2022 access pricing compliance submission to IPART

Delivering safe and reliable rail infrastructure to support passenger and freight services in NSW

Transport Asset Holding Entity

NSW GOVERNMENT

Document control

Revision	*Revision Date*	*Status*	*Brief reason for update*	*Name/Position/ Company*	*Author/Reviewer/ Approver?*	*Signature*

Contents

List of figures

List of tables

Executive summary

Key points

- *Our analysis demonstrates that the Transport Asset Holding Entity (TAHE) complies with all the compliance requirements of the Undertaking in 2021/22.*
- *For the Metropolitan Passenger Rail Network (MPN) access revenues for all access seekers represent approximately 30.9 per cent of the full economic costs of the transport cluster for the network in 2021/22. This is based on a DORC valuation of the regulatory asset base and on access revenue including in kind access contributions.*
- *For the TAHE component of the Hunter Valley Coal Network (TAHE HVCN) access revenues represent approximately 79.6 per cent of the full economic costs of the transport cluster for the network in 2021/22.*
- *For the Country Regional Network, Northern Sydney Rail Corridor (Freight Services), and the Metropolitan Freight Network (Freight Services), access revenues are currently insufficient to recover the operational and maintenance costs involved in providing access and so by implication comply with the ceiling test.*
- *The regulatory asset base roll forward principles have been applied in estimating the full economic cost of providing access to the MPN – the largest source of TAHE's access fee revenue – and the TAHE HVCN, consistent with the requirements in the Undertaking.*
- *The unders and overs account for the TAHE HVCN has been reduced by $1.5 million to a closing balance of $6.6 million at 30 June 2022.*

The Transport Asset Holding Entity (TAHE) was established on 1 July 2020 as a state-owned corporation (SOC) to own and hold railway network assets used by the NSW transport cluster, and freight operators. These railway network assets include rail embankments, cuttings and tunnels, track, signals, power systems, rolling stock, stations and significant land holdings around stations within metropolitan and regional NSW.

Access to TAHE's rail networks is regulated by the NSW Rail Access Undertaking 1999, which requires TAHE to:

- *demonstrate the compliance of its access prices with pricing principles, including a ceiling and floor test, to ensure that TAHE does not charge above its full economic costs of providing regulated network services;*
- *provide information on its unders and overs account, for those networks where access revenue might exceed its estimated full economic costs; and*

– *estimate its regulatory asset base in line with a specified roll forward methodology.*

TAHE's compliance with the requirement of the Undertaking is evaluated by the Independent Pricing and Regulatory Tribunal (IPART). This submission provides all the relevant information to IPART to undertake its evaluation.

This submission demonstrates and details TAHE's compliance with the Undertaking both in respect of the Metropolitan Passenger Rail Network and the TAHE component of the Hunter Valley Coal Network. TAHE has not charged above the full economic cost of providing access to either Sydney Trains or NSW Trains to the Metropolitan Passenger Rail Network.

Access revenue from Coal and General Freight operators on the TAHE component of the Hunter Valley Coal Network (TAHE-HVCN) is shown to be below the full economic cost of the provision of access to this part of the rail network which resulted in the over recovery balance of the unders and overs account for the HVCN being reduced by $1.5 million during 2021/22.

In addition, it has been demonstrated that it has not charged above the full economic cost of providing access to the remaining segments of its heavy rail that are subject to the NSW Rail Access Undertaking being, the Country Regional Network, Northern Sydney Rail Corridor (Freight Services) and the Metropolitan Rail Network (Freight Services).

This reflects the concern TAHE expressed in its submission to the review of the NSW Rail Access Undertaking in relation to the under recovery of costs, particularly in relation to the Country Regional Network.

The regulated rail networks provided by TAHE

TAHE provides access across several rail networks, namely:

– *Metropolitan Passenger Rail Network (MPN) – accessed by Sydney Trains and NSW Trains to provide passenger rail services;*[1]

– *Country Regional Network (CRN) – accessed by NSW Trains and rail freight operators to provide both passenger rail and freight rail services;*

– *Hunter Valley Coal Rail Network (TAHE HVCN) – a small segment of the entire Hunter Valley coal network which is otherwise principally provided by the Australian Rail Track Corporation and accessed by rail freight operators to provide coal haulage services to electricity generators and for export via the Port of Newcastle. The TAHE HVCN is also an integral part of the MPN and so the rail sectors are shared between coal freight and passenger services.;*

– *Northern Sydney Rail Corridor – Freight Services (NSRC) – a subset of the metropolitan rail network that connects Sydney to Newcastle and is used by freight operators to provide rail freight services; and*

– *Metropolitan Rail Network – Freight Services (MRN-FS) – while the metropolitan rail network (excluding the TAHE HVCN and NSRC) is accessed by both passenger and freight services, the MRN-FS is treated as a theoretical stand-alone freight only for compliance purposes.*

[1] *While Sydney Trains and NSW Trains are the main access seekers, the MPN is also accessed by other special/heritage operators.*

TAHE's access revenue across all its rail networks comply with the pricing principles in the Undertaking

For 2021/22, access revenues for the MPN and TAHE HVCN do not exceed our estimates of the full economic costs associated with providing access to each access seeker. Figure 1 sets out our access revenue compliance results for the MPN and Figure 2 sets out the results for the TAHE HVCN.

All analysis in this submission (including Figure 1 and Figure 2) is presented on a transport cluster cost basis using a DORC asset valuation, unless otherwise noted.

Figure 1: Compliance of access revenue, Metropolitan Passenger Rail Network, transport cluster, 2021/22, $ million

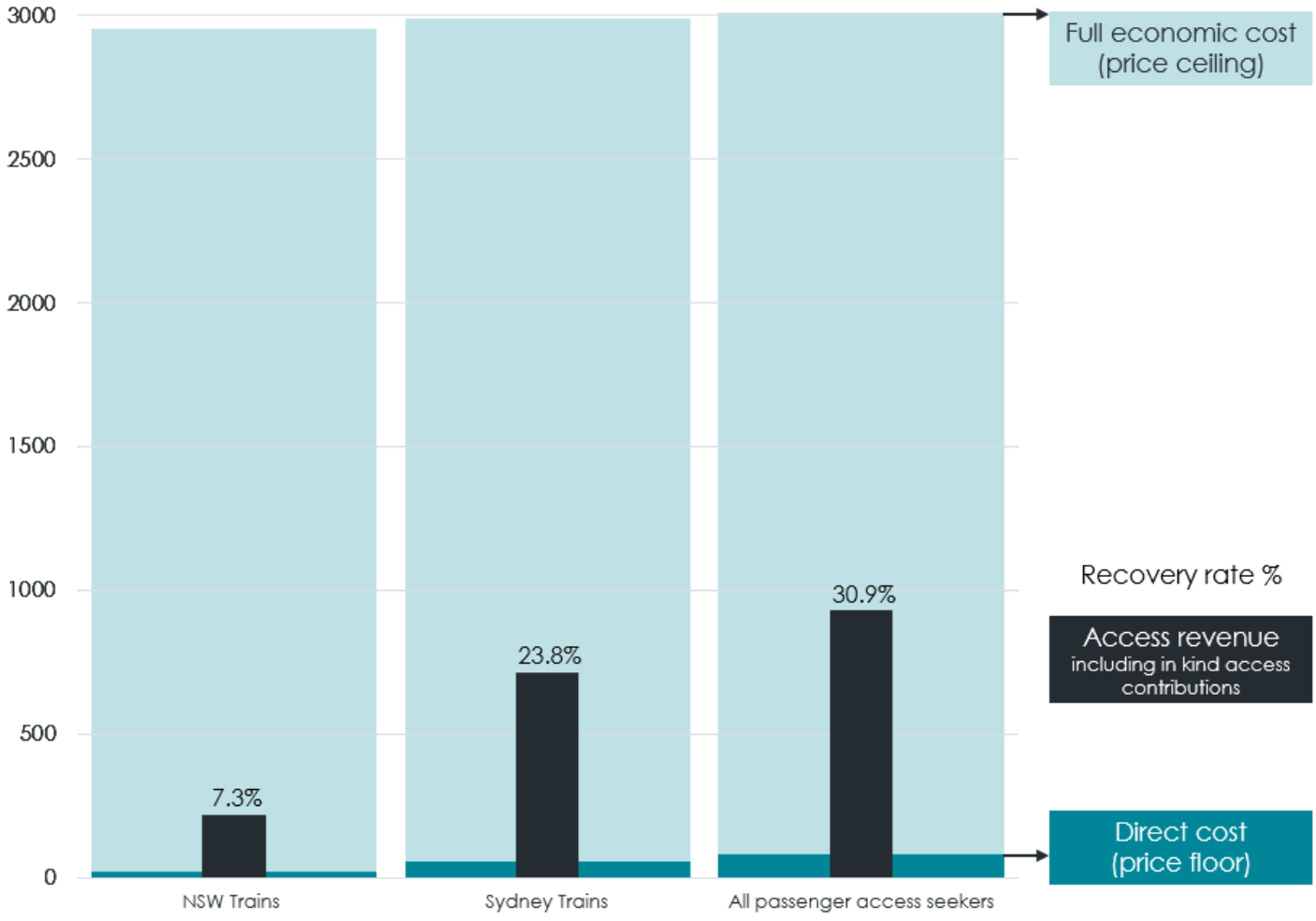


Table 1: Access revenue and full economic cost, Metropolitan Passenger Rail Network, transport cluster, 2021/22, $ million

	NSW Trains	*Sydney Trains*	*All passenger access seekers*[2]
Access revenue (including in kind access contributions)	*216.4*	*712.0*	*928.6*

[2] *Includes $0.08 million of access revenue from other passenger services provided by special/heritage operators on the MPN.*

	NSW Trains	Sydney Trains	All passenger access seekers[2]
Full economic cost (FEC) – based on DORC valuation	2,951.1	2,987.0	3,008.2
Access revenue less FEC	-2,734.6	-2,274.9	-2,079.6
Recovery rate	**7.3%**	**23.8%**	**30.9%**

Figure 2: Compliance of access revenue, TAHE Hunter Valley Coal Network, 2021/22, $ million

