Public Transport Authority

Public Transport Authority Third Party Rail Access

STATEMENT OF DEPRECIATED OPTIMISED REPLACEMENT COST

July 2025

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CONTENTS

List of Tables

List of Figures

Table of Acronyms

Acronym	Definition
AASB	Australian Accounting Standards Board
ASA	The American Society of Appraisals
CPI	Consumer Price Index
DORC	Depreciated Optimised Replacement Cost
FAR	Fixed Asset Register
GRV	Gross Replacement Value
Initial RAB	Initial Regulatory Asset Base
MEA	Modern Equivalent Assets
ORC	Optimised Replacement Costs
PPI	Producer Price Index
PTA	Public Transport Authority
RAB	Regulatory Asset Base
RLB	Rider Levett Bucknall WA Pty Ltd
RUL	Remaining Useful Life
Updated RAB	Updated Regulatory Asset Base
WACC	Weighted Average Cost of Capital

Executive Summary

The Public Transport Authority of Western Australia (PTA) is responsible for designing, building and maintaining the urban railway network that supports the operation of train services across the Perth metropolitan area. The primary purpose of the PTA's urban railway network is to provide public transport services across the Perth area.

Under the *Railways Access Code 2000* (the Code), the PTA provides access to third parties to the routes listed in Schedule 1 of the Code. The PTA is currently contracted with three third-party operators for access to two lines, for a very small number of access services. Third party use of the PTA urban network is not expected to increase from the current low level. Amendments made to the Code in 2023 require that the PTA determine the Depreciated Optimised Replacement Cost (DORC) of applicable railway infrastructure associated with each relevant route section.

This report is the PTA's statement setting out the determinations of the DORC for the eight route sections of the routes in Schedule 1 of the Code and the supporting material demonstrating the basis of each determination.

The DORCs calculated by the PTA are shown in Tables 1, 2 and with the total in Figure 1 below. In calculating the DORCs, the PTA followed the approach described in the PTA's Costing Principles that were approved and published by the Economic Regulatory Authority (ERA) in 2024. Consistent with the Code and the methodology set out in the PTA's Costing Principles, the DORC approach was used to value the assets that will form the basis of the Regulatory Asset Base (RAB) for use in setting the prices for third parties under the Code to access the relevant PTA railways.

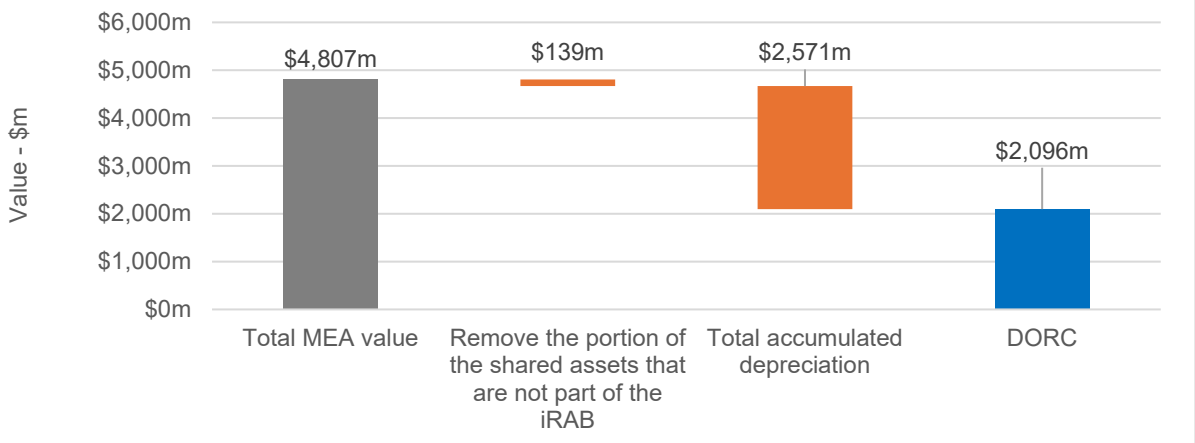
Table 1: Depreciated Optimised Replacement Costs

Route section number	Route name	DORCs	Route length (km)	Costs per km
49(a)	Perth - Clarkson	$525.83m	55.46	$9.48m
49(b)	Perth - Fremantle	$395.72m	21.01	$18.83m
49(c)	Perth - Armadale	$287.68m	29.11	$9.88m
49(d)	Perth - Midland	$273.40m	14.14	$19.34m
49(e)	Perth - Mandurah	$471.39m	70.91	$6.65m
50	Robb Jetty - North Quay - Leighton	$45.90m	6.00	$7.65m
50A	Beckenham - Thornlie	$85.37m	2.99	$28.55m
51	Armadale - Mundijong	$11.70m	13.39	$0.87m
Total		**$2,097.00m**	**213.01**	**$9.84m**

Table 2: DORC Calculation by Asset Class

	Total MEA value	In-scope MEA value	Total accumulated depreciation	DORC
Total	$4,807.2m	$4,667.9m	$2,571.4m	$2,096.5m
49(a)	-	$1,065.9m	$540.1m	$525.8m
49(b)	-	$946.1m	$550.4m	$395.7m
49(c)	-	$869.0m	$581.3m	$287.7m
49(d)	-	$678.1m	$404.7m	$273.4m
49(e)	-	$732.6m	$261.2m	$471.4m
50	-	$172.8m	$126.9m	$45.9m
50A	-	$152.4m	$67.0m	$85.4m
51	-	$51.0m	$39.8m	$11.2m

Figure 1: DORC Calculation



Approved: Michael Parker

1. Introduction

The Public Transport Authority (PTA) is a statutory authority that oversees the operation of all public transport in Western Australia (WA). The PTA was established under the *Public Transport Authority Act 2003* with the responsibility to direct, manage, maintain and control the Government Railways in WA.

The purpose of the *Railways (Access) Act 1998* (the Act) and the Railways (Access) Code 2000 (the Code)[1] is to establish a rail access regime that encourages the efficient use of, and investment in, railway facilities by facilitating a contestable market for rail operations. The Act requires nominated parts of the rail network managed by the PTA to be made available for access by third party rail operators. Schedule 1 of the Code lists the sections of the PTA rail network covered by the Code.

1.1. Purpose of this Statement

The purpose of this statement is to meet the Code requirements for submission of Depreciated Optimised Replacement Costs (DORCs) for determining an initial regulatory asset base (iRAB).

Part 5, Division 3 of the Code contains provisions for the RAB. Section 47J within Division 3 of the Code is the provision relating to the iRABs. The PTA must determine the DORC for each route section and submit the DORCs to the ERA.

Table 3: Section 47J(1) of the Code

	Section 47J(1) Initial regulatory asset base
(1)	Each railway owner must, within the period that applies under section 47L —
(a)	determine, for each route section of an applicable part of the railways network, the depreciated optimised replacement cost of applicable railway infrastructure associated with the route section; and
(b)	submit to the Regulator a statement setting out — (i) each of the railway owner's determinations made under paragraph (a); and (ii) supporting material demonstrating the basis of each determination.

This statement sets out the PTA's DORC determinations for each route section and contains the supporting material demonstrating the basis of each determination.

Together the sections 5(1), 47C and 47H(2) of the Code set out that the route sections of the relevant network owned by the railway owner to which the Code applies required DORC determinations.

[1] As amended on 19 December 2023 in accordance with the Railways (Access) Amendment Code 2023.

Table 4: Section 5(1) of the Code

	Section 5 Routes to which this Code applies
(1)	This Code applies only to —
(a)	those parts of the railways network; and
(b)	the associated railway infrastructure, that come within the routes specified in Schedule 1.

Table 5: Section 47C of the Code

	Section 47C Applicable part of the railways network and applicable railway infrastructure
	If a railway owner is for the time being the railway owner in relation to a part of the railways network to which this Code applies —
(a)	that part is ***an applicable part of the railways network*** in relation to the railway owner; and
(b)	railway infrastructure associated with that part is ***applicable railway infrastructure*** in relation to the railway owner.

Table 6: Section 47H(2) of the Code

	Section 47H Costing principles
(2)	The statement must —
(a)	specify the route sections into which each applicable part of the railways network is divided; and

Appendix 1 of the PTA's Costing Principles sets out the route sections prescribed under the Code for which separate DORCs are determined.

The applicable route sections are detailed in section 1.4 of this report.

1.2. Contents of this Statement

This statement sets out the PTA determined DORCs for each route section, as well as supporting materials demonstrating the basis of each determination provided within this report and in the Attachments.

The PTA has prepared DORC values of the relevant parts of its urban railway network that are subject to the Code in accordance with its Costing Principles, as approved and published by the ERA on the 26th of November 2024.

- Section 1 sets out the purpose and contents of this report.
- Section 2 provides an overview of the DORC methodology used by the PTA.
- Section 3 describes the basis of the determination of DORC for each route section. The basis of determination sets out the principles, assumptions and a summary of valuation approaches used in satisfying the obligations in the Code.

- Section 4 sets out the details of the approach used to value the replacement cost for railway infrastructure;
- Section 5 details the approach to optimisation;
- Section 6 sets out the approach to capital contribution, which is a component of the DORC methodology but not relevant to the PTA;
- Section 7 sets out the approach to accumulated depreciation;
- Section 8 sets out the DORC results for each route section;

Attachment 1 provides a summary of the DORC model;

Attachment 2 outlines the Modern Equivalent Asset standards;

Attachment 3 details the portion of PTA infrastructure assets excluded from the iRAB; and

Attachment 4 outlines the allocation of shared assets by route section and asset class.

Accompanying this report is the Statement of the Applicable Depreciation Schedule.

1.3. Compliance of this Statement with the Code

Table 7 sets out each obligation relevant to this statement and the section within this statement that addresses the obligation.

Table 7: PTA Compliance with Code Requirements

Item	Code clause number	Code clause	Section within this statement where Code requirement is addressed
Initial regulatory asset base 47J			
1	(1)	Each railway owner must, within the period that applies under section 47L — (a) determine, for each route section of an applicable part of the railways network, the depreciated optimised replacement cost of applicable railway infrastructure associated with the route section; and (b) submit to the Regulator a statement setting out — (i) each of the railway owner's determinations made under paragraph (a); and (ii) supporting material demonstrating the basis of each determination.	This report, including attachments, is the Statement setting out the DORC determinations and supporting material.
2	(2)	A determination by the railway owner under subsection (1)(a) must be made in accordance with the costing principles for the time being approved or determined by the Regulator under section 47H.	2. DORC Methodology
Applicable depreciation schedule 47K			

Item	Code clause number	Code clause	Section within this statement where Code requirement is addressed
3	(1)	Each railway owner must prepare and submit to the Regulator a statement of the depreciation schedule (the ***applicable depreciation schedule***) to be applied by the railway owner when determining — (a) the updated regulatory asset base of applicable railway infrastructure under section 47N(1); and (b) the costs referred to in Schedule 4 clauses 7 and 8.	See separate document "Applicable Depreciation Schedule"
4	(2)	The railway owner must submit the statement to the Regulator on the same day that the railway owner submits the statement containing the railway owner's determination of the depreciated optimised replacement cost of the relevant applicable railway infrastructure to the Regulator under section 47J(1).	See separate document "Applicable Depreciation Schedule
Double counting of assets prohibited			
5	(1)	A railway owner must not, when valuing railway infrastructure under or for the purposes of this Code, engage in double counting of assets.	7.3 Uniform depreciation

1.4. Description of the PTA Urban Railway Network

About the PTA

The PTA is the primary supplier of public transport services in WA and is responsible for the following transport services:

- Rail, bus and ferry services in the metropolitan area (Transperth);
- Public transport services in regional centres (TransRegional);
- Coach and rail passenger services to regional areas (Transwa);
- School bus services;
- Designing, building and maintaining transport infrastructure and rollingstock and associated parts; and
- Protecting the long-term viability of the State's freight rail corridor and infrastructure.

Since 2010, the State's three key transport agencies - the PTA, the Department of Transport and Main Roads - have worked together as the Transport Portfolio to coordinate a smarter,

integrated and optimised transport network for WA.

The PTA is responsible for maintaining the State's freight rail network and managing the long-term Rail Infrastructure Lease.

Train services in the Perth metropolitan area are delivered with a train fleet of 342 railcars that operate as two, three, four or six-car trains making an average of 89,966 weekly trips across the network, comprising the following lines:

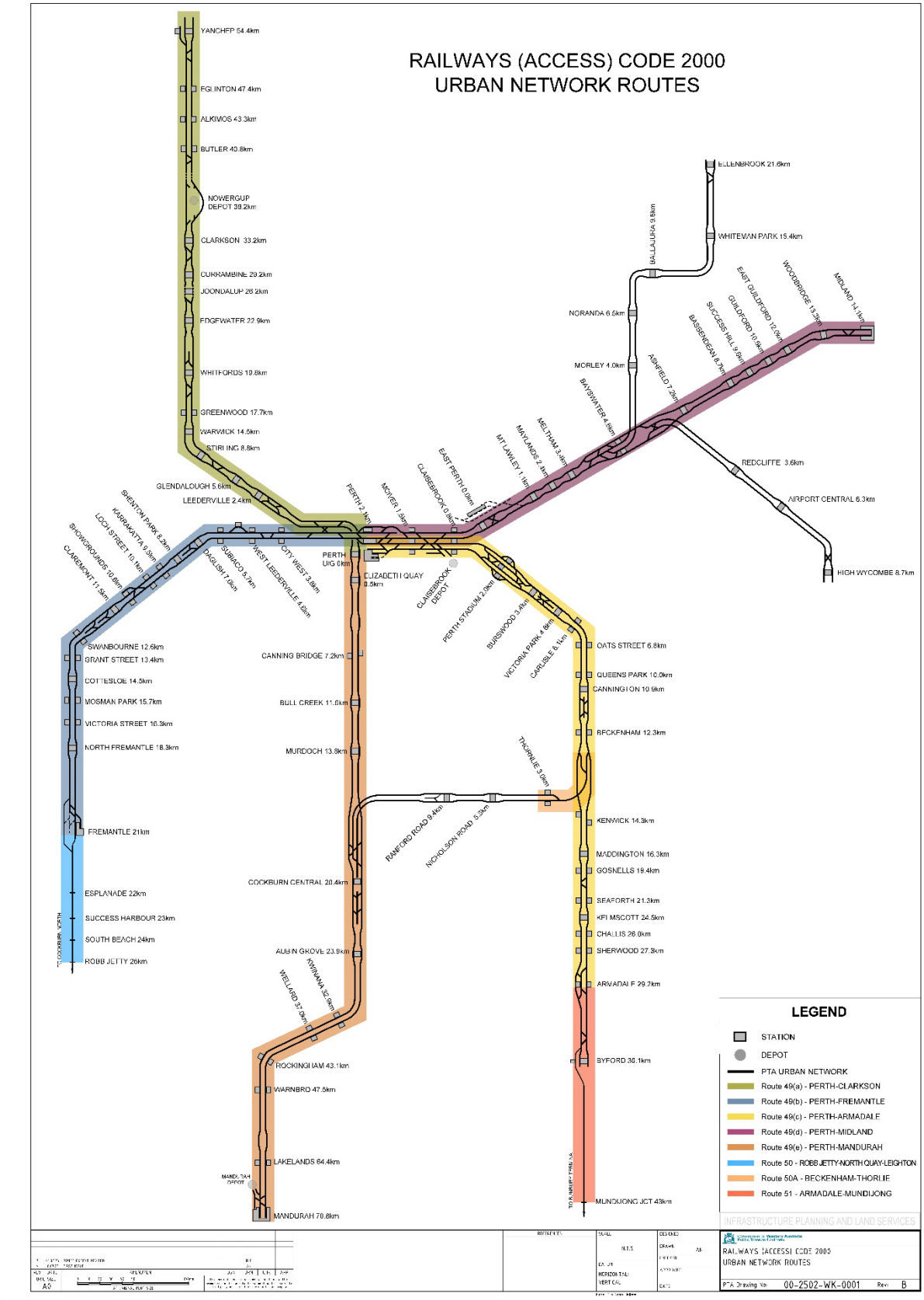
- Forrestfield Airport Line;
- Armadale/Thornlie;
- Ellenbrook (which opened in December 2024);
- Fremantle;
- Midland;
- Mandurah; and
- Yanchep.

