made up of the following branches:

- Audit and Risk provides frameworks and advice to assist management in the effective and efficient operations of the business. Responsibilities within TfNSW include:
    - framework development and review
    - independent assurance and advice
    - assisting decision making and performance improvement in the areas of audit, enterprise risk and corruption prevention.
- Internal Audit is an independent, objective assurance and consulting function which reports to the Secretary and the TfNSW Audit and Risk Committee. Internal Audit helps TfNSW accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve operational controls, governance and risk management processes
- Corporate Planning and Reporting helps build a shared vision and establish collective priorities by developing corporate strategy including the TfNSW Corporate Plan 2012-17 *Connections* and alignment of divisional business plans. The team also coordinates whole of cluster performance reporting as well as managing the Annual Report and the Secretary's performance agreement

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Appendix C References

TfNSW Asset Management Framework Overview	https://confluence.transport.nsw.gov.au/display/AM/TfNSW+Asset+Management+Framework
Office of the National Rail Safety Regulator Asset Management Guideline (2014)	https://www.onrsr.com.au/resource-centre-document-finder/publications/guidelines
Office of the National Rail Safety Regulator Major Projects Guideline (2014)	https://www.onrsr.com.au/resource-centre-document-finder/publications/guidelines
Office of the National Rail Safety Regulator Meaning of Duty to Ensure Safety so Far as is Reasonably Practicable Guideline, (2014).	https://www.onrsr.com.au/resource-centre-document-finder/publications/guidelines
Rail Safety National Law NSW	http://www.legislation.nsw.gov.au
Sydney Trains Rail Services Contract	
T MU AM 01005 ST TFNSW Asset Handover Requirements	http://www.asa.transport.nsw.gov.au/ts/asa-standards
T MU AM 00002 GU TfNSW Assurance and Governance Plan - Guidelines	http://www.asa.transport.nsw.gov.au/ts/asa-standards
T MU AM 04001 TfNSW Configuration Management Plan	http://www.asa.transport.nsw.gov.au/ts/asa-standards
T MU MD 00004 TfNSW Independent Safety Assessor (ISA) Requirements (Interim)	http://www.asa.transport.nsw.gov.au/ts/asa-standards
T MU AM 06006 ST TfNSW Systems Engineering Standard	http://www.asa.transport.nsw.gov.au/ts/asa-standards
TS 2001: 2013 TfNSW System Safety Standard for New or Altered Assets	http://www.asa.transport.nsw.gov.au/ts/asa-standards
Work Health and Safety Act 2011	http://www.legislation.nsw.gov.au
Register of Asset Information System and Repositories	http://www.asa.transport.nsw.gov.au/ts/asa-standards
TfNSW: Fixing the Trains: Safety Accreditation Context Paper (December 2012)	
NSW Trains Rail Services Contract	
NSW Trains Access Agreement(s)	
NSW Train Maintenance Agreement with Sydney Trains	

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1 See Fixing the trains: Safety Accreditation Context Paper (TfNSW December 2012)
2 Certain light rail rolling stock is maintained by CAF Australia. Altrac Rail Consortium acts as TfNSW's agent in managing the CAF contract.
3 See Section 28K of the Passenger Transport Act 1990
4 The meaning of a Person Conducting a Business or Undertaking (PCBU) is explained under Section 5 of the WHS Act
5 Section 19, WHS Act
6 Sections 20-26, WHS Act
7 Section 27, WHS Act
8 Section 28, WHS Act
9 Section 29, WHS Act
10 An RTO is defined under Section 4 of the Rail Safety Law as a Rail Infrastructure Manager (RIM) and/or a Rolling Stock Operator (RSO)
11 Section 18, WHS Act
12 See Section 16 of the WHS Act and S50 of the Rail Safety Law
13 Section 16, WHS Act
14 Section 50(4), Rail Safety Law
15 The Rail Services Contracts (RSCs) between TfNSW and Sydney Trains and TfNSW and NSW Trainlink set out the detailed listing of RailCorp assets and their allocation to each of the three Agencies.
16 See Section 28K of the Passenger Transport Act 1990
17 Each agency undertakes business functions that are broader than these rail related functions (e.g. NSW Trainlink operates coach services). The Agencies must ensure the safety, SFAIRP, of all those non-railway operations as part of their obligations under the WHS Act.
18 Northwest Rapid Transit, as the Operating Company for the SMNW, will have the function of designing and constructing the SMNW rail infrastructure and rolling stock, as well as operating and maintaining those assets.
19 Due to commercial issues, Sydney Trains has retained the function of procuring the Waratah trains. Any new trains procured in the future for Sydney Trains operations will be managed by TfNSW.
20 Transport Administration (General) Regulation 2013, Clause 11
21 Transport Administration Act 1988, Section 3E and Schedule 1
22 With the exception of the Waratah trains. Future rolling stock acquisitions for Sydney Trains will be managed by TfNSW.
23 Section 52 (3), Rail Safety National Law (NSW)
24 Section 52 (4), Rail Safety National Law (NSW)
25 Some NSW transport assets may be owned by other government entities. For instance, certain railway assets are owned by Railcorp. TfNSW has been conferred with responsibility for managing those transport assets via statutory and contractual arrangements.
26 The Executive Director of the ASA reports to the Deputy Secretary Freight, Strategy and Planning, TfNSW, but also has a dotted line' direct to the Secretary. The ASA may provide independent advice directly to the Secretary where appropriate.
27 See 7.4 for a discussion about the role of AEOs
28 Itis important to note, however, that TfNSW's duties with respect to the safe design and construction of the asset continue to hold after the transfer of the asset to the operator/maintainer.
29 Subject to the scope of the work being within the AEOs authorisation
30 Or are willing and have the capacity to gain such authorisation
31 It is important to note, however, that TfNSW's duties with respect to the safe design and construction of the asset continue to hold after the transfer of the asset to the operator/maintainer
32 Refer to the System Safety Standard for New or Altered Assets
33 This is not always the case. For instance, the acquisition of the SMNW and Sydney Rapid Transport has been delegated to a Project Office specifically focused on that project.

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