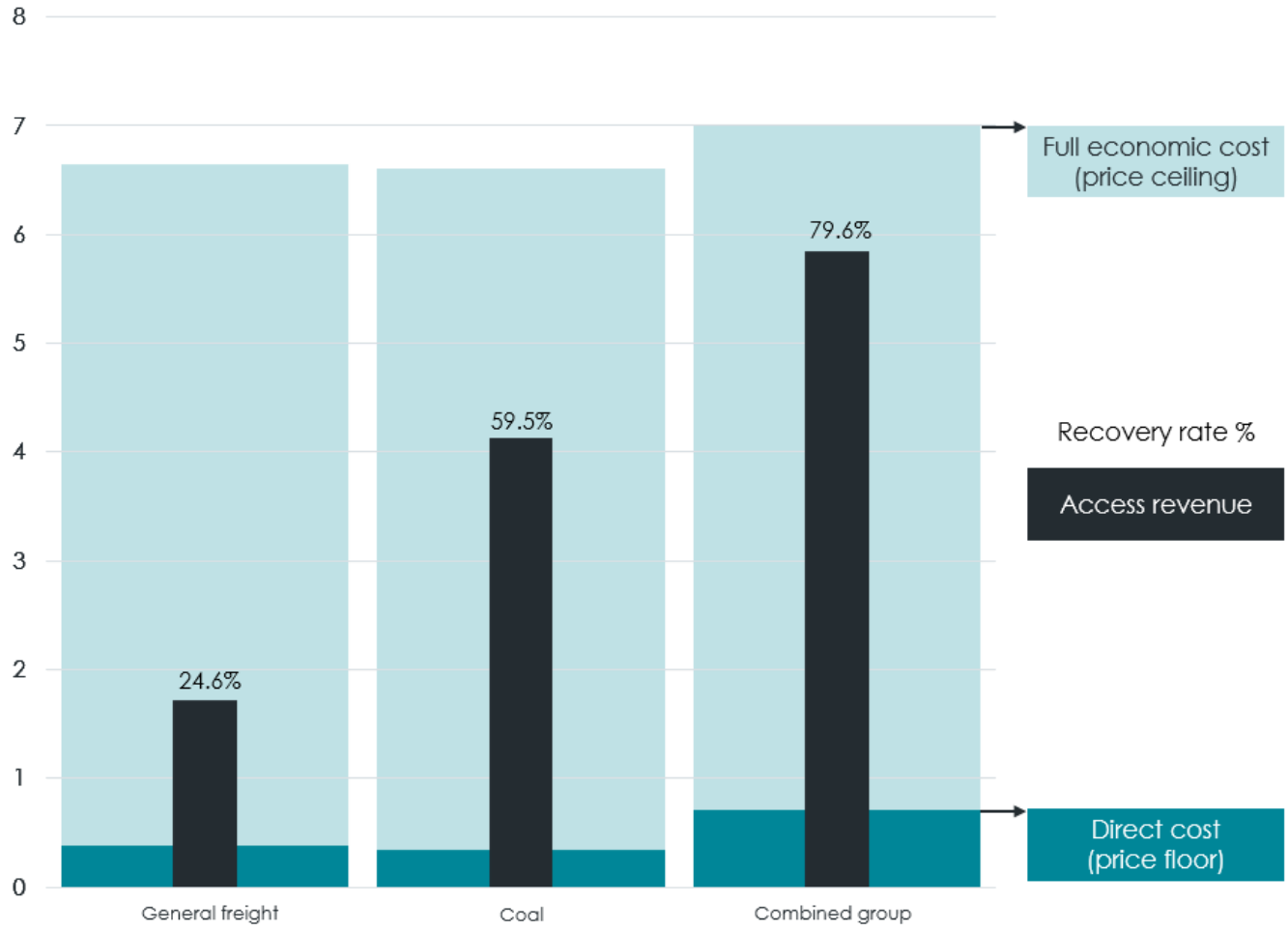


Table 2: Access revenue and full economic cost, TAHE Hunter Valley Coal Network, 2021/22, $ million

	General freight	Coal	Combined freight
Access revenue	1.7	4.1	5.8
Full economic cost (FEC) – based on DORC valuation	7.0	6.9	7.3

	General freight	Coal	Combined freight
Access revenue less FEC	-5.3	-2.8	-1.5
Recovery rate	**24.6%**	**59.5%**	**79.6%**

Across the remaining rail networks, access revenue is insufficient to recover the operational and maintenance costs incurred to provide access – Table 3. Consistent with previous years, we have not estimated the full economic costs of providing access to these networks. Given that access revenue is below the operational and maintenance costs, it follows that the associated access revenues also would not exceed an associated full economic cost test.

Table 3: Compliance of access revenue, other rail networks, 2021/22, $

	Country Regional Network	Northern Sydney Rail Corridor – Freight Services	Metropolitan Rail Network – Freight Services
Maintenance costs	61,120,876	20,525,917	28,689,912
Network control costs	7,617,814	3,658,882	4,261,393
Corporate and system overheads	47,702,2253	2,225,001	3,031,520
Total operations and maintenance (O&M)	116,440,915	26,409,800	35,982,825
Access revenue	14,344,889	22,204,663	28,612,365
Access revenue less O&M	-102,096,026	-4,205,137	-7,370,460
Recovery rate for O&M	**12.3%**	**84.1%**	**79.5%**

The balance of TAHE's unders and overs account for the TAHE Hunter Valley Coal Network reduced by $1.5 million in 2021/22

The only rail network for which TAHE maintains an unders and overs account is for the TAHE HVCN. As a consequence of reductions in access fees in 2020/21, which was maintained through a consumer price

[3] *Includes contract mobilisation cost of $37 million.*

index increase on 1 July 2021, total access revenue increased by a lower amount compared to underlying full economic costs. This led to a reduction in the unders and overs account by $1.5 million – Table 4.

Looking ahead TAHE is currently developing its policy for the unders and overs account, and is intending to return the current over recovery amount over a period that is longer than 12 months. This reflects concerns about its ability to recover its remaining asset value within the current remaining mine life assumptions, and the earlier than anticipated exit of Eraring Power Station. This approach is intended to reduce price volatility for all network users.

Table 4: Unders and overs account – TAHE Hunter Valley Coal Network, 2020/21 to 2021/22

	All access seekers
Balance at 30 June 2020	$10,463,886
2020/21 revenue minus costs	-$2,326,393
Balance at 30 June 2021	$8,137,493
2021/22 revenue minus cost	-$1,494,140
Balance at 30 June 2022	$6,643,352

Given TAHE's responsibility as the owner of rail network assets, access fees are set based on obtaining a reasonable return on the economic value of its assets

The establishment of TAHE changed the roles and responsibilities associated with rail network infrastructure in NSW. For the MPN, TAHE is the owner of the assets, while operational and maintenance activity is undertaken by Sydney Trains.

In 2021/22,TAHE adopted an economic valuation methodology for determining the fair value of its assets for its financial reporting requirements. This led to a decrease in its asset value for accounting purposes for the MPN as at 30 June 2021 from $21.5 billion to $9.5 billion.

Consistent with its role, TAHE's access revenues for the MPN have been set to recover its directly incurred costs (ie, excluding any costs associated with operational and maintenance of the MPN), plus a reasonable return over the medium term on the economic value of the MPN assets.

To be transparent about its level of cost recovery against TAHE's relevant cost base, we have also provided information on how access revenues compare to a full economic cost estimate based on the economic valuation of the MPN RAB using a discounted cash flow methodology, and TAHE's directly incurred costs – Table 5.

In 2021/22, access revenue in the MPN accounted for 17.0 per cent of full economic costs for Sydney Trains, and 6.1 per cent of full economic costs for NSW Trains.

Table 5: Access revenue, TAHE's directly incurred costs and economic valuation of assets, Metropolitan Passenger Rail Network, 2021/22, $ million

	NSW Trains	Sydney Trains	All passenger access seekers[4]
Access revenue paid to TAHE	67.4	187.3	254.8
Full economic cost (FEC) – based on economic asset valuation	1,101.5	1,104.6	1,107.0
Access revenue less FEC	-1,034.1	-917.2	-852.1
Recovery rate	**6.1%**	**17.0%**	**23.0%**

[4] Includes $0.08 million of access revenue from other passenger services provided by special/heritage operators on the MPN.

Who we are and what we do

Overview of the Transport Asset Holding Entity of NSW

The Transport Asset Holding Entity of NSW (TAHE) was established as a statutory State-Owned Corporation (SOC) on 1 July 2020 under Part 3 of the State-Owned Corporation Act 1989 (NSW), to own and hold railway network assets used by the NSW transport cluster. These railway network assets include rail embankments, cuttings and tunnels, track, signals, power systems, rolling stock, stations and significant land holdings around stations within metropolitan and regional NSW.

TAHE was formed from its predecessor RailCorp, which owned railway network assets. RailCorp's rail operations and maintenance functions were transferred to Sydney Trains and NSW Trains in 2013 and they continue to be responsible for rail operations and maintenance functions across the NSW rail network.

TAHE's remit is to enable a more effective, efficient and commercial approach in the management of transport assets, including property. To this end, TAHE's principal objectives are:

- *to undertake its activities in a safe and reliable manner to be a successful business and, to this end:*
  - *to operate at least as efficiently as any comparable businesses; and*
  - *to maximise the net worth of the State's investment in TAHE;*
- *exhibit a sense of social responsibility by having regard to the interests of the community in which it operates;*
- *to conduct its operations in compliance with the principles of ecologically sustainable development contained in section 6(2) of the Protection of the Environment Administration Act 1991 (NSW) where its activities affect the environment; and*
- *to exhibit a sense of responsibility towards regional development and decentralisation in the way in which it operates.*

In pursuing these objectives, TAHE is responsible for several critical functions within the transport cluster of entities:

- *to hold and manage transport assets vested in or owned by it, or to be vested in or owned by it;*
- *to establish, finance, acquire, construct and develop transport assets to be vested in or owned by it;*
- *to promote and facilitate access to the part of the NSW rail network vested in or owned by TAHE in accordance with any current NSW rail access undertaking or otherwise lease or make available transport assets vested in or owned by TAHE to other persons or bodies; and*
- *to acquire and develop land for the purpose of enabling TAHE to carry out its other functions (including the acquisition of land).*

Our regulated rail infrastructure assets

TAHE owns railway network assets to provide rail access services valued at more than $26.3 billion as at 30 June 2022 on a depreciated optimised replacement cost (DORC) basis,[5] comprised of approximately $21.7 billion within the Sydney metropolitan area and approximately $4.6 billion within the Country Regional Network.