These services are operated by PTA's Transperth Train Operations division. There were more than 56 million total rail boardings in the 2023-24 financial year.

The PTA's Third Party Access Services

The Code requires the PTA to provide access to third parties to the route sections detailed in Schedule 1 of the Code. Figure 2 shows a high-level diagram of the PTA urban network with the relevant eight route sections to which this statement applies.

Figure 2: PTA Third Party Access Route Sections



Approved: Michael Parker

Table 8: Length of the Route Sections for the Routes in Schedule 1 of the Code

Route section number	Route section name [2]	Route section details	Length (km)
49 Narrow gauge double tracks			
49(a)	Perth- Clarkson	This route consists of the Yanchep Line (Perth Underground to Yanchep Station)	55.46 km (Perth-Yanchep)
49(b)	Perth- Freemantle	This route consists of part of the Fremantle Line (Perth Station to Fremantle Station)	21.01 km
49(c)	Perth- Armadale	This route consists of two lines, being City Line (Perth Station to Claisebrook Station) and part of the Armadale Line (Claisebrook Station to Armadale Station)	29.11 km (prior to current works), only 4.8 km currently operational (Perth - Vic Park)
49(d)	Perth- Midland	This route consists of two lines, being Fremantle Line (Perth Station to East Perth Station) and Midland Line (East Perth Station to Midland Station)	14.14 km
49(e)	Perth- Mandurah	This route consists of all of the Mandurah Line (Perth Underground to Mandurah Station)	70.91 km
50	The dual gauge track between Robb Jetty- North Quay - Leighton and the spur line between Leighton- North Fremantle	This route consists of three parts of the Fremantle Line: 1) from Robbs Jetty, loops around Fremantle Station and joins the mainline after to Beach St; 2) shared with the Mainline from Beach St, over Fremantle Bridge up to Tydeman Rd; and 3) leaves mainline before Tydeman Rd and enters North Quay. There are no longer any spur lines between Leighton and North Fremantle.	6.00 km
50A	The narrow gauge single track between Beckenham-Thornlie	This route consists of the Thornlie Line (Armadale mainline after Beckenham Station to Thornlie Station)	2.99 km (prior to the TCL extension project, not online)
51	The narrow gauge mainline track between Armadale-Mundijong Junction	This route consists of part of the Armadale Line (Armadale Station to Mundijong Junction)	13.39 km
Total	Urban rail distance under Code		213 km

These route sections comprise approximately 85% of the PTA urban rail infrastructure of 250 kilometres.

[2] Each route section name is a general description of the location. The precise origin and destination of the routes are based on PTA's network configuration.

2. DORC Methodology

This section provides an overview of the DORC valuation approach and its application by the PTA in practice.

Section 47J(2) of the Code requires that the DORC must be prepared in accordance with the approved Costing Principles.

Table 9: Section 47J(2) of the Code

	Section 47J(2) Initial regulatory asset base
(2)	A determination by the railway owner under subsection (1)(a)* must be made in accordance with the costing principles for the time being approved or determined by the Regulator under section 47H.

*see Table 7 which sets out the Code requirement for PTA to determine the depreciated optimised replacement cost for each route section.

The DORCs submitted by the PTA will be either approved or determined by the ERA. Section 47J(7) provides that DORCs that receive approval or alternatively are determined by the ERA, become the iRABs for each route section.

Table 10: Section 47J(7) of the Code

	Section 47J(7) Initial regulatory asset base
(7)	The depreciated optimised replacement cost of applicable railway infrastructure associated with a route section approved or determined by the Regulator under subsection (3) (including as amended in accordance with a direction given under section 47M(2)) is the ***initial regulatory asset base*** of that route section.

The iRABs are updated after the first year and then in each subsequent year in accordance with the approved Costing Principles.

Table 11: Section 47N(1) of the Code

	Section 47N(1) Railway owner to update regulatory asset base
(1)	A railway owner must, within 60 business days after 30 June of each year, determine the updated regulatory asset base of applicable railway infrastructure associated with each applicable route section.

2.1. Introduction of iRAB and DORC to the Code

The Western Australian Government completed a review of the WA Rail Access Regime (the Regime) 2020. This review recommended that for the purpose of setting prices for third party access under the Regime, the asset valuation methodology was changed from Gross Replacement Value (GRV) to DORC.[3]

This change was implemented via amendments to the Code on the 19th of December 2023.

2.2. Background WA Rail Access Regime review 2020

In assessing the DORC approach along with other asset valuation options as part of the Regime review, the Western Australian Government commented that "Determining the initial DORC values will be particularly costly."[4] It also acknowledged that this would be relatively straightforward for new assets and more complicated for existing assets.

In establishing the iRAB for existing assets, the Government made the following points:

- The segmentation of each railway for the purpose of establishing the iRAB "would be unique to each railway owner, who would propose a method for approval by the ERA based on the characteristics of their network."[5]
- The calculation of efficient replacement costs of existing assets would be comparable to the current approach used to determine the GRV, including optimising the network to meet current and future demand. Further, in determining the modern equivalent assets (MEA) to meet that demand, the calculation assumes that the existing route and gauge specification are already efficient.
- Depreciation could be assessed by either measuring the extent of deterioration from new condition, or assessing the consumption of economic benefits to date, for example, using straight line depreciation (or some other recognised depreciation methodology).

2.3. Definition and Description of DORC

Section 3 of the Code sets out the definition of DORC that is applied in the RAB calculations and the definition of the types of railway infrastructure that can be included in the DORC calculation.

[3] Government of Western Australia (2020). Review of the Western Australian Rail Access Regime – Final Decision Paper. p.15

[4] Government of Western Australia (2020). p.14.

[5] Government of Western Australia (2020). p.16.

Table 12: Section 3 of the Code

	Section 3 depreciated optimized replacement cost
	in relation to railway infrastructure, means —
(a)	the lowest current cost to replace the railway infrastructure with assets that — (i) have the capacity to provide the level of service that meets the actual and reasonably projected demand; and (ii) are modern equivalent assets; less
(b)	accumulated depreciation in accordance with the costing principles for the time being approved or determined by the Regulator under section 47H;

DORC is the most common asset valuation method used in Australian rail access regimes. In this context it has been described as:

> *The DORC approach is an asset valuation method that determines the current cost required to replace the service of an existing asset. A DORC valuation reflects the market-based price a reasonable buyer would pay to construct a substitute asset of comparable utility, adjusted for condition, asset age and obsolescence that is designed to meet foreseeable regulated service requirements.* [6]

Prior to the 2023 Code amendments, the PTA was required to use the GRV approach as an input in calculating the floor and ceiling prices. The PTA's GRV was last approved by the ERA in 2009. The GRV approach applies values for the network based on 'as new' assets at the time an access proposal is made under the Code, assuming a MEA. MEA is also used in the DORC approach.

The main differences between DORC and GRV are the concepts of optimisation and depreciation. The general expectation is that a GRV would be a higher value than the DORC because DORC accounts for both optimisation and depreciation as shown below.

- Optimisation is considered by the PTA in terms of the capacity required to meet actual and projected demand for services, along with determining the MEA standards. See section 5.
- Accumulated depreciation is taken into account for the DORC with reference to the standard life and the economic life of the assets as set out in the PTA's Costing Principles.[7] See section 7.

[6] GHD Advisory (2021), Developing a Regulatory Asset Base value for the Australian Rail Track Corporation Interstate Network, using the Depreciated Optimised Replacement Cost method, Concluding Public Report, p.1.

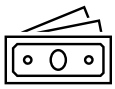
[7] PTA (2024) Costing Principles, p.11

3. Basis of Determination of DORC

3.1. Overview

The PTA undertook a structured approach to determine the DORCs, consistent with the approach proposed in the PTA's Costing Principles. An overview of the steps taken to develop the DORC values for each route section is presented in Figure 3.

Figure 3: DORC Methodology Approach

1	**Establish Principles** 	• Establish the principles that apply to the PTA's public transport network • Set out the definition of MEA
2	**Update Replacement Cost** 	• Asset cost updated by RLB /SMEC engineering valuers • Benchmark costs
3	**Confirm Assets** 	• Remove assets that are irrelevant to the route sections • Remove assets that are irrelevant to third parties
4	**Optimisation** 	• Apply relevant standards for MEA to PTA network
5	**Capital Contribution** 	• No capital contributions were made
6	**Estimate Accumulated Depreciation** 	• Determine economic life, accumulated depreciation and remaining life • Apply condition based straight-line depreciation to assets

7	**DORC** 	• Calculate DORC by subtracting accumulated depreciation from the Optimised Replacement Cost (ORC)

The above steps are consistent with the steps outlined in the PTA's Costing Principles for determining the DORC which are as follows. [8]

1. Determine the replacement cost of the assets by obtaining the current cost to replace the existing assets with their modern equivalents, or if new railway assets, the current construction cost of the assets;
2. Optimise the mix of MEAs such that there is capacity necessary to meet the reasonably projected demand;
3. Remove any Contributed Capital from the value of the optimised MEA; and
4. Depreciate the optimised replacement cost of the asset to reflect accumulated depreciation.

3.2. Principles

This section sets out a number of principles underpinning the approach used to determine the DORC valuation for each route section. The information provided in this section and the attachments contributes to the supporting material demonstrating the basis of each determination.

Principle 1: Network Configuration is Optimal for Public Passenger Transport

The PTA states that the majority of its urban network is used to provide passenger transport services and so the network has been optimally designed and constructed for that purpose. The PTA assumes that the optimal mix and network configuration that would deliver the service level associated with the actual and reasonably projected demand is the current network configuration.

It is assumed that the route section and gauge specification are efficient, consistent with the principles outlined by the WA Government. As summarised in section 2.2 that, "in determining the modern equivalent assets (MEA) to meet that demand, this assumes that the existing route and gauge specification are already efficient."

The PTA's grouping of assets is set out in the Applicable Depreciation Schedule and this statement provides the information necessary for the ERA's review of the PTA's approach to asset grouping under Section 47H(4) of the Code.

[8] Ibid p.8-9

Table 13: Section 47H(4) of the Code

Section 47H(4)	Description
(a)	assets will only be grouped with other assets that are — (i) in the same route section; and (ii) the same, or a similar, category of railway infrastructure; and (iii) of a similar age and condition; and
(b)	assets will not be grouped in a way that will result in access holders paying for assets they do not use; and
(c)	assets will not be grouped in a way that will interfere with the Regulator's ability to monitor compliance by the railway owner with the provisions of this Code.

The PTA has grouped assets for the purposes of reporting the results in this statement. Whilst the DORC model is calculated on a granular basis of each asset line item in the Fixed Asset Register (FAR), it is not practical to report each asset. For the purposes of reporting, the PTA groups assets of similar nature into "Asset Classes" as used for internal accounting purposes. This provides a practical approach to reporting the DORC inputs and outputs in this statement.

Principle 2: Assets are Optimised for Freight Third Parties

The primary third party access holders are freight operating companies. The PTA observes that there is a single third party access providing a passenger rail service (that is the Indian Pacific train operated by JBRE), so the PTA has not considered any optimisation specific to the assets used for this service.

For simplicity, the PTA has instead applied optimisation for this route section as if it was a freight access service. This is justified because there is minimal difference between the services that the PTA provides to the different types of third parties.

Principle 3: Historic Values are used for Route Sections under Construction

The following two routes are not revalued like the other six routes:

- Route 49(c) Perth to Armadale; and
- Route 51 Armadale-Mundijong

This is because those two routes were closed during 2024 and not available for third party rail access services whilst under re-construction. The value of these routes is based on the MEA recorded in the FAR as at December 2023, which is the date when the values for these assets were last updated by the PTA.

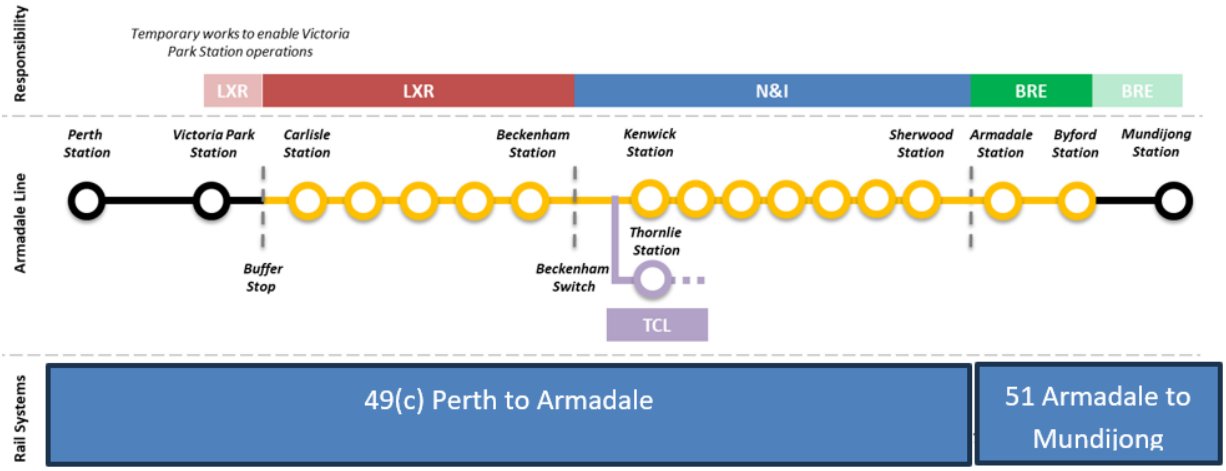
Route 49(c) has been impacted by three projects:

- Victoria Park – Cannington Line Level Crossing Removal (LXR)
- Rail Revitalisation Project (RRP)
- Byford Rail Extension (BRE)

Route 51 has been impacted by the BRE project based on the removal and replacement of all assets.

Figure 4 shows the sections of the Armadale Line that are being re-constructed.

Figure 4: Armadale Line Re-construction



Principle 4: Apply the Economic Life of Assets as Appropriate to the Circumstances

Many assets in the FAR are still in use but have a value of zero because they are fully written down. This occurs when the economic life of assets extends beyond the standard design life.

Assets that are fully written down in the FAR for accounting purposes but remain in use on the network and are relevant to third parties, are assigned an economic life of 10% beyond their effective life. For these assets the fully written down value was replaced with the 90% written down value.

The reason for recognising a small value in the DORC for these assets is that they continue to serve a useful purpose for the provision of access services and without these assets the PTA could not provide the same level of service to third parties.

It is appropriate for the PTA to adjust the economic life of assets still in use as such adjustments are the subject of the ERA's considerations in its review and approval process. Section 47K (5)(e) of the Code:

> *The Regulator must not approve the statement submitted by the railway owner unless the Regulator is satisfied that the statement …*
>
> *(e) allows, as far as reasonably practicable, for adjustments that reflect changes in the expected economic life of a particular asset or group of assets;*

The PTA's Costing Principles allow for economic life to be determined based on the following circumstances:

> *"Accumulated depreciation for the Initial RAB will be calculated with reference to the Standard Design Life of the Railway Infrastructure detailed in Appendix 2 and the Economic Life of the assets. In determining the Economic Life of an asset, the PTA will:*

- *Consider the current physical condition of the asset; and*
- *Forecast the rate at which the asset will be consumed.*

Following the determination of the Economic Life of the asset, the PTA will compare the Economic Life of the asset to the Standard Design Life to the calculate the DORC for the asset."

Note that other assets that are fully written down in the FAR for accounting purposes and are not used on the network or are not relevant to third party access continue to be excluded from the DORC determination.

Principle 5: Assets are Grouped for Reporting Purposes

For reporting purposes, assets are grouped at the asset-class level in accordance with the PTA's FAR structure. This classification aligns with the PTA's internal reporting conventions as well as the Costing Principles.

3.3. Assumptions

The PTA has made a number of assumptions throughout the development of the DORC which are listed below.

Table 14: Table of Assumptions

Topic	Assumption detail/basis	Reason
Current Replacement Cost	The Current Replacement Cost reflects the amount that would be required currently to replace service capacity of an asset with comparable utility, characteristics and site-specific specifications. In addition to the direct costs associated with construction, additional allowances were included for the following: • Contractor Preliminaries • Design and Professional Fees • Design and Construct Risk • Contractor Overheads and Profit • Project Contingency The on-costs identified above have been applied based on RLB's recent and relevant experience, sourced from current PTA and similar infrastructure projects, and are current as at the date of this report.	On-costs are relevant to the total current replacement cost. The expectation is that contracts are procured on a design and construction basis with free access to undertake the works.

Topic	Assumption detail/basis	Reason
Network configuration	The PTA assumes that the optimal mix and network configuration that would deliver the service level associated with the actual and reasonably projected demand is the current network configuration.	In calculating the RAB for existing railway assets, it is appropriate to assume that the existing route and gauge are already efficient. This is based on the principles outlined by the WA Government to "optimise the network to meet current and future expected demand, determine the modern equivalent asset specification that would meet this demand (assuming the existing route and gauge specification are already efficient) and determine the replacement cost for this."[9]
Demand and level of service	Actual and reasonably projected levels of demand are the current levels of demand at the current levels of service in respect of maximum axle load, train speed and train lengths.	This is consistent with forecast demand, which is set at the current level. These cost drivers are not expected to change based on interactions with customer regarding requirements.
Plant equipment and vehicles	Replacement cost is assumed to be valued at purchase cost.	Immaterial value.
Overhead lines	Assume all third parties are diesel powered and not using overhead lines.	For simplicity.
Values	In AUD.	
Approval for construction	Government planning approvals are granted and construction proceeds without unplanned delays.	For simplicity.
Capital costs	The PTA applies the definition of Capital Costs relevant to Railway Infrastructure in Schedule 4 of the Code as far as is reasonably practical.	The PTA data does not separately identify cuttings and embankments as a sub-category of Civil Rail Instructure. Most of the PTA urban routes were built after 2000. Armadale, Midland and Fremantle were built before 2000.
Economic life	Assets that are still in use with zero residual value have extended economic life assumed to be 10%.	For simplicity.

3.4. Summary of Approach to Valuations

The PTA has determined the replacement cost using three different approaches across the three main asset category databases. The valuation of replacement costs for:

- Railway Infrastructure Assets in the PTA urban network were undertaken by Rider Levett

[9] Government of Western Australia (2020). p.16

Bucknall WA Pty Ltd (RLB) and SMEC who were engaged in 2024. As no significant cost increases have occurred since that report there has been no additional inflation adjustments have been applied. Examples of Railway Infrastructure Assets include rails, track, ballast and structures.

- System Infrastructure Assets were updated from the previous valuation undertaken by GHD in 2021. Examples of relevant System Infrastructure Assets are communications, signalling assets and internet services.
- Plant, Property and Equipment were based on the cost values as at the purchase dates and depreciated in line with the effective asset life thereafter. The total carrying value of this asset group in the asset register is relatively small at around 0.1% of the total initial RAB value. Furthermore, as this category of assets is largely not relevant for third party access, establishing current replacement costs was not considered a priority and historic values were considered sufficient. Examples of Plant, Property and Equipment are rail plant, mobile plant, and trucks.

Railway Infrastructure Assets are the category that is most relevant to third party access seekers. The following sections of this report focus on the approach used for valuing Railway Infrastructure Assets.

3.5. Valuation Approach of Railway Infrastructure Consistent with Costing Principles

The approach taken by RLB is consistent with the requirements of the Costing Principles and DORC valuation practice more generally. This includes the need to identify cost drivers and cost components and to use MEA as set out below.

Identification of Cost Drivers

The RLB valuation methodology complies with the requirement for consideration of key cost drivers described in the PTA's Costing Principles.

The PTA's Costing Principles describe the key capital cost drivers as:

- *"the train operating standards (axle load, maximum speed, maximum train length);*
- *supporting infrastructure (bridges, culverts);*
- *topography of route (gradient and track curvature); and*
- *forecast demand and improvement to service levels."*[10]

RLB use the relevant accounting standards which take into account the characteristics and site-specific specifications of the PTA network locations:

> *"The general valuation methodology follows all aspects of the relevant standards developed by the Australian Accounting Standards Board ("**AASB**"), particularly AASB 13 and AASB 116, which is based on the valuation technique Cost Approach where the Current Replacement Cost reflects the amount that would be required currently to replace the service capacity of an asset with comparable utility, characteristics and site-specific specifications. RLB has provided a Replacement Cost in line with this definition per Standards above for the purposes of calculating Current Replacement Cost; the methodology and approach are demonstrated in the sections herein."*[11]

The PTA's assessment of forecast demand for third party access services to the route sections is that demand will continue at the levels experienced in 2024-2025 for the year 2025-2026 and beyond.[12] As demand is expected to be constant, no adjustment has been made to the MEA as the current mix of MEA has the capacity necessary to meet the reasonably projected demand.

The key reasons why this assessment of demand is reasonable are:

- The utilisation of the urban network by third party freight services is very small and there

[10] PTA (2024) Costing Principles p.10
[11] RBL (2024). Urban Rail Infrastructure Asset Register Review and Gross Valuation, July, p.12.
[12] Excluding lines closed with assets out of service due to re-construction.

is no indication from contracted parties of an expected increase. Third party usage on the Fremantle to North Quay section is less than 14% of total train movements and on the Perth to Midland line it is less than 5% to total train movements.

- Six of the eight routes owned and managed by PTA that are covered in Schedule 1 of the Code have no current or reasonably projected future demand by third parties. The PTA has no expectation that there will be new third parties seeking access or different access services requested.
- Should there be an unexpected increase in demand, the PTA will assess requests on a case-by-case basis.

Given the low levels of demand for third party access, and zero forecast demand in six of the eight route sections, there is no requirement to estimate the costs of re-design, changes to the asset quantity or re-configuration of route sections for the purposes of providing additional capacity for third party access.

On this basis, the current mix of MEA is sufficient to meet reasonably projected demand.

Cost Components

The RLB valuation methodology complies with the requirement for consideration of cost components described in the PTA's Costing Principles.

The PTA's Costing Principles describe the components to be included as follows:

> *"The asset replacement cost will include provisions for, but not be limited to:*
>
> - *amortisation of the costs of acquiring any interest or access to land, as permitted under Schedule 4, Division 1 clause 2(5) of the Code;*
> - *design, development, planning and approval costs as typically expected for an efficient railway owner such as the PTA;*
> - *material and construction costs, as expected for the scale and types of Railway Infrastructure owned by the PTA in the relevant Route Section locations;*
> - *project and construction management costs, commensurate with the modern risks of managing such projects; and*
> - *funding costs."*[13]

The RLB approach takes into account the following cost components that are consistent with the PTA Costing Principles, noting that RLB excluded several cost components as listed below.

> *"In addition to the direct costs associated with construction, additional allowances were included for the following:*

[13] PTA (2024) Costing Principles p.10

- *Contractor Preliminaries*
- *Design and Professional Fees*
- *Design and Construct Risk*
- *Contractor Overheads and Profit*
- *Project Contingency.*

*… The on-costs identified above have been applied based on RLB's **recent** and **relevant** experience, sourced from current PTA and similar infrastructure projects, and are current as at the date of this report,"*[14]

"There are a number of exclusions which are listed below:

- *Escalation.*
- *Finance charges and/or fees, including interest.*
- *Fixed furniture and equipment.*
- *Goods and services tax.*
- *Headwork, fees and charges.*
- *Land costs, fees and charges.*
- *Latent ground conditions, including contaminated and hazardous materials.*
- *Loose furniture and equipment.*
- *Loss of income and cost of alternative accommodation during replacement.*
- *Provision of temporary facilities, operational or otherwise.*
- *Public Art.*
- *Public liability.*
- *Rates, taxes and similar outgoings.*
- *Tenancy fitout, contents and specialist equipment owned by others.*
- *Third party claims arising or resulting from PTA's ownership of these assets."*[15]

[14] RLB (2024) p. 15
[15] RLB (2024) p.18

Modern Equivalent Assets

The PTA's Costing Principles describes MEA used in the DORC methodology as:

> *"the current costs to replace the existing assets with their modern equivalents, or if the railway assets are new and built efficiently, the current construction cost of the assets.*
>
> *Modern equivalent assets are the relevant assets for determining replacement costs. Existing assets may not be replaceable due to discontinued production and modern assets reflect modern capabilities of assets and current standards. The current costs of modern equivalent assets will be the lowest costs currently available for new railway infrastructure that will meet the level of service of actual and reasonably projected levels of demand and comply with relevant building codes and legislation. The scope of the modern equivalent assets will be defined on the basis that it meets the closest comparable service standard to the existing asset."*[16]

RLB describe their use of MEA in their report, which is consistent with PTA's Costing Principles, as:

> *"In accordance with IVSC 2019, the above unit rates and assumptions on dimensions have been done based on modern equivalent considerations, which are assets that provide similar function and equivalent utility to the asset being valued, but which are of a current design and constructed or made using current cost-effective materials and techniques."*[17]

and

> *"The Current Replacement Cost assumes the replacement of an asset with a cost substitute asset of comparable utility and size specifications in accordance with current regulations and standards but does not allow for amendments to the existing asset arising from subsequent and/or future statutory changes."*[18]

See Attachment 2 for the relevant MEA standards that RLB applied to each asset category. The PTA's specifications for infrastructure are continually updated to accommodate changes in engineering standards and advancements in available technology for both operational and construction purposes.

[16] PTA (2024) Costing Principles p.9
[17] RLB (2024) p.18
[18] RLB (2024) p.16

3.6. Valuation of System Infrastructure Assets

The PTA engaged GHD to undertake a replacement cost valuation of System Infrastructure Assets in 2021. The purpose of this valuation was to provide the PTA with a current replacement cost of all items listed in the System Infrastructure Asset Register.

GHD prepared its valuation in accordance with the relevant accounting standards.[19] The current replacement cost was either based on quotes received from key suppliers or on the 'built-up' cost of component parts. Additional costs were included for procurement, based on the standard PTA procurement procedures and installation costs, for assets that are not of the 'Plug and Go' nature.

The values of System Infrastructure Assets were most recently updated in March 2024 based on the ABS 2024 Producer Price Index for the non-residential building construction industry. Third party use of this asset category is generally minimal, with the exception of radio communication and infrastructure monitoring assets. The costs of these assets are apportioned on the same basis as Railway Infrastructure Assets.

[19] In particular, AASB13 and AASB116.

4. Replacement Cost Valuation for Railway Infrastructure Assets

Railway Infrastructure is the main category of assets in terms of volume and cost in the DORC determinations. This section cites extracts from RLB's report explaining its approach to the:

1. technique and methodology,
2. approach,
3. unit rates,
4. benchmarking and
5. assurance of valuation.

4.1. Technique and Methodology

The methodology and valuation techniques used by RLB to determine the fair value of the Railway Infrastructure are described below as level 3.

*"*The general valuation methodology follows all aspects of the relevant standards developed by the Australian Accounting Standards Board ("AASB"), particularly AASB 13 and AASB 116 which is based on the valuation technique Cost Approach where the Current Replacement Cost reflects the amount that would be required currently to replace the service capacity of an asset with comparable utility, characteristics and site-specific specifications."[20]

"AASB 13 requires inputs to valuation techniques used to measure fair value to be categorised into three levels, to increase consistency and comparability in fair value measurements and related disclosures. These inputs are:

- Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets that the entity can access at the measurement date.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset directly or indirectly.
- Level 3 inputs are unobservable inputs, not based on observable market data.

RLB are of the view that the inputs required in accordance with the hierarchy are Level 3, as these assets are of unique, specialised nature and there is little market activity or market based comparable assets. Therefore, RLB collected various data across a wide-ranging number of assets and used the average and most common drive to arrive at the appropriate calculations. Hence, the average unit rates were established, and a dedicated methodology was developed and adopted for each Asset Class that complied with the requirements. Subsequently, RLB analysed the data output to assess the appropriateness and robustness in order to validate the valuation in line with RLB's experience across a number of recent and relevant projects throughout Western Australia and Australia.