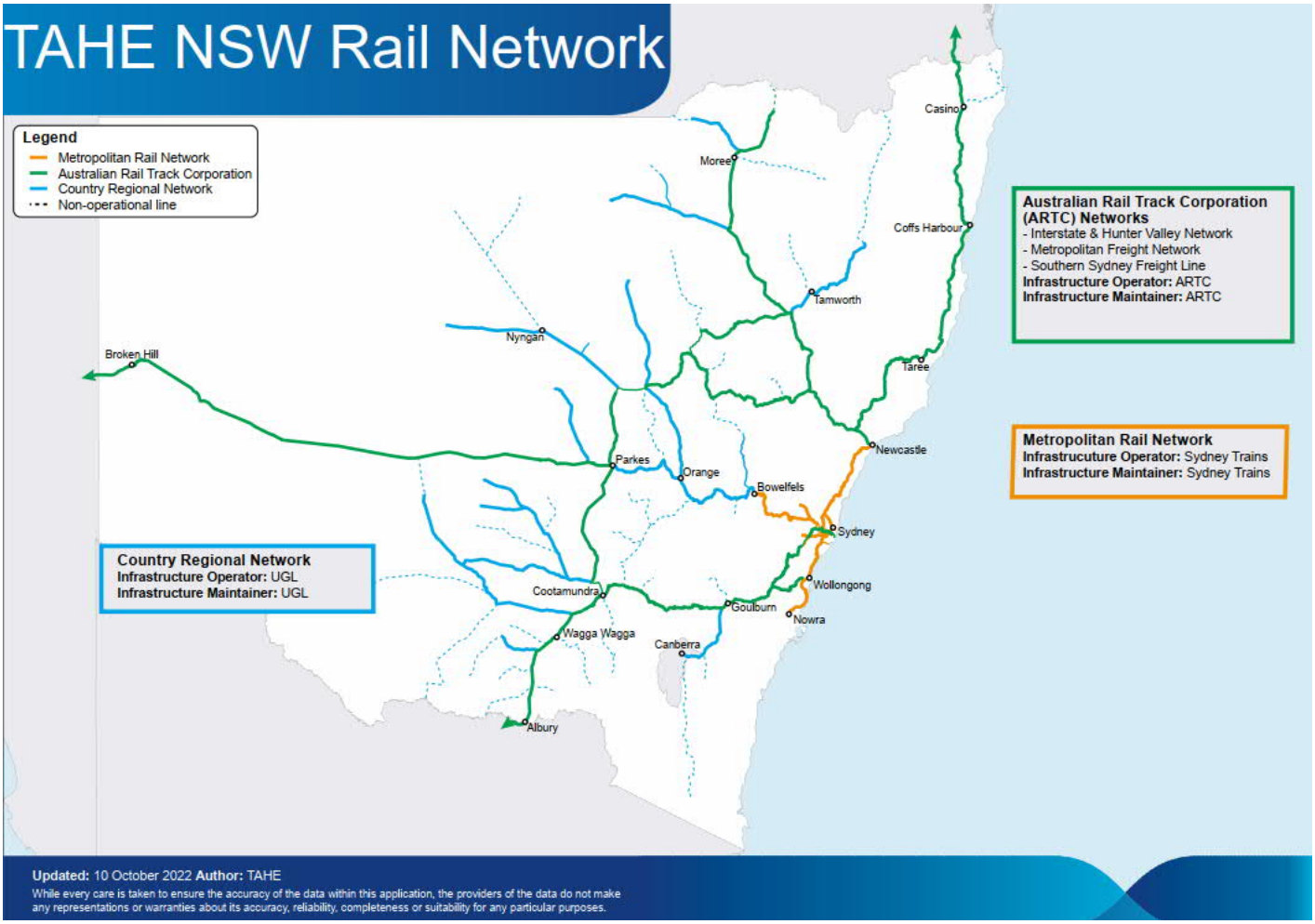
TAHE's rail network is split into several networks, which support both passenger and freight services, specifically:

- *Metropolitan Passenger Rail Network (MPN) – accessed by Sydney Trains and NSW Trains to provide passenger rail services;*
- *Country Regional Network (CRN) – accessed by NSW Trains and rail freight operators to provide both passenger rail and freight rail services;*
- *Hunter Valley Coal Rail Network (TAHE HVCN) – a small segment of the entire Hunter Valley coal network which is otherwise principally provided by the Australian Rail Track Corporation and accessed by rail freight operators to provide coal haulage services to electricity generators and for export via the Port of Newcastle. The TAHE HVCN is also an integral part of the MPN and so the rail sectors are shared between coal freight and passenger services.;*
- *Northern Sydney Rail Corridor – Freight Services (NSRC) – a subset of the metropolitan rail network that connects Sydney to Newcastle and is used by freight operators to provide rail freight services; and*
- *freight network within the metropolitan rail network (excluding the TAHE HVCN and NSRC) – the Metropolitan Rail Network - Freight Services (MRN-FS) – a subset of the metropolitan rail network that is used by freight operators to provide rail freight services.*

Our railway networks and the roles and responsibilities across each network are summarised in Figure 3 below.

[5] *TAHE's assets for financial reporting purposes is based on a discounted cash flow methodology. As at 30 June 2022, the value of rail network assets to provide access services based on a discounted cash flow basis was $9.8 billion.*

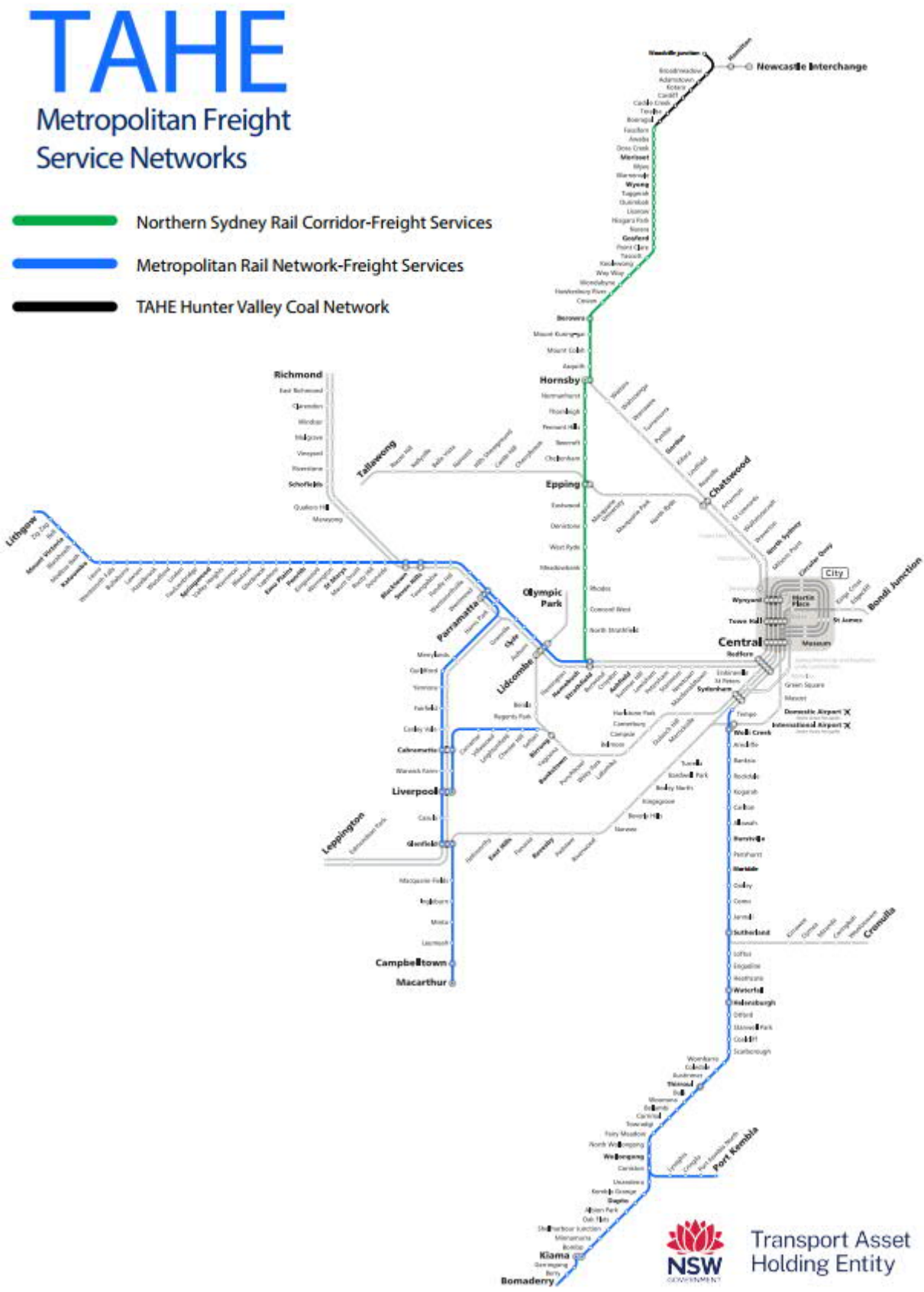
Figure 3: Roles and responsibilities across each of the TAHE owned rail networks



The MPN covers access to the Metropolitan Rail Network by passenger services. Figure 4 below presents a more detailed map of the Metropolitan Rail Network.

Figure 4 also provides an indicative overview of the coverage of the TAHE HVCN, the NSRC and the MRN-FS, which are all subsets of the Metropolitan Rail Network accessed by freight services.

Figure 4 – Metropolitan Rail Network and indicative coverage of metropolitan freight service networks