[20] RLB (2024) p.12

Paxon have separately confirmed this in their letter of conformity.

In preparing this report, RLB has had regard to valuation guidance and standards from a range of sources, including:

- International Valuation Standards Effective 31 January 2020, IVSC 2019.
- ANZVTIP 8 – Technical Information Paper – Valuations of Real Property, Plant and Equipment for Use in Australian Financial Reports, Australian Property Institute, effective 8 March 2017
- ANZVTIP 4 – Technical Information Paper – Valuation for Insurance Purposes, Australian Property Institute, effective 1 July 2015."[21]

4.2. Approach

"The approach taken in the valuation of each asset has been as follows:

1. Obtaining the information: RLB have sourced relevant documentation including Rail Freight Network Maps and Rail Sizes as well as supplementary information to assist with defining the assets and scope of work.

RLB was provided upon request with drawings, specifications and the like from PTA to assist with defining the battery limits, nature of asset and quantities. RLB also attended various meetings with PTA to discuss and understand the required scope of work for each unit including seeking advice on a reasonable method of apportioning preliminaries, contingency and design costs to each Average Unit Rate." [22]

"2. Asset Count and Verification: To test the validity and reliability of the data sourced from PTA, approximately 95% of the total assets were sampled to compare PTA data against online resources such as Google Maps / Earth and Nearmaps, both of which are tools providing high resolution 3D, aerial and / or satellite imagery. These tools have enabled RLB to measure the assets with accuracy and query any discrepancies with PTA Technical Experts.

Separate to the above, SMEC have undertaken site inspections for 62% of the total assets. Refer to Appendix C - SMEC's Technical Memorandum.

3. Battery Limits Agreement: RLB was provided upon request battery limits to freight lines to identify and exclude private rail assets and third party operated assets that are not part of PTA Asset. RLB also attended meetings with PTA and SMEC to agree new battery limits to the assets that do not already have this available.

4. Assessment: RLB prepared a desktop functional area assessment of each asset, broken down into defined functional categories for pricing purposes, in accordance with PTA's Fixed Asset Classification Structure having regard to the applicable technical engineering standards, Rail Access Manual and respective Code(s) of Practice(s), which provided guidance and

[21] RLB (2024). p.12.
[22] RLB (2024) p. 13.

assurance on the application of appropriate and applicable rates and related calculations.

5. Average Unit Rates: Average Unit Rates were established, as provided in section 5.7 herein, and a dedicated methodology was developed and adopted for each Asset Class that complied with the above requirements.

6. Pricing: The measured schedule of functional areas for each asset was priced at appropriate current market rates, refer to section 5.6 herein for details.

7. Current Market Prices: Where possible, RLB have utilised rates from recent PTA projects to value the assets in which RLB have had access to the appropriate cost data. Specific project experience includes:

a. Aubin Grove Station (2014 - 2016)

b. Bayswater Station and Turnback (2019 - ongoing)

c. Bellevue Depot (2018 – 2022)

d. Byford Rail Extension Project (2022 – ongoing)

e. Claremont Station and Turnback (2019 - 2021)

f. Forrestfield Airport Link (2017 – 2018)

g. Inner Armadale Level Crossing Removal Project (2022 – ongoing)

h. Kenwick Rail Freight Facility (2019 – ongoing)

i. Lakelands Station (2020 – 2023)

j. Mandurah Station Multi-Storey Car Park (2019 – 2021)

k. Morley Ellenbrook Line (2017 – ongoing)

l. Nowergup Depot Upgrade (2018 – ongoing)

m. Thornlie – Cockburn Link (2014 - ongoing)

n. Yanchep Rail Extension (2014 - ongoing)

Any cost information extracted from these projects have been done so with sensitivity and used for the purposes of benchmarking RLB's Average Unit Rates.

8. Reasonableness Test: The reasonableness test was performed via vigorous testing of Average Unit Rates and on-cost applications with various stakeholders. Given the comprehensive and fully costed approach to the establishment of the Average Unit Rates, together with the method of identification and validation of assets, the valuation is considered reasonable.

The Average Unit Rate calculation has been prepared having regard to PTA's Fixed Asset Classification Structure as well as the applicable technical engineering standards, Rail Access Manual and respective Code(s) of Practice(s).

To verify the reasonableness of the Average Unit Rates calculated, RLB conducted reviews of the different components included in the assessment, including reviewing the core assumptions used in the calculation. Each asset class was reviewed by RLB's technical team.

In addition, the Average Unit Rates used an application of on-costs were reviewed by PTA which confirmed that the valuation has considered relevant standards and replacement costs found to be fair and reasonable.*"*[23]

4.3. Average Unit Rate Build-up

"In accordance with PTA's requirements, RLB was required to provide a high-level valuation.

In providing this valuation, and taking cognisance of the high-level requirement, RLB have adopted a Unit Rates estimating methodology.

This method of valuation, when applied to quantities, allows for the application of using current market rates (against differing dimensions and quantities) for like items. To establish the unit rates, RLB firstly conducted detailed measure of the units consisting of all elements based on the standard drawings and registers provided to support asset definitions. Subsequently, RLB established costs of the units and elements by utilising data obtained from previous projects, as identified Section 5.4.2 herein, breaking elements down to first principles and comparing against other similar projects. Where applicable, RLB have also relied upon third party supply quotations where in our possession.

Furthermore, RLB was able to internally compare unit rates to comparable projects within Western Australia based on recent and relevant projects to broaden the availability of comparative data. This equally applied to those project on-costs identified in Section 5.5.1 herein.

Based on RLB's extensive experience of recent and relevant projects, RLB have been able to establish appropriate and applicable rates for each of the unit rates required for this valuation.

To verify the accuracy of the unit rates calculated, RLB conducted reviews of the different components included in the assessment, including reviewing the core assumptions used in the calculation. Each asset class was reviewed by RLB's technical team."[24]

"Separate to the above, RLB have undertaken a review of the cost estimates which form the basis of the valuation(s), which has allowed us to provide assurance and confidence that the valuation is reasonable and that the cost data is meaningful.

In determining the applicability of the cost data information available, RLB have relied upon the qualifications, skills, and expertise of our team members, combined with our prominent market position of providing cost valuation and estimation services in the West Australian market.

Furthermore, RLB relies upon the considerable and ongoing working relationship that exists with PTA across a number of projects, past and present, and as such, consider that we are well placed to be able to provide reliable replacement value services. As such, cost data has

[23] RLB (2024) p.13-14
[24] RLB (2024) p.17.

been benchmarked against recent and relevant completed and / or Tendered projects to ensure that the cost data is valid and current.

MASS APPRAISAL

The American Society of Appraisals ("**ASA**") would define this valuation as a "mass appraisal", in which they state "…the process of valuing a universe of properties as of a given date using standard methodology, employing common data and allowing statistical testing".

Using standard methodology, RLB collected various data across a wide-ranging number of assets, such as asset descriptions and dimensions, and used the average and most common to arrive at unit rate calculations based on common descriptions. After that RLB analysed the data output to assess the appropriateness and robustness in order to validate the valuation in line with RLB's experience across a number of recent and relevant projects throughout Western Australia and Australia. As such, RLB consider this valuation to be a mass appraisal considering the quantum of assets and the number of locations.

In accordance with IVSC 2019, the above unit rates and assumptions on dimensions have been done based on modern equivalent considerations, which are assets that provide similar function and equivalent utility to the asset being valued, but which are of a current design and constructed or made using current cost-effective materials and techniques."[25]

4.4. Benchmarking Analysis

"In order to ascertain whether the valuation is comparable against other like for like projects, RLB undertook a high-level benchmarking exercise against relevant projects.

RLB have benchmarked rates in a number of different ways in order to benchmark rates as individual unit rate cost items, such as ballasting, sleepers and rails, and collectively in the aggregated sum to benchmark costs as total assets, such as the total of track per km. This method has been applied meticulously throughout in order to test and validate RLB's valuation approach with changes made to RLB's original unit rate costs as required.

It is important to remember that there are sensitivities to be considered when benchmarking as there are a number of factors which influence each project, and any given rate therein. RLB are acutely alert to anomalies that may arise during the benchmarking process, and as an example to this disregarded benchmarking data arriving out of analysis of Australian wide rail tunnelling projects.

Tunnelling costs vary significantly depending upon a number of factors, including the depth of tunnel and ground conditions in which the tunnel is to be constructed, and analysis of Cross River Rail and Melbourne Metro confirmed that there was no comparable costs data with Cross River Rail owing to the nature of flood plain areas, or Melbourne Metro due to geological conditions such as hard rock, neither of which is comparable with the soft (and ideal) nature of Perth's underlying geological formation.

[25] RLB (2024). p.17-18

RLB have also benchmarked the rates against recent and relevant PTA projects for each Asset Class, where applicable."[26]

"RLB are satisfied that the benchmark analysis undertaken concludes that the unit rate costs for similar rail infrastructure projects are comparable with the unit rate cost assumptions underpinning the PTA's urban rail network analysis."[27]

4.5. Indexation

System infrastructure asset values were adjusted for inflation in 2022-23 using the Non-residential Building Construction Price Index for WA, reflecting construction price increases since the original cost estimation in March 2021. Additional indexation adjustments have not been applied, as no significant market increases were anticipated.

Railway infrastructure asset costs were updated as of March 2023, with no further indexation applied. No further subsequent indexation has been applied to plant, equipment and vehicle assets.

[26] RLB (2024). p.19
[27] Op.cit.

5. Optimisation

The PTA conducted the following steps to optimise the network for third party access.

1. Removal of redundant assets
2. Identified Railway Infrastructure as defined in the Code
3. Identified Assets relevant to Route Sections
4. Exclusion of assets that are not relevant to third party operations
5. Allocation of Shared Assets to Route Sections

5.1. Removal of Redundant and Retired Assets

The PTA's Fixed Asset Register (FAR) is regularly reviewed and updated by the PTA's managers who are responsible for maintaining the assets, to ensure that the register is free of excess assets that were disposed of or are no longer in service.

A formal annual stock-take process is undertaken across the PTA by the engineering teams responsible for those assets, with their findings provided to the PTA finance team, who will remove asset values from the FAR. The PTA finance team is responsible for maintaining the accuracy of the FAR.

As a result of the PTA's annual stock take review process:

- disposed and decommissioned assets are removed from the FAR. These assets are not re-valued by RLB;
- assets that are retired and in the process of being replaced, remain in the FAR at depreciated values until that replacement occurs. Generally, the removal of the retired asset from the FAR, and the inclusion of the new replacement asset, occur at the same time; and
- assets that are retired from service and have no value attributed to them are identified and excluded from the DORC. Retired assets are in the process of being removed from the network and the FAR.

5.2. Identify Assets Defined as Railway Infrastructure

The FAR contains a comprehensive list of all the PTA urban network assets, whether or not the asset types are consistent with the definition of Railway Infrastructure in the Code.

The definition of Railway Infrastructure in the Code includes 7 types of assets (a) to (g) and excludes two types of assets (h) and (i). The list of included assets in the definition is not exhaustive and may include other items. Table 15 below maps the categories of assets in the

Code definition against the asset classes that are included in the PTA's DORC determination.

The PTA has excluded some categories in the Code definition from the DORC determination because they are not relevant to freight third parties, namely (c), (e), (f), (h) and (i). In addition, other categories that are clearly not railway assets such as urban buses are excluded from the DORC determination. The PTA has not added other asset types.

Table 15: DORC Asset Classes Mapped to the Code Definition of Railway Infrastructure

Section 3 railway infrastructure	Asset class in the PTA DORC
Means the facilities necessary for the operation of a railway, including —	
(a) railway track, associated track structures, over or under track structures, supports (including supports for equipment or items associated with the use of a railway); and	Ballasting Crash barrier Fencing Footbridges Level crossings Noise wall Ped crossing Rail civil infrastructure including hardstand, urban rail safety infrastructure, and rail civil infrastructure[28] Rails Retaining structure Siding Slab track Sleepers Turnouts Underpass Viaducts Roads and approaches
(b) tunnels and bridges; and	Rail bridge Tunnels
(c) stations and platforms; and	Not included in DORC. See section 5.4 below

[28] The PTA defines 'rail civil infrastructure' as all structures that sit within the rail corridor. The items included (but not limited to) are earthworks, all foundations and structural supports, metalwork, kerbs, stormwater drainage, cuttings, embankments for track alignment, culverts; access stairs, buffer stops, track signage and track hard stands.

Section 3 railway infrastructure	Asset class in the PTA DORC
(d) train control systems, signalling systems and communication systems; and	Signals Train control Comms infrastructure Transmission systems Wireless transmission system Fire SCADA IMS SCADA Comms power supply Infrastructure monitoring system
(e) electric traction infrastructure; and	Not included in DORC. See section 5.4 below
(f) buildings and workshops; and	Not included in DORC. See section 5.4 below
(g) associated plant machinery,	Rail plant Trucks Plant and equipment Mobile plant (LIC)
but not including — (h) sidings or spur lines that are excluded by section 3(3) or (4) of the Act from being railway infrastructure; and	PTA confirms that the assets in the route sections in Schedule 1 of the Code do not include privately managed sidings or spur lines, which are excluded from the Act.[29]
(i) rolling stock, rolling stock maintenance facilities, office buildings, housing, freight centres, and terminal yards and depots;	Not included in DORC. See section 5.4 below.

5.3. Identify Assets Relevant to Route Sections

The FAR, that is maintained by the PTA for accounting purposes, contains PTA's urban network assets across lines and parts of lines that are not included in Schedule 1 of the Code and therefore are excluded from the DORC determinations.

Table 16 provides a summary view of the percentage of asset value excluded from the DORC

[29] Railways (Access) Act 1998

> *(3) If a siding associated with a railway is managed and controlled by a different person from the person who manages and controls the use of the railway, the siding is not railway infrastructure of the railway for the purposes of this Act.*
>
> *(4) If a spur line associated with a railway is connected to premises managed and controlled by a different person from the person who manages and controls the use of the railway, the spur line is not railway infrastructure of the railway for the purposes of this Act unless the Minister, by order published in the Gazette, declares that it, or any of it, is railway infrastructure of the Railway*

by line or major location.