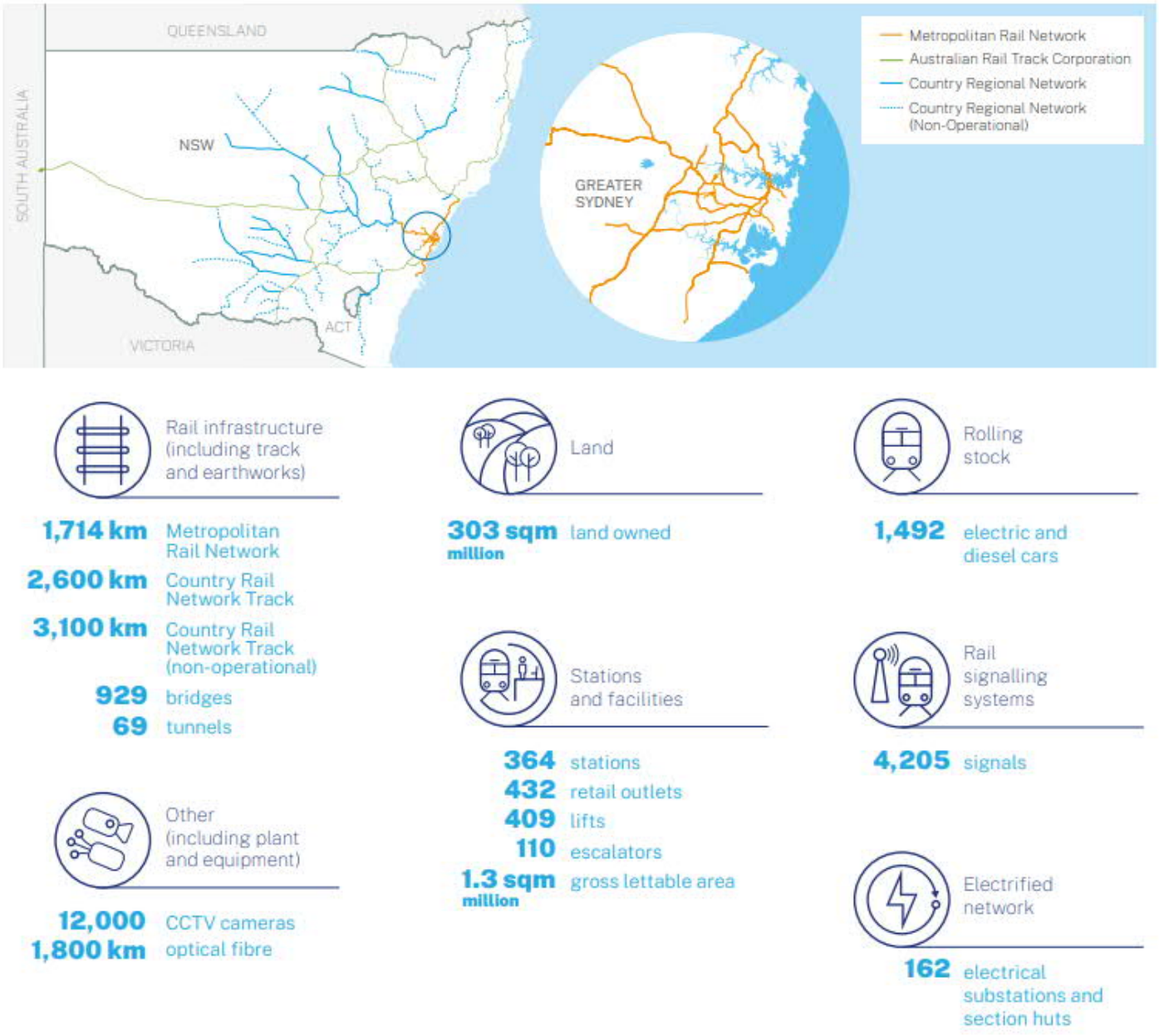


TAHE was established to provide safe, reliable rail assets, driving economic growth through precinct investment and innovative solutions that enhance communities.

TAHE's establishment as a statutory SOC allows it to focus on ensuring there is reliable transport infrastructure across NSW and to take a more commercial approach to managing our extensive property portfolio, creating vibrant communities and exciting destinations for the benefit of NSW residents. We know that success in the future relies on day-to-day asset management excellence while bringing innovation to life.

Figure 5 summarises the assets owned and managed by TAHE across its rail networks.

Figure 5: TAHE's railway assets



The services that we provide related to rail infrastructure access

TAHE holds assets in two broad classes that are used by rail operators, namely:

- *regulated assets, which are assets within the operational rail network. These assets are commonly referred to in the rail industry as 'below rail' assets and comprise trackwork and associated*

infrastructure, signalling systems and the land supporting rail infrastructure including electricity assets;[6] *and*

- *unregulated assets, which largely comprise significant property holdings around stations and the stations themselves, and stabling yards as well as rolling stock. These assets are commonly referred to as 'above rail' assets.*

For regulated rail assets, TAHE charges access fees to rail operators for the use of the rail network. We refer to the provision of access by TAHE to regulated rail assets as regulated services throughout the remainder of this submission.

For unregulated assets, TAHE charges licence fees to operators for the use of the assets, and also charges commercial rents to tenants using its extensive property portfolio. Unregulated licence fees and returns from commercial property are not subject to regulation under the NSW Rail Access Undertaking.

We refer to the provision of access by TAHE to unregulated rail assets as 'unregulated services'.

Administrative arrangements supporting rail access

The NSW Rail Access Undertaking 1999 (the Undertaking) was established in accordance with Schedule 6AA of the Transport Administration Act 1988 (NSW) and sets out the administrative arrangements that enable third party access to TAHE's rail assets. The Undertaking requires TAHE to:[7]

- *provide a right of access to TAHE's rail networks;*[8]
- *limit access to TAHE's rail networks for the purposes of rail operations; and*
- *use all facilities owned by, vested in or otherwise exclusively controlled and operated by it, in a manner that facilitates access to the NSW Rail Network for the purpose of rail operations.*

In enabling access to TAHE's rail networks, the Undertaking supports negotiations between TAHE and access seekers by setting out information requirements for access seekers that provide information on routes, availability, and prices for access as well as requirements of the access seeker.

Information requirements inform negotiations between TAHE and access seekers over a defined timeframe agreed between the parties. These negotiations can involve discussions concerning new capital investments by TAHE.

An agreement, if reached between TAHE and an access seeker, is required to contain terms of agreement as detailed in schedule 2 of the Undertaking. The terms of the agreement include operational specifications of access, conduct on the rail network, compliance with relevant laws, and arbitration of disputes by

---

[6] *The Transport Administration Act defines the NSW Rail Network as "the railway lines vested in or owned by or managed or controlled by a rail infrastructure owner (including passing loops and turnouts from those lines and loops and associated rail infrastructure facilities that are so vested or owned or managed or controlled), but does not include any part of a metro." It further defines rail infrastructure facilities as "(a) includes railway track, associated track structures, over track structures, cuttings, drainage works, track support earthworks and fences, tunnels, bridges, level crossings, service roads, signalling systems, train control systems, communications systems, overhead power supply systems, power and communication cables, and associated works, buildings, plant machinery and equipment."*

[7] *NSW Rail Access Undertaking, 1999, para 2.1.*

[8] *Excludes access seekers seeking access for the purposes of trading in access rights (para 2.2).*

IPART.[9] The Undertaking also ensures that access rights can only be used by access seekers where operational specifications are complied with.

TAHE's focus during the 2021 financial year, its first year of operations, has been on start-up activities including the establishment of agreements between TAHE and its partners in the NSW transport cluster that performs a board range of functions including network maintenance, network controller, network manager, capacity allocation, maintaining network standards and network planning. Our work around establishing these agreements culminated in the execution of seven major contracts on 30 June 2021.

These agreements included a Sydney Trains Access Agreement, a NSW Trains Access Agreement, the Licence Agency and Maintenance Deed, and a Corporate Services Deed.

Each of the access agreements set out the access fees charged by TAHE for access to TAHE owned rail assets used to provide regulated services, and the associated terms and condition of access.

The Licence Agency and Maintenance Deed identifies that Sydney Trains is to maintain the MPN and provides Sydney Trains with the right to access the rail network for the purpose of undertaking maintenance activity. The Deed also specifies that maintenance activity is to be self funded.

Consistent with its role as the asset owner, TAHE currently sets access fees principally to provide a return on and of the value of its regulated assets, plus an amount to recover its operational costs. This is discussed in further detail in the submission.

Operational context and performance

The establishment of TAHE in 2020 changed the operational arrangements for the provision of rail services in NSW. Figure 6 provides a diagrammatical representation of the various roles and responsibilities across the transport cluster.

[9] *Terms of the agreement must detail a) the operational specifications, b) the facilities and services to be provided by each party, c) the period for which rights exist and arrangements for renewals, d) train control procedures and time-tabling, e) compliance with operational standards, f) distribution of liability for risks, g) any confidentiality requirements or restrictions on the use or dissemination of information, h) any mechanism which can be used by each party to revoke or modify the agreement, i) where the Agreement is reached after the conclusion of Arbitration processes set out in the Access Undertaking, a mechanism by which each party can revoke or modify the Agreement if there has been a material change in circumstances, j) prices and charges, k) any mechanism relating to an Access Seeker's investment in the NSW rail network.*

Figure 6: Roles and responsibilities across the NSW transport cluster

	Country Regional Rail Network	Metropolitan Rail Network
Network owner	Transport Asset Holding Entity	
Network operator	UGL	Sydney Trains
Network maintainer	UGL	Sydney Trains
Main access seekers	NSW Trains Pacific National	Sydney Trains NSW Trains Pacific National

The responsibility for operations and maintenance on the CRN was transferred from John Holland Rail to UGL in 2021/22.

TAHE's regulated assets supports the ongoing provision of passenger train services, freight, heritage, private passenger and other third-party rail operations across the metropolitan rail network, and the country rail network.

Table 6 provides information on passenger trips since 2017/18. It shows a dramatic reduction in passenger trips across the network, to its lowest level in 2021/22 at less than half the number of trips in 2018/19. This is associated with the COVID-19 pandemic. We discuss the impact of the pandemic on maintenance expenditure under 'Maintenance and train control costs', below.

Table 6: Metropolitan passenger trips from 2017/18 to 2021/22[10]

	2017/18	2018/19	2019/20	2020/21	2021/22
Passenger trips ('000s)	*386,888*	*402,378*	*313,261*	*206,473*	*149,094*
Share of passenger trips (Sydney Trains)	*89.3%*	*89.7%*	*90.0%*	*90.2%*	*90.9%*

[10] *Sourced from Transport for NSW, https://www.transport.nsw.gov.au/data-and-research/passenger-travel/train-patronage, accessed 20 September 2022. This data covers Sydney Trains and NSW Trainlink services on the MPN.*

The access regulatory framework TAHE operates within

TAHE is required to provide information to IPART on its compliance with the requirements of the NSW Rail Access Undertaking 1999, which is currently the subject of review by IPART. TAHE has lodged submissions and discussed with IPART indicating TAHE's opinion that the Undertaking is no longer fit for purpose and requires additional flexibility to meet the requirements of the more contemporary operating models and structures of the NSW rail industry. In particular, the introduction of principles-based access pricing guidance that is capable of adapting to changing circumstances would be beneficial for both network owners, network operators and above rail operators.

Until the NSW Rail Access Undertaking is amended or replaced IPART has indicated that the current pricing principles are to be applied despite the multiple parties which are responsible for delivering and funding various elements of access. The remainder of this section provides a summary of the current compliance requirements.

Pricing principles

The current form of regulation for rail access in the Undertaking is negotiate / arbitrate. Access seekers are required to negotiate with TAHE on the price and non-price terms of access, and TAHE is required to ensure that in setting its terms and conditions of access it satisfies the requirements of the Undertaking.

Schedule 3 of the Undertaking sets out the pricing principles that are to be applied to negotiated prices for access to rail infrastructure.

Specifically, clause 1 states:

1. Pricing Principles

Prices will be negotiated so that the following requirements are satisfied:

(a) Access revenue from every Access Seeker must at least meet the Direct Cost imposed by that Access Seeker. In addition, for any Sector or group of Sectors, revenue from Access Seekers together with Line Sector CSOs (if applicable) should, as an objective, meet the Full Incremental Costs of those Sectors ("floor test").

(b) For any Access Seeker, or group of Access Seekers, Access revenue must not exceed the Full Economic Costs of the Sectors which are required on a stand alone basis for the Access Seeker or group of Access Seekers ("ceiling test").

(c) The Rail Infrastructure Owner's total Access revenues together with Line Sector CSOs (if applicable) must not exceed the stand alone Full Economic Costs of that part of the NSW Rail Network for which it is the Rail Infrastructure Owner.