Table 16: Percentage of Asset Value Excluded in DORC by Line

Facility / line	Length (km)	Percentage of asset value excluded from DORC
9541 - North Fremantle & Leighton (IN) - Tydeman Road (IN)	0.5	0%
A010 - Armadale Line	72.2	47%
AL20 - Airport Line	8.7	99%
C020 - City Line	2.1	79%
F010 - Fremantle Line	21	26%
J010 - Yanchep Line	54.4	48%
M010 - Midland Line	14.1	49%
SS01 - Mandurah Rail Line	70.8	70%
T010 - Thornlie Spur	3	21%
Morley Ellenbrook (MEL) - 21.6 km	21.6	100%
Thornlie Cockburn (TCL) - 11.5 km	11.5	100%

Any asset records in the FAR that are associated with lines that are not included in Schedule 1 as routes, were removed from the DORC determination.

Asset records in the FAR that are shared across the network, typically relate to the data for System Infrastructure and Plant, Equipment and Vehicles. At this point in the PTA process, all shared assets are retained in the model.

To identify the relevant assets for inclusion in the DORC determination for each route section, the FAR records for each asset on the route section were assessed to determine the location relative to the route origin and destination named in Schedule 1. The DORC determination excluded assets that are outside the origin and destination description of the route sections and that are not shared assets.

The method used by the PTA to determine the locations of assets and decide on their inclusion or exclusion in the DORC was to:

- Use locational information in the FAR for Facility/Line and asset location;
- Obtain chainage location of structures;
- Review geospatial overlay maps;
- Utilise information about asset function; and
- Refer to rail access manuals.

5.4. Exclusion of Asset Data not Relevant to Third Party Operations

As the PTA urban network is constructed and operated for public passenger rail services, there are a large number of assets in the FAR that are used for commuter passenger services and not used by freight operators. The assets specific to passengers are removed from the DORC determination to ensure that third party access seekers do not pay for assets that are not relevant for the provision of access services to them.

The PTA removed all assets in the FAR that are not relevant to the provision of freight services. Examples of assets that are only relevant to the provision of passenger transport services are train stations, platforms, ticketing and overhead electrical infrastructure. A detailed list of asset classes that were excluded from the initial RAB is included in Attachment 3.

5.5. Allocation of Shared Assets to Route Sections

The value of shared assets is allocated to the route sections. Many assets are shared across the PTA's urban network, between city lines and as a route section within longer line routes.

The methods used to allocate shared asset costs are:

1. **Network-wide route assets**: these assets are divided across the number of lines in the PTA urban network. There are eleven lines. These are identified as "Network-wide" under "DORC Scope" with the reason provided such as "Supports radio communications network-wide" or "Supports rail maintenance network-wide". Examples of the types of assets in this category are:

   - Radio infrastructure system: radio communications;
   - Fall arrestor system for urban bridges: rail maintenance network; and
   - Trucks: rail maintenance network.

   Using the allocation of $1/11^{th}$ is justified because these assets are either vehicles used on each route for maintenance purposes or, centrally located communication assets which each line relies upon. PTA is not aware of any reasonable justification for using an alternative approach to each share per line.

2. **Cross line assets:** these assets are shared across a small number of adjacent lines. They are divided by either two or three as appropriate.

   - The City Line is divided by three, and
   - the Fremantle, Perth Underground and Airport Lines are each divided by two.

   An example of the type of assets in this category is footbridges.

3. **Partial line assets:** these are assets that have been grouped in the FAR and are used

across a line. Examples of the types of assets in this category are fencing, ballasting and sleepers. These are identified as “Partially” under “RAB Scope”, with the reason provided describing the function of the asset. Chainage (km) is used to allocate these assets to route sections within routes. The allocations are:

- Perth to Clarkson 49(a): 81.57%
- Perth the Fremantle 49(b): 80.77%
- Robb Jerry to North Quay and Leighton Spur Route 50: 19.23%.

Attachment 4 shows the shared asset classes and volume of assets for each Route Section.

5.6. Optimised Replacement Costs

Using the MEA replacement costs for Railways Infrastructure as valued by RLB and GHD and the optimisation steps to remove out-of-scope assets, the PTA brings together relevant optimised replacement costs (ORC) as summarised in Table 17 and Table 18.

Table 17: MEA Unit Rates and Quantity

Asset class	Total MEA value relevant to DORC[30]	No. of in scope assets	MEA unit rate[31]	Unit
Plant, Equipment, Vehicles				
Mobile Plant (LIC)	$2.9m	22	$163,666	No.
Plant & Equipment	$1.3m	27	$57,224	No.
Rail Plant	$0.3m	6	$45,646	No.
Trucks	$2.5m	14	$221,987	No.
Railway Infrastructure				
Ballasting	$107.3m	10	$116	t
Crash Barrier	$133.6m	6	$1,112	m
Fencing	$63.8m	10	$171,257	km
Footbridges	$284.3m	37	$14,606	m^2
Level Crossings	$15.4m	45	$345,988	No
Noise Wall	$22.6m	5	$4,601	m
Pedestrian Crossing	$11.3m	108	$106,458	No
Rail bridge	$770.8m	34	$17,437	m^2

[30] The total MEA value includes assets or portions of assets that are in scope of the DORC, i.e. the assets or asset portions that are not relevant to the scope of the DORC are excluded as per Attachment 3.
[31] Unit rates were estimated via multiple sources including the RLB report, the GHD report and estimation from PTA FAR and physical asset configurations.

Asset class	Total MEA value relevant to DORC[30]	No. of in scope assets	MEA unit rate[31]	Unit
Rail Civil Infrastructure	$241.2m	37	Hardstand: $367,095 Rail civil infrastructure: $1,043,254 Urban rail safety infrastructure: $14,387	Hardstand: No. Rail civil infrastructure: km Urban rail safety infrastructure: km
Rails	$303.1m	11	$1,461,897	km
Retaining Structure	$100.0m	8	$3,342	m
Roads & Approaches	$74.0m	5	$404	m^2
Siding	$30.9m	19	$2,081,546	km
Signals	$1,252.4m	36	$4,352,830	km
Slab Track	$36.1m	3	$1,470	m^2
Sleepers	$106.8m	8	$373	No.
Train Control	$42.5m	7	$7,543,283	Line
Tunnels	$625.1m	15	$119,304	m
Turnouts	$224.5m	228	$923,562	No.
Underpass	$52.4m	17	$17,437	m^2
Viaducts	$13.2m	1	$939,710	km
System Infrastructure				
Communications Infrastructure	$8.2m	6	$52,806	km
Communications Power Supply	$0.7m	11	UPS: $2,438 RPS: $6,814	km
Infrastructure Monitoring System SCADA	$16.5m	76	$217,151	km
Infrastructure Monitoring Systems	$2.7m	4	$689,626	km
Transmission Systems	$3.2m	3	$188,930	km
Wireless Transmission	$118.3m	5	$576,880	km
Total	$4,667.9m	824	NA	NA

Table 18: MEA Value by Route Section

Asset class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
Plant, Equipment, Vehicles									
Mobile Plant (LIC)	$2.9m	$0.3m	$0.4m	$0.4m	$0.4m	$0.3m	$0.3m	$0.3m	$0.3m
Plant & Equipment	$1.3m	$0.1m	$0.2m	$0.2m	$0.2m	$0.1m	$0.1m	$0.1m	$0.1m
Rail Plant	$0.3m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.2m	$0.0m	$0.0m
Trucks	$2.5m	$0.3m	$0.4m	$0.4m	$0.4m	$0.3m	$0.3m	$0.3m	$0.3m
Railway Infrastructure									
Ballasting	$107.3m	$19.5m	$11.8m	$17.8m	$9.9m	$41.0m	$2.6m	$0.8m	$3.9m
Crash Barrier	$133.6m	$53.3m	$0.0m	$0.0m	$0.0m	$80.3m	$0.0m	$0.0m	$0.0m
Fencing	$63.8m	$10.8m	$9.2m	$9.6m	$4.8m	$22.5m	$1.6m	$1.0m	$4.4m
Footbridges	$284.3m	$59.2m	$34.3m	$56.3m	$61.7m	$68.1m	$4.6m	$0.0m	$0.0m
Level Crossings	$15.4m	$0.0m	$1.0m	$6.7m	$2.4m	$0.0m	$2.8m	$0.0m	$2.4m
Noise Wall	$22.6m	$3.3m	$1.3m	$11.9m	$0.0m	$4.4m	$0.0m	$1.6m	$0.0m
Pedestrian Crossing	$11.3m	$0.0m	$1.8m	$5.5m	$1.6m	$0.0m	$2.1m	$0.0m	$0.3m
Rail bridge	$770.8m	$51.6m	$45.1m	$141.0m	$100.0m	$376.4m	$34.8m	$16.6m	$5.2m
Rail Civil Infrastructure	$241.2m	$42.6m	$27.1m	$39.5m	$33.4m	$90.8m	$5.6m	$2.3m	$0.0m
Rails	$303.1m	$94.5m	$60.5m	$51.4m	$63.0m	$0.0m	$12.8m	$4.3m	$16.7m
Retaining Structure	$100.0m	$9.2m	$45.6m	$17.6m	$15.6m	$0.0m	$10.1m	$1.9m	$0.0m
Roads & Approaches	$74.0m	$21.0m	$12.9m	$26.6m	$9.4m	$0.0m	$3.1m	$1.1m	$0.0m
Siding	$30.9m	$2.1m	$3.9m	$13.4m	$8.1m	$0.0m	$3.0m	$0.5m	$0.0m
Signals	$1,252.4m	$260.6m	$320.4m	$354.9m	$251.8m	$0.0m	$63.4m	$1.4m	$0.0m
Slab Track	$36.1m	$0.0m	$26.1m	$4.9m	$0.0m	$0.0m	$0.0m	$5.1m	$0.0m
Sleepers	$106.8m	$34.0m	$19.8m	$29.3m	$17.8m	$0.0m	$4.5m	$1.4m	$0.0m
Train Control	$42.5m	$12.1m	$7.8m	$8.3m	$6.0m	$0.7m	$2.3m	$1.2m	$4.1m
Tunnels	$625.1m	$336.5m	$195.9m	$0.0m	$0.0m	$0.0m	$0.0m	$92.7m	$0.0m
Turnouts	$224.5m	$31.2m	$60.5m	$47.3m	$48.5m	$27.5m	$5.2m	$4.4m	$0.0m
Underpass	$52.4m	$6.6m	$36.3m	$2.4m	$7.1m	$0.0m	$0.0m	$0.0m	$0.0m
Viaducts	$13.2m	$0.0m	$0.0m	$0.0m	$13.2m	$0.0m	$0.0m	$0.0m	$0.0m
System Infrastructure									
Communications Infrastructure	$8.2m	$1.1m	$1.1m	$1.3m	$1.0m	$3.0m	$0.5m	$0.3m	$0.0m
Communications Power Supply	$0.7m	$0.0m	$0.2m	$0.0m	$0.1m	$0.3m	$0.0m	$0.0m	$0.0m
Infrastructure Monitoring System SCADA	$16.5m	$1.6m	$3.8m	$4.6m	$2.8m	$3.7m	$0.0m	$0.0m	$0.0m

Asset class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
Infrastructure Monitoring Systems	$2.7m	$1.6m	$1.1m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m
Transmission Systems	$3.2m	$0.0m	$0.0m	$0.0m	$1.3m	$0.0m	$0.0m	$1.9m	$0.0m
Wireless Transmission	$118.3m	$13.1m	$17.5m	$17.6m	$17.5m	$13.1m	$13.1m	$13.1m	$13.1m
Total	**$4,667.9 m**	**$1,065.9 m**	**$946.1m**	**$869.0m**	**$678.1m**	**$732.6m**	**$172.8m**	**$152.4m**	**$51.0m**

6. Capital Contribution

The process for determining the DORC is set out in the Costing Principles and requires the removal of "the value of the proportion of any Railway Infrastructure that has been funded wholly or partially by Contributed Capital".[32]

The PTA confirms that none of the railway infrastructure or related assets that are subject to this DORC valuation have been funded as Contributed Capital, either wholly or in part. No adjustment for contributed assets is required. No deduction was made to the asset values.

[32] PTA (2024) Costing Principles p.13

7. Accumulated Depreciation

Depreciation recognises that assets lose value over time as they age, reflecting that a portion of their original capital cost has already been recovered and their remaining service potential is reduced compared to newly constructed assets.

Accumulated depreciation is the total amount by which an asset's original value has decreased over time, capturing cumulative usage or consumption up to the valuation date.

For valuation purposes, the asset's Optimised Replacement Cost (ORC) is adjusted by depreciation to reflect current asset condition and usage at the time of valuation. The resulting Depreciated Optimised Replacement Cost (DORC) accounts for accumulated depreciation, indicating the asset's remaining service potential. It also recognises that portions of any previous capital expenditure aimed at extending asset life have already been recovered.

Accumulated depreciation is calculated using a condition-based straight-line method, taking into account each asset's effective economic life and remaining useful life (RUL). The RUL is derived from the asset's standard design life, adjusted based on its actual physical condition, life extending improvement activities and assumptions about future usage and consumption.

In assessing the accumulated depreciation and RUL, asset economic life is adopted instead of the standard design life. Economic life refers to how long an asset remains economically viable considering factors like maintenance costs, usage, and obsolescence, whereas standard design life is the technically determined lifespan based purely on engineering specifications. Economic life can change based on environmental conditions, but standard design life typically remains fixed from asset inception.

The PTA reviews and updates the RUL annually through a divisional stocktake. This process involves examining data from maintenance management systems and physical condition assessments to confirm if the asset can reliably remain in service for the projected period.

The key inputs into determining accumulated depreciation and the remaining useful life include:

- Asset standard design life as presented in Table 19;
- Asset commissioning date;
- Improvement and life-extending activities carried out since asset commissioning; and
- Asset owner adjustments, reflecting both current asset condition assessments and assumptions about future asset consumption:
  - Condition-based adjustment factor of 10% uplift is applied to in-scope assets that are still in service but with less than 10% of the asset life remaining to account for better-than-expected conditions and the expected future service potential in the network; and
  - Assumptions about future consumption, including no material change in service demand, maintenance of current service levels, and implementation of required routine maintenance.

Table 19: Standard Design Life

Asset class	Standard design life
Plant, Equipment, Vehicles	
Mobile Plant (LIC)	10 to 20
Plant & Equipment	10 to 20
Rail Plant	10 to 20
Trucks	10 to 20
Railway Infrastructure	
Ballasting	50
Crash Barrier	20 to 50
Fencing	15
Footbridges	100
Level Crossings	20
Noise Wall	75
Pedestrian Crossing	40
Rail bridge	100
Rail Civil Infrastructure	75
Rails	10 to 70
Retaining Structure	75 to 100
Roads & Approaches	40 to 100
Siding	30
Signals	20
Slab Track	50
Sleepers	50
Train Control	15
Tunnels	100
Turnouts	40
Underpass	75 to 100
Viaducts	75 to 120
System Infrastructure	
Communications Infrastructure	20 to 50
Communications Power Supply	5 to 10
Fire SCADA	7 to 20
Infrastructure Monitoring System SCADA	8 to 20
Infrastructure Monitoring Systems	12
Transmission Systems	10 to 15
Wireless Transmission	7

The FAR serves as the primary data source and is updated periodically, reflecting adjustments made by asset owners as part of ongoing operational practices. These routine updates ensure accumulated depreciation better reflects current asset condition and expected future asset utilisation, supporting effective valuation practices.

7.1. Accumulated Depreciation by Asset Class

The accumulated depreciation for each route section by asset class is outlined in Table 20.

Table 20: Accumulated Depreciation Value by Route Section

Asset class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
Plant, Equipment, Vehicles									
Mobile Plant (LIC)	$1.3m	$0.1m	$0.2m	$0.2m	$0.2m	$0.1m	$0.1m	$0.1m	$0.1m
Plant & Equipment	$0.7m	$0.1m	$0.1m	$0.1m	$0.1m	$0.1m	$0.1m	$0.1m	$0.1m
Rail Plant	$0.2m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.2m	$0.0m	$0.0m
Trucks	$1.4m	$0.2m	$0.2m	$0.2m	$0.2m	$0.2m	$0.2m	$0.2m	$0.2m
Railway Infrastructure									
Ballasting	$69.8m	$14.0m	$10.0m	$13.4m	$8.8m	$17.5m	$2.3m	$0.7m	$3.1m
Crash Barrier	$45.4m	$22.8m	$0.0m	$0.0m	$0.0m	$22.5m	$0.0m	$0.0m	$0.0m
Fencing	$41.5m	$5.7m	$6.2m	$7.3m	$4.2m	$12.6m	$1.4m	$0.9m	$3.4m
Footbridges	$142.4m	$30.1m	$20.2m	$31.2m	$38.1m	$18.7m	$4.2m	$0.0m	$0.0m
Level Crossings	$13.7m	$0.0m	$0.9m	$5.9m	$2.2m	$0.0m	$2.5m	$0.0m	$2.2m
Noise Wall	$4.3m	$0.5m	$0.0m	$0.8m	$0.0m	$1.7m	$0.0m	$1.3m	$0.0m
Pedestrian Crossing	$9.3m	$0.0m	$1.5m	$4.7m	$1.3m	$0.0m	$1.6m	$0.0m	$0.2m
Rail bridge	$270.5m	$19.8m	$26.4m	$57.0m	$20.2m	$117.7m	$21.9m	$5.1m	$2.5m
Rail Civil Infrastr-ucture	$128.6m	$23.8m	$17.5m	$26.6m	$17.4m	$37.3m	$3.9m	$2.1m	$0.0m
Rails	$163.3m	$48.4m	$29.3m	$30.8m	$31.3m	$0.0m	$6.6m	$3.8m	$12.9m
Retaining Structure	$29.0m	$1.5m	$16.1m	$1.6m	$4.4m	$0.0m	$3.8m	$1.5m	$0.0m
Roads & Approa-ches	$20.7m	$4.6m	$2.4m	$10.1m	$2.1m	$0.0m	$0.6m	$0.9m	$0.0m

Asset class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
Siding	$12.3m	$0.8m	$1.1m	$5.4m	$3.3m	$0.0m	$1.2m	$0.4m	$0.0m
Signals	$1,048.8m	$202.6m	$264.4m	$316.4m	$207.2m	$0.0m	$57.0m	$1.3m	$0.0m
Slab Track	$7.8m	$0.0m	$5.6m	$1.0m	$0.0m	$0.0m	$0.0m	$1.1m	$0.0m
Sleepers	$55.6m	$16.8m	$9.4m	$18.5m	$7.5m	$0.0m	$2.2m	$1.3m	$0.0m
Train Control	$34.2m	$10.4m	$6.4m	$6.9m	$4.8m	$0.2m	$1.6m	$0.6m	$3.2m
Tunnels	$186.5m	$97.6m	$60.7m	$0.0m	$0.0m	$0.0m	$0.0m	$28.1m	$0.0m
Turnouts	$134.3m	$23.6m	$38.4m	$21.5m	$25.4m	$17.8m	$3.7m	$3.9m	$0.0m
Underpass	$26.2m	$3.1m	$14.6m	$2.2m	$6.3m	$0.0m	$0.0m	$0.0m	$0.0m
Viaducts	$0.1m	$0.0m	$0.0m	$0.0m	$0.1m	$0.0m	$0.0m	$0.0m	$0.0m
System Infrastructure									
Communication Infrastructure	$3.1m	$0.4m	$0.3m	$0.8m	$0.5m	$1.0m	$0.1m	$0.0m	$0.0m
Communication Power Supply	$0.4m	$0.0m	$0.1m	$0.0m	$0.1m	$0.2m	$0.0m	$0.0m	$0.0m
Infrastructure Monitoring System SCADA	$10.3m	$1.0m	$2.5m	$2.9m	$2.1m	$1.9m	$0.0m	$0.0m	$0.0m
Infrastructure Monitoring Systems	$0.4m	$0.2m	$0.1m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m
Transmission Systems	$2.9m	$0.0m	$0.0m	$0.0m	$1.2m	$0.0m	$0.0m	$1.7m	$0.0m
Wireless Transmission	$106.5m	$11.8m	$15.8m	$15.8m	$15.8m	$11.8m	$11.8m	$11.8m	$11.8m
Total	**$2,571.4m**	**$540.1m**	**$550.4m**	**$581.3m**	**$404.7m**	**$261.2m**	**$126.9m**	**$67.0m**	**$39.8m**

7.2. Applicable Depreciation Schedule

In accordance with the PTA's Costing Principles, depreciation is calculated using a straight-line (proportional) method to reflect the forecast rate of asset consumption over the asset's estimated remaining economic life.

The Applicable Depreciation Schedule is a separate statement accompanying this statement of DORC. The applicable Depreciation Schedule contains annual depreciation rates for each asset group expected to be used in the updated iRAB.

As outlined in Section 7, accumulated depreciation assessments involve estimating each asset's remaining economic life. Annual depreciation rates are determined by applying a straight-line depreciation method, evenly distributing the asset's remaining value over its estimated economic life until it reaches zero.

At an individual asset level, annual depreciation is calculated as follows:

$$Annual\ Depreciation = \frac{\text{Current DORC Value}}{\text{Remaining Economic Life}}$$

The Applicable Depreciation Schedule presents these calculated annual depreciation rates clearly, grouped by asset classes and segmented according to specific route sections.

7.3. Uniform Depreciation

Depreciation is distributed uniformly across each year of the economic life of an asset or asset group, following a straight-line depreciation approach.

When assets are removed from the FAR, their depreciation ceases. Conversely, when new assets are added to the FAR, straight-line depreciation commences, based on the initial capital value of these assets in their first year of operation.

The PTA does not intend to change the economic life of an asset or group of assets solely to accelerate depreciation, where there is a risk of asset stranding or defer depreciation, where the market for access to the asset is relatively immature.[33]

Should the PTA propose a depreciation schedule that involves non-uniform depreciation across the economic life of an asset, the ERA must evaluate and approve this schedule, taking into consideration factors such as specific replacement plans or asset conditions. For example, as outlined in Table 21, railway infrastructure assets associated with planned replacement activities on two identified route sections will be replaced with newly constructed assets, and the depreciation schedule may reflect this accordingly.

Table 21: Route Sections with Planned Replacement Activities

Route section number	Route name	Length
49(c)	Perth- Armadale	29.11 km (prior to current works), only 4.8 km currently operational (Perth - Vic Park)
50A	Beckenham-Thornlie	2.99 km (prior to the TCL extension project, not online)

Future adjustments may be made by the PTA when the iRAB is updated for situations that have not been foreseen at the time of submitting the Applicable Deprecation Schedule.

Consistent with section 47F of the Code, the PTA will not engage in double counting by

[33] See Code 47K(6) Applicable depreciation schedule

ensuring that the sum of the return of capital attributed to an asset over its economic life, via depreciation, does not exceed the value of the asset at the time it is first included in a RAB. The PTA confirms that the value of each asset included in the DORC does not exceed the sum of the return of capital over the remaining economic life of that asset.

8. DORC Results

Taking the ORCs developed using the approach described above, the PTA applies depreciation to arrive at the DORC determinations. Table 22 presents a summary of the DORC Determinations for each route section.

Table 22: DORC Determinations Summary

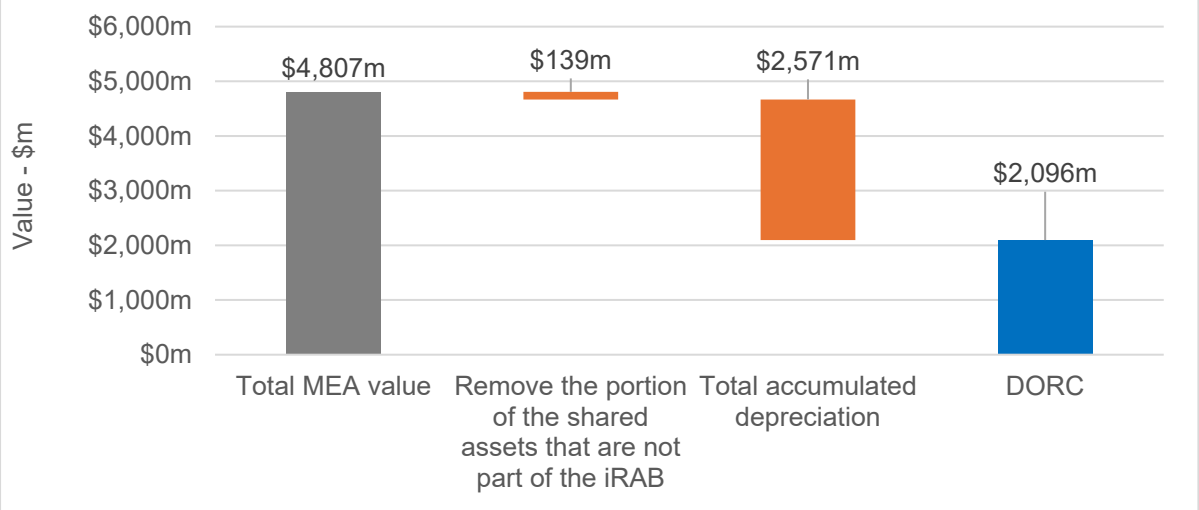
Route section number	Route name	Initial RAB
49(a)	Perth - Clarkson	$525.8m
49(b)	Perth - Fremantle	$395.7m
49(c)	Perth - Armadale	$287.7m
49(d)	Perth - Midland	$273.4m
49(e)	Perth - Mandurah	$471.4m
50	Beckenham - Thornlie	$45.9m
50A	Robb Jetty - North Quay - Leighton	$85.4m
51	Armadale - Mundijong	$11.2m
Total		$2,096.5m

Table 23 presents the DORC values by route section for key steps in calculating DORC. Figure 5 provides a visual representation of the total DORC calculation of all 'in-scope' assets for the iRAB.

Table 23: DORC Calculation by Route Section

	Total MEA value	In-scope MEA value	Total accumulated depreciation	DORC
Total	$4,807.2m	$4,667.9m	$2,571.4m	$2,096.5m
49(a)	NA	$1,065.9m	$540.1m	$525.8m
49(b)	NA	$946.1m	$550.4m	$395.7m
49(c)	NA	$869.0m	$581.3m	$287.7m
49(d)	NA	$678.1m	$404.7m	$273.4m
49(e)	NA	$732.6m	$261.2m	$471.4m
50	NA	$172.8m	$126.9m	$45.9m
50A	NA	$152.4m	$67.0m	$85.4m
51	NA	$51.0m	$39.8m	$11.2m

Figure 5: DORC Calculation



Attachment 1: Summary Model

A summary of the DORC model that will be used as the basis of the iRAB, once approved, is provided below.

Model Summary

Account description	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51	Total
Plant, Equipment, Vehicles	$0.4m	$0.5m	$0.5m	$0.5m	$0.4m	$0.4m	$0.4m	$0.4m	$3.4m
Railway Infrastructure	$336.3m	$241.2m	$136.1m	$112.9m	$348.2m	$22.3m	$81.0m	$4.3m	$1,282.4m
Railway Infrastructure	$96.5m	$77.9m	$82.4m	$86.9m	$86.7m	$13.6m	$1.5m	$4.5m	$450.0m
Railway Infrastructure	$29.1m	$13.3m	$23.1m	$23.6m	$30.4m	$0.0m	$0.0m	$0.0m	$119.5m
Railway Infrastructure	$59.7m	$57.8m	$41.5m	$46.4m	$0.5m	$7.9m	$0.7m	$1.2m	$215.6m
System Infrastructure	$2.0m	$2.7m	$2.3m	$2.4m	$3.4m	$1.7m	$1.8m	$1.3m	$17.6m
System Infrastructure	$1.4m	$1.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$0.0m	$2.3m
System Infrastructure	$0.5m	$1.4m	$1.7m	$0.7m	$1.8m	$0.0m	$0.0m	$0.0m	$6.2m
Subtotal	**$525.8m**	**$395.7m**	**$287.7m**	**$273.4m**	**$471.4m**	**$45.9m**	**$85.4m**	**$11.7m**	**$2,097.0m**

Route Section Number	Route Name	DORCs	Route length (km)	Costs Per Km
49(a)	Perth - Clarkson	$525.83m	55.46	$9.48m
49(b)	Perth - Fremantle	$395.72m	21.01	$18.83m
49(c)	Perth - Armadale	$287.68m	29.11	$9.88m
49(d)	Perth - Midland	$273.40m	14.14	$19.34m
49(e)	Perth - Mandurah	$471.39m	70.91	$6.65m
50	Robb Jetty - North Quay - Leighton	$45.90m	6.00	$7.65m
50A	Beckenham - Thornlie	$85.37m	2.99	$28.55m
51	Armadale - Mundijong	$11.70m	13.39	$0.87m
Total		**$2,097.00m**	**213.01**	**$9.84m**