There are several economic concepts that are further defined in the schedule, namely:[11]

- *Direct cost, means efficient, forward-looking costs which vary with the usage of a single operator within a 12 month period, plus a levelised charge for variable major periodic maintenance costs, but excluding depreciation;*
- *Full incremental cost, means all costs which could be avoided if a Sector was removed from the system; and*
- *Full economic costs, are Sector specific costs including a permitted rate of return and depreciation, and an allocation of non-Sector specific costs such as train control and overheads including a rate of return and depreciation on non-Sector specific assets. All included items are to be assessed on a stand alone basis.*

The pricing principles set out in the Undertaking are generally known by economists as the efficient pricing bounds, as it ensures efficient use and access to monopoly infrastructure.

Within these bounds, TAHE and access seekers negotiate the price for access, with IPART providing arbitration should the negotiating parties fail to establish an agreement.

The regulatory asset base and asset valuation roll forward principles

To calculate the return on assets as a component of full economic costs, a regulatory asset base (RAB) must be determined. The Rail Access Undertaking requires the initial value of the RAB to be calculated using the depreciated optimised replacement cost (DORC) methodology.[12]

[11] *NSW Rail Access Undertaking, 1999, Schedule 3, p 2.*

[12] *NSW Rail Access Undertaking, 1999, Schedule 3, para 2.1. For the HVCN, the opening value of the RAB was determined by the Minister for Transport in accordance with Schedule 3, para 3.2(a).*

To roll forward the RAB, the Rail Access Undertaking requires the application of asset valuation roll forward principles, which describes how the opening RAB as at 1 July is adjusted to arrive at the closing RAB as at 30 June of any year.[13] This approach is as follows:[14]

$$RAB_t = RAB_{t-1} + (RAB_{t-1} \times CPI_t) + Add_t + Capex_t - Dep_t - Disp_t$$

Where:

RAB_t	*is the RAB in any given year t and represents the closing value of the RAB for that year*
RAB_{t+1}	*is the RAB n the year prior to year t and represents the closing value of the RAB for that year and is the Opening RAB in year t*
CPI_t	*is the percentage change in the CPI from the year t-2 to the year t-1, calculated by using the average of the ABS Sydney All Groups Consumer Price Index for the four quarters to June in the year t-1 when compared to the average for the four quarters to June in the year t-2.*
Add_t	*is addition of an existing Sector or an existing group of Sectors due to changes in demand in a common end market, valued at depreciated optimised replacement cost.*
$Capex_t$	*is the actual capital expenditure for assets commissioned in relation to the RAB for the year t, where that capital expenditure is incurred in accordance with the provisions of clause 3.3, less that portion of any capital contribution which is to recover capital expenditure.*
Dep_t	*is the depreciation allowance for year t.*
$Disp_t$	*is the value of asset disposals in the year t as determined by the written down value attributed to them in the RAB.*

The relevant capital expenditure for the TAHE HVCN is that which relates to coal traffic use of the rail network, is considered to be reasonably required to meet minimum demand within a five year horizon, and has been agreed for inclusion by access seekers.[15]

Finally, depreciation within the RAB roll forward, is calculated on a straight-line basis over the useful life of regulated assets.[16] In determining the useful life of the assets for the TAHE HVCN, regard is to be given to the remaining mine life of Hunter Valley coal mines using the TAHE HVCN, as determined by IPART every five years.[17]

The results from applying the asset valuation roll forward principles to the MPN and TAHE HVCN networks is set out in each of the respective submissions below.

[13] *NSW Rail Access Undertaking, 1999, Schedule 3, para 2.1 and 3.*

[14] *NSW Rail Access Undertaking, 1999, schedule 3, para 3.1.1.*

[15] *NSW Rail Access Undertaking, 1999, Schedule 3, para 3.2(b)(i), (ii) and (iv)B.*

[16] *NSW Rail Access Undertaking, 1999, Schedule 3, para 2.1.*

[17] *NSW Rail Access Undertaking, 1999, Schedule 3, para 3.2(c)(ii).*

Economic concepts underpinning the floor and ceiling tests

The floor and ceiling tests are based on the economic concept of an efficient pricing bound for determining access fees for shared infrastructure. The tests are based on the concept that the amount recovered from users of shared assets should be:

- *no more than what it would cost to provide that service alone (ie, the stand alone cost) – if those users are charged more than the stand alone cost, then it would be hypothetically possible for the users to pay an alternative provider to simply replace the assets and provide the service at a lower cost, which would result in inefficient bypass of the existing infrastructure; and*
- *no less than the additional costs directly incurred to provide the service (ie, the full incremental costs or avoidable cost) – if those users are charged less than such additional costs then the business would not be recovering the costs incurred to supply services to the user, and the shortfall in revenue would need to be recovered from other customers.*

A cross-subsidy arises only when the costs recovered from users of a particular service fall outside the bounds established by the stand alone cost (the ceiling bound) and avoidable cost (the floor bound) of that particular service.

In practical terms, the key question that arises is how best to allocate common costs across these bounds between all access seekers, to determine specific access fees that recover total access costs relating to regulated electrified network assets. This requires consideration of the use of TAHE's assets and the development of appropriate cost allocators between each access seeker.

Measuring the full economic costs of providing access to TAHE's rail network

Consistent with the Undertaking, access fees for each access seeker should lie between bounds set by:

- *the direct costs for each access seeker[18] – first limb of the floor test; and*
- *the full economic costs – the ceiling test.*

In addition, the sum of all access fees should aim to exceed the full incremental costs[19] – the second limb of the floor test.

To determine the compliance of TAHE's access fees for the MPN, we have included the cost of non-TAHE incurred operating and maintenance costs in both the ceiling test, as well as in-kind contributions of access seekers. This recognises the in-kind costs borne by Sydney Trains in maintaining the assets it is using.

For completeness we have included a section titled "Roll forward and compliance based on an economic regulatory asset base valuation and TAHE-only costs" below where we have modified the compliance estimates of the floor and ceiling bounds to reflect only those costs that are directly borne by TAHE. Under this alternative approach, access fees negotiated by TAHE are being compared on a like-for-like basis with the costs for which those fees are seeking to recover. The other cost categories included in the

---

[18] *The direct costs include all those TAHE incurred costs that vary according to usage of the assets by each of Sydney Trains and NSW Trains. We explain the economic concepts underpinning the floor test in greater detail in Appendix A2.*

[19] *The full incremental costs are all costs that could be avoided if a sector of the MPN was removed from the system. The TAHE incurred full incremental costs is equal to the sum of the TAHE incurred direct costs for each of Sydney Trains and NSW Trains. These economic concepts are explained in greater detail in Appendix A2.*

Undertaking's definition of full economic costs are not incurred by TAHE, and so do not form part of TAHE's cost base for determining access fees. This approach is also consistent with Sydney Trains having responsibility to maintain and operate the regulated assets in the MPN.

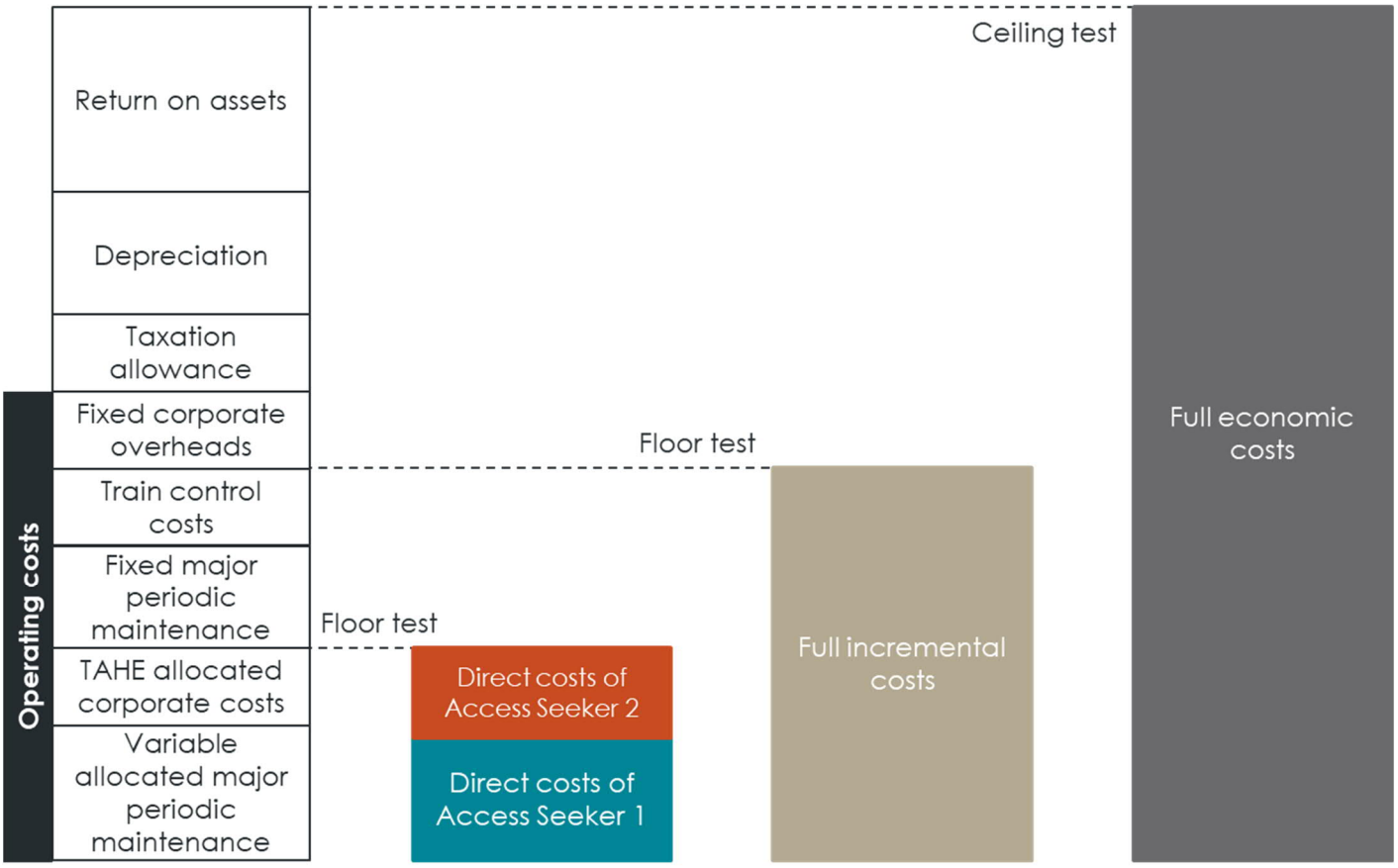
We believe it would be appropriate to assess the compliance estimates of the floor and ceiling bounds for the CRN using a similar alternative approach. That said, given that current access fees are significantly below a likely estimate of the pricing ceiling we have not undertaken a detailed analysis of the ceiling bound for the CRN.

In relation to freight service access to the MPN, including the TAHE component of the HVCN, freight access seekers are not responsible for train control and regulated infrastructure maintenance and so it is appropriate to include these costs within the full economic costs used as the access pricing ceiling. It follows that for the TAHE HVCN we have included benchmark estimates of the maintenance and train operating costs for that network within the ceiling.

The relevant full economic cost categories for passenger service access to the MPN are summarised in Figure 7 below. We have developed a separate spreadsheet model that calculates each of the economic parameters for the purpose of determining whether access fees comply with the pricing principles in the Undertaking.

Finally, Appendix A explains in greater detail the economic concepts underpinning the floor and ceiling tests, as well as how they apply to the cost categories set out in the Undertaking.

Figure 7: Cost categories within each of the floor and ceiling tests for transport cluster costs



Management of under and over revenue recovery

The Access Undertaking requires TAHE to establish an unders and overs account to manage any deviations around the maximum rate of return, and more specifically in circumstances where an access seeker, and/or group of access seekers could potentially breach the ceiling test. An annual reconciliation of each account is required for applicable access seekers with unders and overs balances, and TAHE is to endeavour to return the balance to zero each year. In general, unders and overs should not exceed ±5 per cent of forecast access revenue.[20]

Across TAHE's rail infrastructure network, it is only the TAHE HVCN where access seekers could potentially breach the ceiling test. TAHE is in the process of developing a policy for the operation of the unders and overs account for the TAHE HVCN, with the intention to engage in consultation with access seekers in the near future. Once the policy for the operation of the unders and overs account has been developed it will be submitted to IPART for approval, in accordance with the requirements in the Undertaking and with IPART's recommendation contained in its final decision on TAHE's compliance for its Hunter Valley Coal Network in 2020/21.[21]

Should circumstances change across other parts of TAHE's network such that there is the potential to breach the ceiling test, then it would consult with access seekers to put in place an appropriate unders and overs account policy. The starting point for such policy would likely be the approved policy used for the TAHE HVCN.

Compliance requirements

TAHE is required to submit to IPART by 31 October each year in respect of the financial year ended on 30 June of that year:

- *documentation demonstrating its compliance with the Asset Valuation Roll Forward Principles; and*
- *details as to the compliance with the ceiling test, including the operation of its unders and overs account.*

Compliance information must be provided to IPART to determine whether TAHE has been consistent with the asset valuation roll forward principles, and whether TAHE has complied with the ceiling test having regard to the operation of the unders and overs account.

IPART has historically adopted two approaches when assessing compliance with the Undertaking for TAHE's rail networks, excluding the Hunter Valley Coal Network:

- *if access revenue is substantially below the 80 per cent threshold, IPART assesses the price-related requirements in detail once every five years. Each year, TAHE provides a compliance statement to IPART confirming that:*
  - *access revenue is less than 80 per cent of the full economic cost of providing access;*

[20] *NSW Rail Access Undertaking, 1999, Schedule 3, clause 4.*

[21] *NSW Rail Access Undertaking, 1999, Schedule 3, clause 4(f); and IPART, TAHE's compliance for its Hunter Valley Coal Network – 2020/21, 16 May 2022, p 10.*

- *there have been no significant changes to revenue or costs, so that access revenues remain below the 80 per cent threshold; or*

– *if access revenue is approaching the 80 per cent threshold, supporting cost and revenue information is required to be provided every year via a compliance submission.*

Historically, access revenues for the following networks have not approached the 80 per cent threshold, and so for previous compliance processes a compliance statement has been provided to IPART for the:

– *Country Regional Network (CRN);*

– *Northern Sydney Rail Corridor – Freight Services (NSRC); and*

– *Metropolitan Rail Network – Freight Services (MRN-FS).*

In line with the submission requirements, a compliance submission has been prepared for the Hunter Valley Coal Network between Newstan Junction and Woodville Junction (TAHE HVCN) regardless of whether access revenues have approached the 80 per cent threshold.

In 2021/22, TAHE is also required to prepare a compliance submission for the Metropolitan Passenger Network (MPN), as this is the first year in which access fees have been charged to Sydney Trains and NSW Trains.

TAHE endeavours to provide all information required by IPART to demonstrate compliance with the Undertaking. However, information limitations can affect the extent to which information is available with respect to expenditure information, including maintenance expenditure and train control expenditure, that is not incurred by TAHE but forms part of direct costs and full economic costs.

IPART's review of the NSW Rail Access Undertaking

IPART is in the process of reviewing the NSW Rail Access Undertaking 1999 in accordance with the terms of reference provided by the Minster for Customer Service. IPART published an issues paper for the review in November 2021 and published its draft report on 18 October 2022.

IPART's draft report sets out recommendations for (amongst other things):

– *a new NSW rail regulatory framework, to be set out in legislation and with enhanced oversight by IPART;*

– *improvements in information disclosure;*

– *changed obligations in access agreements on various non-price terms and conditions;*

– *enhancements to the access pricing principles;*

– *improved compliance and enforcement mechanisms; and*

– *clearer dispute resolution procedures.*

TAHE anticipates that any changes to the regulatory regime will take some time for further development, agreement and implementation. In the meantime, TAHE will continue to comply with the requirements under the current Undertaking.

Access revenue compliance for the Metropolitan Passenger Rail Network

Key points

- *Our analysis demonstrates that TAHE complies with all the compliance requirements of the Undertaking in 2021/22 for the MPN.*
- *Total access revenues for the MPN were $928.6 million, comprised of $254.3 million paid by access seekers to TAHE and $673.7 million of in-kind access contributions primarily associated with the provision of maintenance and train control services by Sydney Trains. $928.6 million represents approximately 30.9 per cent of the full economic costs of the transport cluster for the MPN in 2021/22.*
- *There was no need for an unders and overs account because the highest level of recovery for access revenue was for Sydney Trains which only represented 23.8 per cent of the ceiling test and so there was no likelihood that revenues would exceed the ceiling test.*
- *Maintenance expenditure undertaken by Sydney Trains for the MPN has fallen in 2021/22 due principally to reduced maintenance activities as a consequence of protected industrial action, and COVID-19 staff restrictions. This reduction has contributed to a backlog of maintenance needs, which will need to be addressed into the future.*
- *The regulatory asset base roll forward principles have been applied in the MPN consistent with the requirements of the Undertaking.*

This section presents TAHE's compliance submission for the MPN. Specifically, it sets out the results of our estimation of the floor and ceiling test revenue bounds. It also provides information to support TAHE's compliance with the unders and overs account requirements, and the asset roll forward principles.

All analysis is presented on a transport cluster cost basis using a DORC asset valuation, except for in the "Roll forward and compliance based on an economic regulatory asset base valuation and TAHE-only costs" section below.

Access fees and in-kind contributions

As part of TAHE's establishment in 2020/21, access agreement negotiations were undertaken with Sydney Trains and NSW Trains.

The access negotiations concluded with agreements that set out access fees for the period 2021/22 to 2030/31 based on a return of assets and a return of assets, reflecting the assets employed by TAHE to provide those access services.

Access fees were first charged to Sydney Trains and NSW Trains under the access agreements in 2021/22.

Table 7: Access fees paid to TAHE, Metropolitan Passenger Rail Network, 2021/22, $ million

Access fees paid to TAHE	2021/22
Sydney Trains	187.3
NSW Trains	67.4
Other passenger access seekers[22]	0.1
Total access fees paid to TAHE	**254.8**

Looking forward, access fees from the MPN have been agreed to increase in line with expectations about changes to the asset base as new assets are commissioned, and as TAHE seeks to increase its return to commercial levels – Figure 8.

Figure 8: Agreed access fees for Sydney Trains and NSW Trains, Metropolitan Passenger Rail Network, 2022 to 2031, $ million

In addition to access fees paid to TAHE, Sydney Trains provided in-kind contributions to access through the incurrence of maintenance and train control expenditure. NSW Trains also paid a fee to Sydney Trains for the provision of these services. In-kind contributions have been valued at the cost of maintenance and train control costs, as provided by Sydney Trains, and non-TAHE incurred operational expenditure (eg, timetabling). This amounted to total in-kind contributions of $673.7 million in 2021/22.

[22] *Other access seekers include heritage passenger operators who use the MPN.*

Operating expenditure

TAHE incurred operational expenditure related to the provision of access on the MPN of an estimated $78.4 million in 2021/22 – Table 6.

The methodology used to allocate TAHE incurred opex to the provision of access on the MPN is set out in greater detail in Appendix B. Currently, the proportion of TAHE incurred costs that are assumed to vary with network usage is 10 per cent.

Table 8: TAHE operational expenditure, Metropolitan Passenger Rail Network, 2020/21 to 2021/22, $ million

TAHE operational expenditure	2020/21	2021/22
Employee related costs	0.7	1.9
Other payroll related costs	2.0	1.1
Management and property services	21.7	21.6
Contractors	34.9	36.7
Auditor's remuneration	0.1	0.3
Consultants	2.4	2.1
Other expenditure	13.9	14.6
Total	75.8	78.4

Non-TAHE incurred operating costs are relatively low for regulated overheads and operational activities; both of which are expected to stay constant at $2 and $6 million respectively into the future. It is assumed that non-TAHE operational activities vary with network usage and that non-TAHE overheads do not vary with network usage.

Table 9: Non-TAHE operational expenditure, Metropolitan Passenger Rail Network, 2020/21 to 2021/22, $ million

Non-TAHE operational expenditure	2020/21	2021/22
Overheads	1.9	1.9
Operational activities (eg, timetabling)	6.3	6.3
Total	8.2	8.2

Maintenance and train control costs

Sydney Trains is responsible for undertaking maintenance and train control activities for the MPN. In this section we focus on maintenance activities, and so expenditure, that does not affect the asset life of the respective asset. It follows that this is treated as an operating expenditure for the purposes of the ceiling test. We discuss capitalised major periodic maintenance in the capital expenditure section below.

There are several drivers of maintenance costs for the MPN, namely:[23]

- *the density of the network – the MPN has approximately 2,500 turnouts, which increases the number of signal points and inspections needed for routine and regular maintenance. Turnouts also impact on the general costs of ballast cleaning and major periodic maintenance;*
- *electrification of the network – the MPN is an electrified network, which increases overall maintenance costs and the costs of replacements across the network;*
- *the frequency of services – as a passenger network the priority is to ensure that all services operate, and so a high proportion of major periodic maintenance (estimated at approximately 90 per cent) needs to be undertaken outside of service hours or on weekends, to minimise service disruption. This increases the labour related component of those maintenance activities, compared to conducting a system shutdown to undertake major periodic maintenance;*
- *extreme weather events, and in particular excessive rainfall and bushfires, which increases the need for maintenance activities; and*
- *increases in the costs of materials.*

Maintenance costs are further impacted by the need to maximise freight services that operate outside of passenger service hours, which further limits the periods of time within which major periodic maintenance can be undertaken across the MPN.

Across these drivers, the frequency of services, extreme weather events and increases in the cost of materials along with efforts to improve cost efficiency, are expected to be the key reasons for changes in maintenance costs each year into the future.