Asset Class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
PLANT, EQUIP, VEHICLES									
MOBILE PLANT(LIC)	$1.63m	$0.18m	$0.24m	$0.24m	$0.24m	$0.18m	$0.18m	$0.18m	$3.07m
PLANT & EQUIPMENT	$0.59m	$0.07m	$0.09m	$0.09m	$0.09m	$0.07m	$0.07m	$0.07m	$1.12m
RAIL PLANT	$0.06m	$0.00m	$0.00m	$0.00m	$0.00m	$0.00m	$0.05m	$0.00m	$0.13m
TRUCKS	$1.10m	$0.12m	$0.16m	$0.16m	$0.16m	$0.12m	$0.12m	$0.12m	$2.08m
RAILWAY INFRASTRUCTURE									
BALLASTING	$37.49m	$5.52m	$1.81m	$4.47m	$1.07m	$23.55m	$0.26m	$0.09m	$74.26m
FENCING	$22.21m	$5.09m	$3.06m	$2.35m	$0.56m	$9.91m	$0.16m	$0.10m	$43.43m
FOOTBRIDGES	$141.84m	$29.08m	$14.13m	$25.15m	$23.62m	$49.40m	$0.46m	$0.00m	$283.69m
LEVEL CROSSINGS	$1.67m	$0.00m	$0.10m	$0.80m	$0.24m	$0.00m	$0.28m	$0.00m	$3.10m
NOISE WALL	$18.23m	$2.73m	$1.30m	$11.15m	$0.00m	$2.73m	$0.00m	$0.32m	$36.45m
PED CROSSING	$2.02m	$0.00m	$0.34m	$0.79m	$0.30m	$0.00m	$0.52m	$0.00m	$3.97m
RAIL BRIDGE	$500.27m	$31.82m	$18.73m	$84.07m	$79.85m	$258.73m	$12.87m	$11.44m	$997.78m
RAIL CIVIL INFRA	$112.66m	$18.81m	$9.62m	$12.93m	$16.00m	$53.44m	$1.62m	$0.27m	$225.33m
RAILS	$139.86m	$46.03m	$31.21m	$20.54m	$31.64m	$0.00m	$6.13m	$0.48m	$275.90m
RETAINING STRUC	$71.01m	$7.67m	$29.49m	$16.03m	$11.16m	$0.00m	$6.29m	$0.37m	$142.02m
ROADS & APPROACHES	$53.28m	$16.32m	$10.49m	$16.43m	$7.35m	$0.00m	$2.50m	$0.18m	$106.55m
SIDING	$18.65m	$1.27m	$2.80m	$7.95m	$4.80m	$0.00m	$1.77m	$0.05m	$37.29m
SIGNALS	$203.67m	$58.04m	$55.99m	$38.49m	$44.62m	$0.00m	$6.38m	$0.14m	$407.34m
SLAB TRACK	$28.34m	$0.00m	$20.53m	$3.82m	$0.00m	$0.00m	$0.00m	$3.99m	$56.69m
SLEEPERS	$51.15m	$17.26m	$10.38m	$10.73m	$10.29m	$0.00m	$2.33m	$0.16m	$102.29m
TRAIN CONTROL	$8.26m	$1.65m	$1.38m	$1.43m	$1.20m	$0.51m	$0.67m	$0.56m	$15.67m
TUNNELS	$438.58m	$238.81m	$135.17m	$0.00m	$0.00m	$0.00m	$0.00m	$64.61m	$877.17m
TURNOUTS	$90.22m	$7.57m	$22.08m	$25.82m	$23.11m	$9.73m	$1.47m	$0.44m	$180.44m
UNDERPASS	$26.14m	$3.43m	$21.64m	$0.24m	$0.82m	$0.00m	$0.00m	$0.00m	$52.27m
VIADUCTS	$13.16m	$0.00m	$0.00m	$0.00m	$13.16m	$0.00m	$0.00m	$0.00m	$26.32m
SYSTEM INFRASTRUCTURE									
COMMS INFRASTR	$5.12m	$0.67m	$0.82m	$0.52m	$0.46m	$1.96m	$0.40m	$0.30m	$10.24m
COMMS POWR SUP	$0.35m	$0.01m	$0.10m	$0.01m	$0.05m	$0.16m	$0.02m	$0.00m	$0.69m
IMS SCADA	$6.18m	$0.52m	$1.35m	$1.72m	$0.73m	$1.81m	$0.04m	$0.00m	$12.36m
INFR MONIT SYST	$2.33m	$1.37m	$0.95m	$0.00m	$0.00m	$0.00m	$0.00m	$0.00m	$4.66m

Approved: Michael Parker

Asset Class	Total	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
TRANSMISSION SYS	$0.32m	$0.00m	$0.00m	$0.00m	$0.13m	$0.00m	$0.00m	$0.19m	$0.65m
WIRELESS TRANS	$11.83m	$1.31m	$1.75m	$1.76m	$1.75m	$1.31m	$1.31m	$1.31m	$22.35m
Grand Total	**$2,096.48m**	**$525.83m**	**$395.72m**	**$287.68m**	**$273.40m**	**$471.39m**	**$45.90m**	**$85.37m**	**$11.17m**

Summary of Reasons for Assets Included in Model

Reasons for inclusion of the assets
Access roads adjacent to the rail corridor
Allows overtaking within route
Civil infrastructure within rail reserve
Facilitates safe passage within route
Facilitates track switching
Level crossing
Prevents incursions into the rail corridor
Provides buffer for residential areas from railway noise
Provides infrastructure monitoring and data acquisition for railway assets
Provides infrastructure monitoring for associated rail tunnel
Provides pedestrian passage over the rail corridor
Provides pedestrian passage under the rail corridor
Provides security to rail corridor
Rail bridge
Rail plant
Retaining structures within the rail corridor
Safety infrastructure
Supports communications and signalling equipment
Supports planning network-wide
Supports radio communications
Supports rail maintenance network-wide

Reasons for inclusion of the assets
Supports signalling network-wide
Track hardstand providing access within rail reserve
Track infrastructure
Tunnel

Approach to Allocation of Assets

Network-wide Asset Split	Weighting	Percentage
Yanchep Line	1.00	9.09%
Fremantle Line	1.33	12.12%
North Quay Spur	1.00	9.09%
City Line	0.00	0.00%
Mandurah Line	1.00	9.09%
Armadale Line	1.33	12.12%
Thornlie Spur	1.00	9.09%
Mundijong Line	1.00	9.09%
Ellenbrook Line	1.00	9.09%
Airport Line	1.00	9.09%
Midland Line	1.33	12.12%

City Line Asset Split	Weighting	Percentage
Fremantle Line	1.00	33.33%
Armadale Line	1.00	33.33%
Midland Line	1.00	33.33%

Fremantle Line Split	Weighting	Percentage
Fremantle Line	1.00	50.00%
North Quay/Leighton	1.00	50.00%

Perth Underground Split	Weighting	Percentage
Yanchep Line	1.00	50.00%
Mandurah Line	1.00	50.00%

Airport Line Split	Weighting	Percentage
Airport Line	1.00	50.00%
Midland Line	1.00	50.00%

Partial Line Calculations (where Line-wide Assets have been Aggregated in FAR)

49(a) Perth - Clarkson	Total chainage asset served (km)	Section chainage related to route (km)	Allocation percentage
49(a) Perth - Clarkson relevance to 49(a)	40.7	33.2	81.57%
49(b) Perth - Fremantle relevance to 49(b)	26.0	21.0	80.77%
50 Robb Jetty - North Quay and Leighton Spur relevant to 50	26.0	5.0	19.23%

Attachment 2: Modern Equivalent Asset (MEA) Standards

This attachment sets out MEA standards comprised of Asset description, rates, assumptions, units and average unit rates as set out in the RLB Report.

MEA Standard for Civil Structures[34]

Civil Structures (p. 25-31)	Description	Rates	Assumptions
Crash Barrier	Crash Barrier includes all common types used across the network which are a PTA asset. Barriers separating the road and rail system are owned by PTA. All other barriers are owned by the road/bridge owner.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that Crash Barriers are in line with 8880-450-050 - Specification – Road and Rail Safety Barriers and are consistent across the network. Where indicated as wire rope in the asset register, RLB have assumed replacement with W-Beam barrier.
Fencing	Includes fencing and gates which run parallel and within the rail corridor. Includes all types of fencing and gates irrespective of material type and where applicable, includes for foundations, footing and surface finishes, including anti-graffiti treatments	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that Fencing is in line with 8880-450-069 - Specification - Fences and Noise Walls and is consistent across the network. RLB have assumed Chainmesh Fencing and gates to be 1.8m high, and that the Fencing runs both sides of the entire length of the track. Where the width of the vehicle gates is not available, RLB have assumed 7m wide. Where identified as Palisade Fencing, RLB have assumed this to be 2.4m high.

[34] RLB (2024) p25-31

Civil Structures (p. 25-31)	Description	Rates	Assumptions
Footbridges	All pedestrian bridges, irrespective of structural composition, where the primary purpose is to provide a safe means of pedestrian access over the rail corridor, but which provides no access to the rail corridor.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that Footbridges are in line with 8880-450-057 - Specification – Foot and Shared Path Bridges and are consistent across the network. RLB have included all ramps and stairs that form part of the Footbridge within the measure and rate allowance.
Noise Wall	A vertical wall, the primary function of which is to act as a noise barrier to adjacent and adjoining properties, the construction of which may be pre-cast concrete or limestone block.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that Noise Walls are in line with 8880-450-069 - Specification - Fences and Noise Walls and are consistent across the network. RLB have assumed that the Noise Walls do not exceed 3m high.
Protection Screens	All electrification protection screens, including earthing and bonding and associated civil infrastructure works, fixed vertically to bridge parapets or on Principal Shared Paths (PSP) on non-PTA bridges or PSPs.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that Protection Screens are in line with 8880-450-061 – Specification - Protection Screens and are consistent across the network. RLB have assumed that the Protection Screens do not exceed 2.5m high
Rail Bridge	All rail bridges which are not included elsewhere but which are a PTA asset. PTA's current requirements for rail bridges are that all should be concrete construction for its aesthetic, constructability and maintainability requirements for bridges. This has resulted in an increase of between 50% - 80% for most assets which is reasonable.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed that the structure of the bridges is concrete in line with 8880-450- 054 – Specification – Rail Bridges and are consistent across all bridges.

Civil Structures (p. 25-31)	Description	Rates	Assumptions
Retaining Structure	Includes all boundary and retaining walls and structures which run parallel and within the rail corridor.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Retaining Structures are in line with 8880- 450-053 - Specification - Retaining Walls and Shallow Foundations and are consistent across the network. RLB have assumed that the retaining walls and boundary walls do not exceed 3.0m high. Where located along the FAL, RLB have assumed that the walls do not exceed 5.0m high.
Roads and Approaches	All road and pavement structures that are a PTA asset, including access and / or maintenance tracks, excluding Roads and Approaches to Railcar Depots.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Roads & Approaches are in line with 8880- 450-067 - Specification - Roads, Busways, Paths and Access Tracks & 8880-450-300 -Specification - Access to Infrastructure and are consistent across the network.
Slab Track	Sections of concrete slab laid for the purposes of securing rail down where it is not plausible to lay ballast.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Slab Tracks are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8840-400-005 – Technical Instruction - Sleeper Spacing and Ballast Depths for New Construction and are consistent across the network.
Tunnels	Includes all rail tunnels owned by PTA, constructed using a number of construction techniques.	RLB have reviewed the rates from a number of recent and relevant projects both PTA and non-PTA and adjusted the rates to account for the additional complexity as appropriate.	RLB have assumed Tunnels are in line with 8880-450-051 - Specification: Railway Tunnels, Underpasses and Dive Structures and are consistent across the network.
Underpass	Underground passages which are used to facilitate the safe passage of pedestrians, livestock, and / or vehicles, constructed using a number of construction techniques.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Underpasses are in line with 8880-450-051 - Specification: Railway Tunnels, Underpasses and Dive Structures and are consistent across the network.

MEA Standard for Civil Permanent Way[35]

Permanent Way (p. 52-57)	Description	Rates	Assumptions
Ballasting	Ballasting including bottom, top and ballast to shoulders. Item also includes capping layer which is the pavement build-up that sits between sub-grade and bottom ballast.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	For consistency, RLB have utilised the Ballasting tonnages provided within the asset register and have assumed that it complies with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8190-400-001 - Code of Practice - Standard Gauge Mainline Track & Civil Infrastructure, ▪ 8840-400-005 – Technical Instruction – Sleeper Spacing and Ballast Depths for New Construction, and is consistent across the network.
Rail Civil Infrastructure	All structures that sit within the rail corridor, including earthworks preparation, stormwater drainage, access stairs, buffer stops, culverts, signage and track hard stands.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Rail Civil Infrastructure are in line with: ▪ 8880-450-300 - Specification - Access to Infrastructure, ▪ 8880-450-074 -Specification - Earthworks, Slope Stability, Geotextiles and Erosion Protection, ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil infrastructure and is consistent across the network. RLB have assumed hard stands to be reinforced concrete, size at 20m wide and 50m long.

[35] RLB (2024) p52-57

Permanent Way (p. 52-57)	Description	Rates	Assumptions
Rails	Rail includes 31kg, 41kg, 47kg, 50kg, 60kg configured as either Narrow Gauge (NG), Standard Gauge (SG) and / or Dual Gauge (DG), measured in total track kilometres.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Rails are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8190-400-001 - Code of Practice - Standard Gauge Mainline Track & Civil Infrastructure and are consistent across the network.
Siding	Sidings are designed to stable trains, or to provide the ability for trains to change direction. Includes ballast, rails and sleepers that fall within the Sidings boundary.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Siding are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8190-400-001 - Code of Practice - Standard Gauge Mainline Track & Civil Infrastructure and are consistent across the network.
Sleepers	Sleepers include concrete (40 yrs), fibre glass (40 yrs) and timber (25 yrs).	RLB have valued these assets in line with current market rates and as such considers the change in value for this asset to be in the reasonable range.	RLB have assumed Sleepers are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8190-400-001 - Code of Practice - Standard Gauge Mainline Track & Civil Infrastructure, ▪ 8840-400-005 – Technical Instruction – Sleeper Spacing and Ballast Depths for New Construction, RLB have allowed for sleepers to be concrete and a consistent length and spacing across the network.

Permanent Way (p. 52-57)	Description	Rates	Assumptions
Turnouts	Includes all turnouts, switches and crossovers on the passenger rail network including mixed, narrow, dual and standard gauge. These track crossing permit one track to cross another at grade.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Turnouts are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8880-600-845 - Specification Points, Crossings and Operating Equipment, ▪ and are consistent across the network.

MEA Standard for Rail Stations[36]

Rail Stations (p. 64-65)	Description	Rates	Assumption
Footbridges	All pedestrian bridges, irrespective of structural composition, where the primary purpose is to provide a safe means of pedestrian access over the rail corridor, but which provides no access to the rail corridor.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have included all ramps and stairs that form part of the Footbridge within the measure and rate allowance. RLB have assumed Footbridges are in line with 8880-450-057 – Specification - Foot and Shared Path Bridges and are consistent across the network.
Rail Station Structure	Buildings used for the sole purpose of entry and / or exit to Rail Stations, including entry buildings, platform concourse and station platform structures themselves.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Rail Station Structure are in line with 8880-450-059 - Specification - Buildings and Station Structures and are consistent across the network. Consideration has been given to station structures that are more unique such as the Airport Central Station project.