We understand that Sydney Trains has put in place several strategies to lower maintenance costs over time. These include:

- *maximising routine maintenance activities such as inspections, light maintenance, and recalibrations during ordinary working hours across the week;*
- *conducting sector shutdowns during the working week where the passenger service disruptive impact is minimised (eg, on sectors at the extremes of the MPN such as the Illawarra line);*
- *using of innovative technology to minimise costs, for example, the development of automated track lubrication technology to reduce track wear and tear and minimise noise, and the use of ground penetrating radar to map the level of fines within ballast to optimise ballast rejuvenation and replacement; and*

[23] *For a more detailed description of cost drivers in rail asset management, see International Union of Railways (UIC), Key cost drivers in railway asset management – publication of short list, July 2015.*

– *ongoing investments in intelligent asset devices to automate inspections and obtain improved data on the condition of the assets, and improvements in predictive maintenance systems to support technical maintenance plans (TMPs).*

Overall, we expect that these approaches are delivering a cost-efficient maintenance program that supports the provision of passenger rail services with minimal passenger disruption.

Table 10 sets out Sydney Trains' maintenance costs for the MPN in both 2020/21 and 2021/22.

Table 10: Maintenance and train control costs, Metropolitan Passenger Rail Network, 2020/21 to 2021/22, $ million[24]

Maintenance costs	2020/21	2021/22
Variable maintenance costs[25]	72.3	59.0
Fixed maintenance costs	544.9	490.1
Total maintenance costs	617.2	549.2
Train control costs	112.2	111.2
Total maintenance and train control costs	729.4	660.3

In total these costs have decreased by almost 10 per cent between 2021/22 and 2020/21. The decrease has been principally in variable and fixed maintenance costs between the two periods.

Importantly, the observed decrease in maintenance expenditure in 2021/22 likely reflects:

– *reduced maintenance activity in 2021/22 due to changes in operational procedures during the COVID-19 pandemic, whereby maintenance crews focused on safety critical activities directly related to ensuring the safe operation of the network, given labour disruptions during the period; which was offset in part by*

– *increased maintenance costs associated with excessive rainfall across the year; and*

– *rising materials costs in line with general increases in steel and other materials across the economy.*

Weather is an important factor that can affect maintenance costs across the MPN each year. Periods of both excessive rainfall and bushfires increase maintenance costs. These higher maintenance costs result from:

– *cutting and embankment failures due in part to the uncontrolled flow of water;*

---

[24] *Excludes maintenance capital expenditure, which is included in the roll forward of the asset base as described in greater detail later in this section.*

[25] *We note that the Undertaking requires levellised variable major periodic maintenance to be included in the direct costs of providing access. Therefore, a levellised amount of $64.2 million has been included in the direct costs for 2021/22 in Table 13, below.*

- *increasing water runoff from land adjacent to track, due to increasing urban infill and third party development;*
- *track flooding, for example from the Cooks and Hawkesbury Rivers, which requires inspection and replacement of signals systems once flood water recede; and*
- *replacement of electricity poles in areas affected by bushfires (eg, the Blue Mountains).*

While some of these additional weather-caused maintenance needs can be addressed in the business-as-usual maintenance program, there is likely to be a need for additional maintenance expenditure as the incidence of extreme weather events increases over time. This is expected to be an important driver of year-on-year fluctuations in maintenance costs across the MPN into the future.

Finally, looking ahead, Sydney Trains believes that the reduced maintenance activity in 2021/22 due to COVID-19 operational restrictions has resulted in a maintenance backlog that will need to be steadily addressed over the coming years.

Capital expenditure

Capital expenditure for 2021/22 for the MPN was $583.7 million – Table 11. Most of the capital expenditure related to improvements to rail signalling systems (53 per cent) within the MPN, including new rail signalling systems in Gosford amongst other locations. This was followed by replacement of rail infrastructure (10 per cent).

In addition to capital expenditure directly incurred by TAHE, Sydney Trains also capitalises some major periodic maintenance when this extends the life of the assets. This is equivalent to an asset replacement. For the purposes of access pricing compliance, this capitalised major periodic maintenance has been included in the RAB through the asset roll forward methodology. Capitalised major periodic maintenance represented 32 per cent of total capital expenditure in 2021/22.

Table 11: Capital expenditure, Metropolitan Passenger Rail Network, 2021/22, $ million

Capital expenditure	2021/22
Rail signalling systems	311.3
Rail infrastructure	60.6
Land	12.0
Electrified network	10.0
Other	4.6
Capitalised major periodic maintenance	185.2
Total	**583.7**

Depreciation and the return on the regulatory asset base

Consistent with the requirements of the Undertaking, the allowance for depreciation in the estimate of the full economic costs for the MPN has been calculated based on the DORC RAB at the beginning of the financial year, on a straight-line basis applying the remaining useful life of the assets set out in Appendix B.

The return on the RAB has been calculated applying the IPART determined weighted average cost of capital of 5.3 per cent real, post-tax.[26]

Roll forward of the regulatory asset base

The Undertaking requires that the initial value of the regulatory asset base (RAB) be calculated using the depreciated optimised replacement cost (DORC) methodology.[27] *This approach to asset valuation is consistent with a ceiling pricing bound that ensures TAHE does not charge access fees that would reflect the inappropriate exercise of market power.*

The results of the RAB roll forward for 2021/22 based on a DORC valuation are set out in Table 12 below.

Table 12: Roll forward of the regulatory asset base, Metropolitan Passenger Rail Network, 2021/22, $ million

Roll forward component	2021/22
Opening value 30 June 2021	21,563.4
Indexation	324.1
Capital expenditure	583.7
Additions	0.0
Depreciation	786.8
Disposals	31.9
Closing value 30 June 2022	21,652.5
Average RAB	21,608.0

Compliance with the floor and ceiling tests

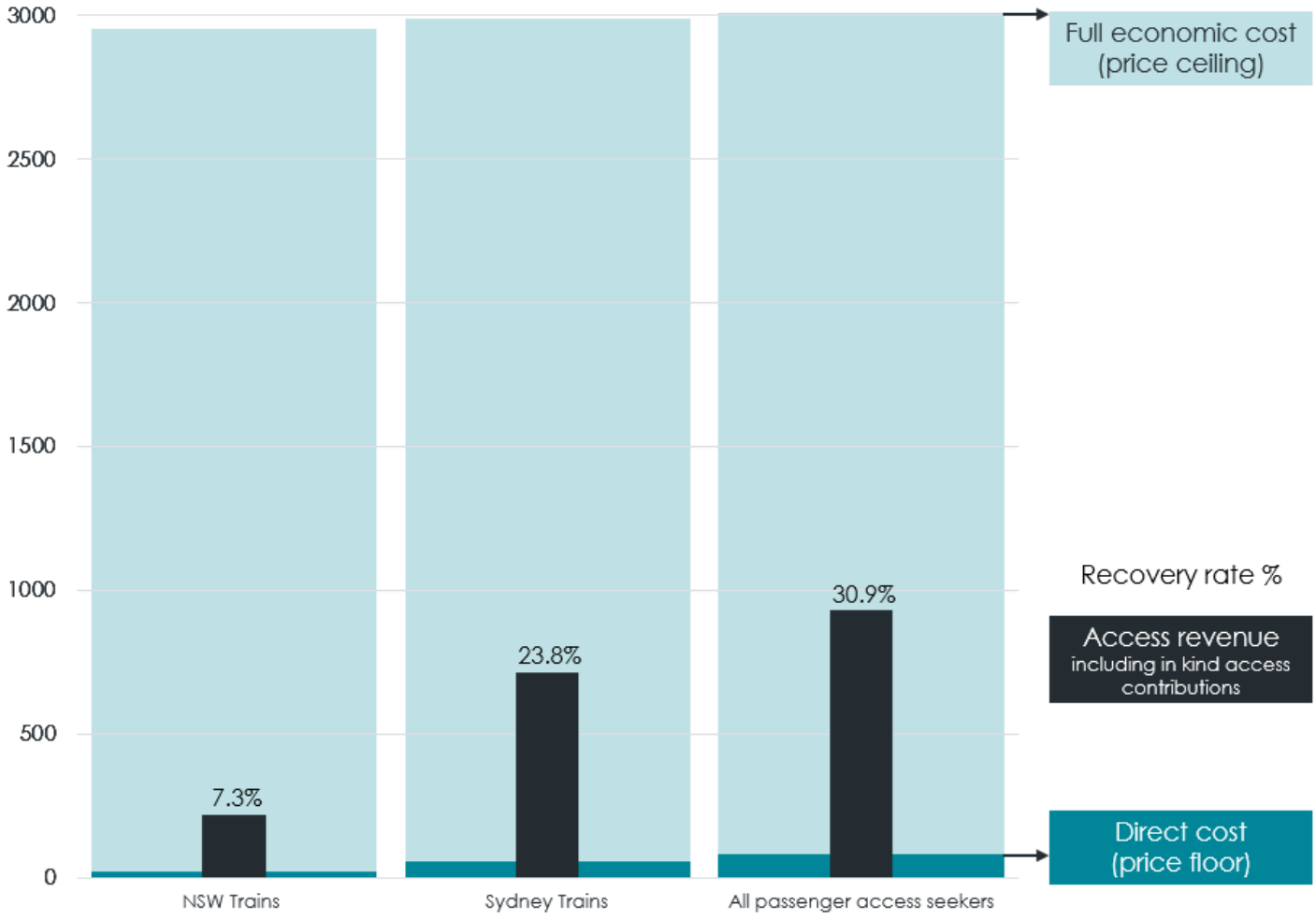
In this section, we demonstrate compliance of access revenue with the floor and ceiling tests for the MPN.

Figure 9 demonstrates compliance of TAHE's access revenue for Sydney Trains, NSW Trains and all passenger access seekers with the floor and ceiling test for regulated assets, using a DORC RAB.

[26] *Independent Pricing and Regulatory Tribunal, Rate of return and remaining mine life, 2019-2024, Final Report, July 2019.*

[27] *NSW Rail Access Undertaking, 1999, Schedule 3, clause 2.*

Figure 9: Compliance of access revenue, Metropolitan Passenger Rail Network, 2021/22, $ million



Source: HoustonKemp analysis of TAHE access fees and economic costs.

Table 13 presents detailed results for TAHE's access fees and demonstrates compliance with both the floor and ceiling test.