[36] RLB (2024) p64-65

MEA Standard for Rail Systems[37]

Rail Systems (p.69-71)	Description	Rates	Assumption
Level Crossings	All at-grade vehicular crossings that crosses the rail corridor at the same level.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	RLB have assumed Level Crossing are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8000-400-001 – Level Crossing Reference Manual and are consistent across the network. RLB note that it is PTA policy that the construction of new level crossings on the urban network is not permitted. However, there is no obligation for existing level crossings to be graded-separated and therefore, the replacement cost valuation of the existing level crossings as at-grade crossings is appropriate.
Pedestrian Crossings	All at-grade pedestrian crossings that crosses the rail corridor at the same level.	RLB have extracted rates from a number of recent and relevant projects both PTA and non-PTA. RLB have assessed the appropriateness of each rate and adjusted them where appropriate.	have assumed Pedestrian Crossing are in line with: ▪ 8190-400-002 - Code of Practice - Narrow Gauge Main Line Track and Civil Infrastructure, ▪ 8000-400-001 – Level Crossing Reference Manual and are consistent across the network. Similar to level crossings, whilst it is PTA policy that the construction of new pedestrian crossings on the urban network is not permitted, the replacement cost valuation of the existing pedestrian crossings as at-grade crossings is appropriate.

[37] RLB (2024) p.69-71

Rail Systems (p.69-71)	Description	Rates	Assumption
Signals	Signals are required to provide movement authority and limit of authority to train drivers.	RLB considers the change in value for this asset to be in the reasonable range. A large increase in the value of Airport Line assets has been observed in the indicative valuation, likely a result of different cost and overhead allocation methodologies and the pending final capitalisation due for the project. The replacement cost identified is consistent with the approach for similar assets on other lines.	RLB have assumed Signals are in line with: ▪ 8190-600-005 – Signalling Construction Code of Practice, ▪ 8110-600-001 – Technical Procedure for Signal Design, ▪ 8103-600-008 - Guideline - ICO Basic Train Control Systems & Signals and are consistent across the network.
Train Control	The Train Control System (TCS) provides the ability to manage and operate rail traffic within the PTA rail network.	RLB have relied upon asset replacement costs (of existing signalling assets) developed by PTA during formulation of the 'High Capacity Signalling' project and applied costs on a proportional basis, where appropriate.	RLB have assumed Train Control is in line with 8103-600- 008 - Guideline - ICO Basic Train Control Systems & Signals and is consistent across the network.

Attachment 3: Asset Classes Excluded from the Initial RAB

Percentage of asset value excluded in the initial RAB by asset class by route.

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
PLANT, EQUIPMENT, VEHICLES								
BUS PLANT	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
FURNITURE & FITTINGS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
HARDWARE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
LIGHT VEHICLES	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
MOBILE PLANT (LIC)	96%	95%	95%	95%	96%	96%	96%	96%
OFFICE EQUIPMENT	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PLANT & EQUIPMENT	98%	97%	97%	97%	98%	98%	98%	98%
PRINTER	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
RAIL PLANT	99%	99%	99%	99%	99%	72%	99%	99%
SERVER	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TRUCKS	91%	88%	88%	88%	91%	91%	91%	92%
RAILWAY INFRASTRUCTURE								
ADMIN FACILITIES	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
BALLASTING	93%	82%	89%	81%	92%	98%	92%	92%
BICYCLE FACILITIES	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
CAR PARKS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
CRASH BARRIER	43%	fully excluded	fully excluded	fully excluded	71%	fully excluded	fully excluded	fully excluded
CROSS PASSAGE STRUCTURE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
EGRESS BUILDING	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
EGRESS STRUCTURE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
ELECT SERVS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
ESCALATORS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
FENCING	94%	71%	87%	92%	92%	99%	92%	98%
FENCING & WALLS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
FOOTBRIDGES	79%	86%	84%	79%	79%	97%	fully excluded	fully excluded
LEVEL CROSSINGS	fully excluded	93%	57%	85%	fully excluded	83%	fully excluded	85%
LIFTS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
MAINTENANCE FAC	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
MOTORCYCLE FAC	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
MULTISTOREY CARPARK	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
NOISE WALL	88%	88%	88%	fully excluded	88%	fully excluded	88%	fully excluded
O'HEAD LINE EQUI	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PEDESTRIAN CROSSING	fully excluded	85%	52%	85%	fully excluded	82%	fully excluded	97%
PERMANENT WAY	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PROTECT SCREENS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
RAIL BRIDGE	89%	79%	78%	92%	86%	93%	97%	89%
RAIL CIVIL INFRASTRUCTURE	87%	89%	95%	94%	77%	99%	95%	fully excluded
RAIL STATION STRUCTURE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
RAILS	95%	85%	92%	79%	fully excluded	94%	94%	94%
RETAINING STRUCTURE	93%	65%	91%	91%	fully excluded	98%	91%	fully excluded
ROADS & APPROACHES	94%	94%	92%	92%	fully excluded	99%	92%	fully excluded
SIDING	92%	76%	76%	88%	fully excluded	96%	96%	fully excluded
SIGNALS	88%	82%	86%	83%	fully excluded	97%	98%	fully excluded
SLAB TRACK	fully excluded	80%	80%	fully excluded	fully excluded	fully excluded	80%	fully excluded
SLEEPERS	93%	82%	89%	81%	fully excluded	98%	92%	fully excluded

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
T PORTL BUILDING	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TRACTION POWER	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TRAIN CONTROL	90%	86%	87%	84%	99%	97%	88%	95%
TUNNELS	63%	94%	fully excluded	fully excluded	fully excluded	fully excluded	97%	fully excluded
TURNOUTS	86%	72%	78%	85%	88%	97%	98%	fully excluded
UNDERPASS	95%	55%	95%	77%	fully excluded	fully excluded	fully excluded	fully excluded
VIADUCTS	fully excluded	fully excluded	fully excluded	0%	fully excluded	fully excluded	fully excluded	fully excluded
WASH FACILITIES	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
SYSTEM INFRASTRUCTURE								
ACCESS CONTROL	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
ACCESS SWITCH	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
ADSS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
BUS SYSTEMS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
CABLE CONTAINMEN	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
CCTV NETWORK	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
COMM CABLING	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
COMMS INFRASTR	93%	93%	91%	91%	92%	98%	99%	fully excluded
COMMS POWR SUP	93%	90%	97%	88%	86%	98%	fully excluded	fully excluded
DATA CENT SWITCH	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
DISTR SWITCH	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
FIRE SCADA	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
IMS SCADA	89%	82%	84%	88%	86%	100%	fully excluded	fully excluded
INFR MONIT SYST	63%	88%	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
IN-GROUND CABLE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
MONITORING SYS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
OPERATIONAL TELE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PARKING VENDING	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PERIPH DEVICES	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PINS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
PUBLIC ADDRESS	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
SCADA	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
SECURITY CONTROL	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
SERVER	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
SMARTRIDER EQP	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
STORAGE	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
STRUCT CABLING	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TICKET VEND MAC	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TP SCADA	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded	fully excluded
TRANSMISSION SYS	99%	99%	99%	94%	99%	99%	94%	99%
WIRELESS TRANS	97%	96%	89%	96%	97%	97%	97%	97%

Attachment 4: Allocation of Shared Assets by Route Section

Total number of assets by asset class and route section (include fully allocated assets and partially allocated assets)

Asset classes	49(a)	49(b)	49(c)	49(d)	49 (e)	50	50A	51
PLANT, EQUIP, VEHICLES	64	64	64	64	64	69	69	63
MOBILE PLANT(LIC)	22	22	22	22	22	22	22	22
PLANT & EQUIPMENT	27	27	27	27	27	27	27	27
RAIL PLANT	1	1	1	1	1	6	6	1
TRUCKS	14	14	14	14	14	14	14	13
RAILWAY INFRASTRUCTURE	89	178	186	126	60	56	56	18
BALLASTING	1	3	2	3	1	1	1	1
CRASH BARRIER	4	0	0	0	2	0	0	0
FENCING	1	4	2	1	1	1	1	1
FOOTBRIDGES	8	7	7	9	8	2	2	0
LEVEL CROSSINGS	0	3	20	7	0	8	8	7
NOISE WALL	1	1	1	0	1	0	0	0
PED CROSSING	0	18	53	17	0	20	20	3
RAIL BRIDGE	4	9	8	3	5	4	4	3
RAIL CIVIL INFRA	8	8	4	5	13	2	2	0
RAILS	1	3	2	4	0	1	1	1
RETAINING STRUC	1	4	1	1	0	1	1	0
ROADS & APPROACHES	1	1	1	1	0	1	1	0
SIDING	2	6	6	3	0	1	1	0
SIGNALS	7	13	10	12	0	3	3	0
SLAB TRACK	0	1	1	0	0	0	0	0
SLEEPERS	1	3	2	3	0	1	1	0
TRAIN CONTROL	2	3	3	3	1	2	2	2

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Asset classes	49(a)	49(b)	49(c)	49(d)	49 (e)	50	50A	51
TUNNELS	12	2	0	0	0	0	0	0
TURNOUTS	34	79	62	48	28	8	8	0
UNDERPASS	1	10	1	5	0	0	0	0
VIADUCTS	0	0	0	1	0	0	0	0
SYSTEM INFRASTRUCTURE	24	37	32	30	25	11	11	5
COMMS INFRASTR	2	2	2	2	2	2	2	0
COMMS POWR SUP	2	4	2	4	3	2	2	0
IMS SCADA	12	24	22	18	15	1	1	0
INFR MONIT SYST	3	1	0	0	0	0	0	0
TRANSMISSION SYS	1	1	1	2	1	1	1	1
WIRELESS TRANS	4	4	5	4	4	4	4	4
Grand Total	**177**	**278**	**282**	**220**	**149**	**135**	**135**	**86**

Number of assets fully allocated to a route section by asset class

No of items	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope
Asset classes	**49(a)**	**49(b)**	**49(c)**	**49(d)**	**49(e)**	**50**	**50A**	**51**
PLANT, EQUIP, VEHICLES	0	0	0	0	0	5	5	0
MOBILE PLANT(LIC)	0	0	0	0	0	0	0	0
PLANT & EQUIPMENT	0	0	0	0	0	0	0	0
RAIL PLANT	0	0	0	0	0	5	5	0
TRUCKS	0	0	0	0	0	0	0	0
RAILWAY INFRASTRUCTURE	77	130	155	96	59	36	36	15
BALLASTING	0	1	1	2	1	0	0	1
CRASH BARRIER	4	0	0	0	2	0	0	0
FENCING	0	3	1	1	1	0	0	0
FOOTBRIDGES	8	4	6	8	8	0	0	0
LEVEL CROSSINGS	0	3	20	7	0	8	8	7

No of items	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope	Fully in scope
NOISE WALL	1	1	1	0	1	0	0	0
PED CROSSING	0	16	52	16	0	19	19	3
RAIL BRIDGE	4	6	8	3	5	1	1	3
RAIL CIVIL INFRA	6	4	2	3	13	0	0	0
RAILS	0	2	1	3	0	1	1	1
RETAINING STRUC	0	3	1	1	0	0	0	0
ROADS & APPROACHES	0	0	1	1	0	0	0	0
SIDING	2	6	6	3	0	1	1	0
SIGNALS	5	7	6	8	0	1	1	0
SLAB TRACK	0	1	1	0	0	0	0	0
SLEEPERS	0	1	1	2	0	0	0	0
TRAIN CONTROL	0	0	0	1	0	0	0	0
TUNNELS	12	2	0	0	0	0	0	0
TURNOUTS	34	60	46	31	28	5	5	0
UNDERPASS	1	10	1	5	0	0	0	0
VIADUCTS	0	0	0	1	0	0	0	0
SYSTEM INFRASTRUCTURE	14	17	17	15	18	0	0	0
COMMS INFRASTR	0	0	1	1	1	0	0	0
COMMS POWR SUP	0	0	0	2	3	0	0	0
IMS SCADA	11	16	15	11	14	0	0	0
INFR MONIT SYST	3	1	0	0	0	0	0	0
TRANSMISSION SYS	0	0	0	1	0	0	0	0
WIRELESS TRANS	0	0	1	0	0	0	0	0
Grand Total	**91**	**147**	**172**	**111**	**77**	**41**	**41**	**15**

Number of assets partially allocated to a route section by asset class.

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
PLANT, EQUIP, VEHICLES	64	64	64	64	64	64	64	63
MOBILE PLANT(LIC)	22	22	22	22	22	22	22	22
PLANT & EQUIPMENT	27	27	27	27	27	27	27	27
RAIL PLANT	1	1	1	1	1	1	1	1
TRUCKS	14	14	14	14	14	14	14	13
RAILWAY INFRASTRUCTURE	12	48	31	30	1	20	20	3
BALLASTING	1	2	1	1	0	1	1	0
CRASH BARRIER	0	0	0	0	0	0	0	0
FENCING	1	1	1	0	0	1	1	1
FOOTBRIDGES	0	3	1	1	0	2	2	0
LEVEL CROSSINGS	0	0	0	0	0	0	0	0
NOISE WALL	0	0	0	0	0	0	0	0
PED CROSSING	0	2	1	1	0	1	1	0
RAIL BRIDGE	0	3	0	0	0	3	3	0
RAIL CIVIL INFRA	2	4	2	2	0	2	2	0
RAILS	1	1	1	1	0	0	0	0
RETAINING STRUC	1	1	0	0	0	1	1	0
ROADS & APPROACHES	1	1	0	0	0	1	1	0
SIDING	0	0	0	0	0	0	0	0
SIGNALS	2	6	4	4	0	2	2	0
SLAB TRACK	0	0	0	0	0	0	0	0
SLEEPERS	1	2	1	1	0	1	1	0
TRAIN CONTROL	2	3	3	2	1	2	2	2
TUNNELS	0	0	0	0	0	0	0	0
TURNOUTS	0	19	16	17	0	3	3	0
UNDERPASS	0	0	0	0	0	0	0	0
VIADUCTS	0	0	0	0	0	0	0	0

Asset classes	49(a)	49(b)	49(c)	49(d)	49(e)	50	50A	51
SYSTEM INFRASTRUCTURE	10	19	15	15	7	10	10	5
COMMS INFRASTR	2	2	1	1	1	2	2	0
COMMS POWR SUP	2	4	2	2	0	2	2	0
IMS SCADA	1	8	7	7	1	1	1	0
INFR MONIT SYST	0	0	0	0	0	0	0	0
TRANSMISSION SYS	1	1	1	1	1	1	1	1
WIRELESS TRANS	4	4	4	4	4	4	4	4
Grand Total	**86**	**131**	**110**	**109**	**72**	**94**	**94**	**71**

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