Table 13: Detailed breakdown of compliance with floor and ceiling tests, Metropolitan Passenger Rail Network, transport cluster, 2021/22, $ million

	Sydney Trains	*NSW Trains*	*All passenger access seekers*
Variable operating costs	*10.1*	*4.1*	*14.2*
Variable maintenance expenditure	*47.1*	*17.1*	*64.2*
Direct costs	*57.1*	*21.2*	*78.4*
Train control costs	*111.2*	*111.2*	*111.2*

	Sydney Trains	NSW Trains	All passenger access seekers
Fixed maintenance expenditure	490.1	490.1	490.1
Fixed operating costs	72.4	72.4	72.4
Depreciation	786.8	786.8	786.8
Return on RAB	1,145.2	1,145.2	1,145.2
Tax Allowance	324.1	324.1	324.1
Full economic cost (FEC)	2,987.0	2,951.1	3,008.2
Full incremental cost	na	na	601.3
Access revenue paid to TAHE	187.3	67.4	254.8
In-kind contributions	524.7	149.0	673.7
Total access revenue and in-kind contributions	712.0	216.4	928.6
Access revenue and in-kind contributions less FEC	-2,274.9	-2,734.6	-2,079.6
Recovery rate	**23.8%**	**7.3%**	**30.9%**

The results show that TAHE's access fees were within the floor and ceiling test bounds for both Sydney Trains and NSW Trains in 2021/22. Access fee revenue covered 23.8 per cent of the full economic costs for Sydney Trains, while this value was lower for NSW Trains – 7.3 per cent.

Importantly, access revenue exceeds the direct costs estimated for each access seeker in the MPN.

We estimate that access revenue in aggregate across all access seekers does not exceed the estimated full incremental costs inclusive of fixed maintenance expenditure and train control costs. However, this reflects the observation that those maintenance and train control costs are borne by Sydney Trains, and so should properly be disregarded from consideration within the estimate of full incremental costs. Removing those cost categories from the estimate of full incremental cost results in access revenue exceeding the resultant refined estimate of full incremental costs.

Roll forward and compliance based on an economic regulatory asset base valuation and TAHE-only costs

This section presents compliance results based on TAHE's economic asset value, which is calculated using a discounted cash flow methodology. This asset value approach is what TAHE uses to guide the setting of its access fees and is consistent with the asset values used in its financial accounts. This approach allows TAHE to set access fees at a level commensurate with earning a commercial return on its economic asset value, over the medium term.

In 2021/22, TAHE adopted an economic valuation methodology for determining the fair value of its assets for its financial reporting requirements. This led to a decrease in its asset value for accounting purposes for the MPN as at 30 June 2021 from $21.5 billion to $9.5 billion.

The results of the RAB roll forward for the economic valuation methodology is set out in Table 14, below.

Table 14: Roll forward of the regulatory asset base under an economic valuation, Metropolitan Passenger Rail Network, 2021/22, $ million

Roll forward component	2021/22, economic valuation
Opening value 30 June 2021	9,500.0
Indexation	142.8
Capital expenditure	583.7
Additions	0.0
Depreciation	371.6
Disposals	31.9
Closing value 30 June 2022	9,822.9
Average RAB	9,661.5

The establishment of TAHE changed the various roles and responsibilities associated with rail network infrastructure in NSW. For the MPN, TAHE is the owner of the assets, while operational and maintenance activity is undertaken by Sydney Trains.

Consistent with its role, TAHE's access revenues for the MPN have been set to recover its directly incurred costs (ie, excluding any costs associated with operational and maintenance of the MPN), plus a reasonable return over the medium term on the economic value of the MPN assets.

The RAB based on an economic value approach will be lower than that based on DORC for TAHE's rail network assets because of historical downward revaluations of TAHE's fixed assets. Consequently, full economic costs derived from a RAB based on economic value will be materially below full economic costs from a RAB valued on a DORC approach. It follows that TAHE's access fees, which reflect a RAB based on

economic value and the fee setting process, are unlikely to exceed full economic costs derived from a RAB based on a DORC value, even if a full commercial rate of return is applied.

To be transparent about its level of cost recovery against TAHE's relevant cost base, we have provided information on how access revenues compare to a full economic cost estimate based on the economic valuation of the MPN RAB using a discounted cash flow methodology, and TAHE's directly incurred costs – Table 15.

Table 15: Detailed breakdown of compliance with floor and ceiling tests, economic regulatory asset base valuation and TAHE only costs, Metropolitan Passenger Rail Network, 2021/22, $ million

	Sydney Trains	NSW Trains	All passenger access seekers
Variable operating costs	5.4	2.4	7.8
Variable maintenance expenditure	-	-	-
Direct costs	5.4	2.4	7.8
Train control costs	-	-	-
Fixed maintenance expenditure	-	-	-
Fixed operating costs	70.5	70.5	70.5
Depreciation	371.6	371.6	371.6
Return on RAB	512.1	512.1	512.1
Tax Allowance	144.9	144.9	144.9
Full economic cost (FEC)	1,104.6	1,101.5	1,107.0
Access revenue paid to TAHE	187.3	67.4	254.8
Access revenue less FEC	-917.2	-1,034.1	-852.1
Recovery rate	**17.0%**	**6.1%**	**23.0%**

In 2021/22, access revenue paid to TAHE in the MPN accounted for 17.0 per cent of full economic costs for Sydney Trains, and 6.1 per cent of full economic costs for NSW Trains, on the basis of an economic RAB valuation.

Importantly, access revenue paid to TAHE exceeds the direct costs estimated for each access seeker in the MPN.

Summary statement on compliance

In summary, TAHE has complied with the requirements of the Undertaking for the MPN, specifically:

- *access revenue for both Sydney Trains and NSW Trains in 2021/22 is within the ceiling and floor bounds;*
- *there was no need for an unders and overs account because the highest level of recovery for access revenue was for Sydney Trains which only represented 23.8 per cent of the ceiling test and so there was no likelihood that revenues would exceed the ceiling test; and*
- *the roll forward of the RAB is consistent with the requirements of the Undertaking.*

Access revenue compliance for the TAHE component of the Hunter Valley Coal Network

Key points

- *Our analysis demonstrates that TAHE complies with all the compliance requirements of the Undertaking in 2021/22 for the TAHE HVCN.*
- *Total access revenues for the TAHE HVCN were $5.84 million for all access seekers which represents approximately 79.6 per cent of the full economic costs for the network in 2021/22.*
- *The unders and overs account for the TAHE HVCN has been reduced by $1.5 million to a closing balance of $6.6 million at 30 June 2022.*
- *The regulatory asset base roll forward principles have been applied in the TAHE component of the HVCN consistent with the requirements of the Undertaking.*

This section presents TAHE's compliance submission for the TAHE component of the HVCN. In line with previous submissions, it focusses on coal access seekers and general freight access seekers as the groups of access seekers that would be most likely to exceed the full economic cost. It provides information on compliance with the ceiling and floor tests, the RAB roll forward principles, and the unders and overs account.

Access fees

Access fees in the TAHE component of the HVCN are set on the basis of distance travelled (train kilometre) for each train path. The access fee rates differ based on the commodity transported and the origin-destination combination. Relevantly, all access charges are based on usage of the network which means that actual access revenue each year can vary depending on actual network usage over the corresponding time period.

TAHE implemented a 20 per cent fee reduction for coal access seekers in 2020/21 in order to reduce the over-recovery balance on the TAHE HVCN. This fee reduction was maintained in 2021/22, where access fees were inflated by CPI.

Table 16 sets out TAHE's access fees for its component of the HVCN from 2018/19 to 2021/22.

Table 16: Access revenue, TAHE Hunter Valley Coal Network, 2018/19 to 2021/22, $ million

Access fees	2018/19	2019/20	2020/21	2021/22
Coal access seekers	6.7	6.6	3.2	4.1
General freight access seekers	1.9	1.6	1.5	1.7
Total access fees	**8.6**	**8.2**	**4.7**	**5.8**

Operating and maintenance expenditure

The main operational and maintenance expenditure in the TAHE HVCN is incurred by Sydney Trains, as it is within the metropolitan rail network.

The calculation of the Full Economic Cost for the TAHE component of the HVCN and in particular the appropriate level of operating and maintenance expenditure to be used has been the subject of ongoing debate between IPART and the network owner/agent (RailCorp/TfNSW) for a number of years. IPART did not consider that the level of operating expenditure, including maintenance expenditure claimed by RailCorp and its agents was in line with the standalone freight network methodology required by the Undertaking or the subsequent benchmark figures developed by SNC Lavalin that form part of the submissions TfNSW made for the financial years 2015/16 to 2017/18.

TAHE assumed responsibility from TfNSW for developing the delayed submissions for the financial years 2018-19 and 2019-20. In these submissions TAHE identified its position that it agreed that this component of the network needed to be treated, from a regulatory perspective as a hypothetical standalone freight network (including rationalisation of assets for the purpose of calculating efficient cost). However, TAHE's position has been that it was more appropriate that the calculated maintenance and operating expenditure for the hypothetical network be more reflective of the actual cost of operating a shared rail network against the rationalised network rather than the benchmark rates determined by IPART.

Noting the differences in opinion TAHE previously acknowledged that IPART's decision for the 2019/20 financial year would result in the calculation of the ceiling test and a subsequent over recovery of the full economic cost calculated by IPART. This position was confirmed by TAHE in its 2020/21 submission in which it stated that it had applied the theoretical standalone freight only network calculations however specifically used the assumptions articulated by IPART in its 2019/20 final decision.

In addition, through reducing coal access fees in 2019-20 by 20 per cent and maintaining this reduction in real terms during 2020/21 TAHE has continued to address the over recovery balance based on IPART assumptions of efficient operating expenditure rates.

TAHE remains of the opinion that the calculation of the maintenance and operating expenditure for the metropolitan component of the HVCN needs to be more reflective of the actual cost incurred in what is a shared network. TAHE believes this aspect, along with other aspects of the Undertaking that are skewed towards the Hunter Valley rather than the majority of TAHE's heavy rail networks need to be addressed in IPART's review of the NSW Rail Access Undertaking.

In line with TAHE acknowledgement of IPART's position on maintenance and operating expenditure the 2021/22 submission for the TAHE component of the HVCN has been developed based on the IPART assumptions and rates, appropriately escalated, that were contained in its decision on the 2019/20 compliance submission.

The remainder of this section explains the approach that has been used in further detail.

Maintenance costs

Maintenance costs have been estimated in a manner consistent with previous IPART determinations for the TAHE component of the HVCN.

Specifically, fixed maintenance costs have been estimated using a benchmark rate per track kilometre, while variable maintenance costs have been estimated using a benchmark rate per thousand gross tonne kilometres (GTK).[28] *The benchmarks were set with reference to work done by SNC Lavalin to support RailCorp's 2015-16 to 2017-18 compliance assessments.*

Consistent with the maintenance task for the TAHE HVCN, this approach results in fixed maintenance costs being the same for each set of access seekers while the variable costs differ in line with the GTK of coal and general freight serviced.

Train control costs

Train control costs do not vary with GTK. The labour and expenses associated with train control are required for provision of access regardless of the number of access seekers or the volume of freight. Therefore, the same set of costs is considered applicable to each set of access seekers.

In the 2021/22 financial year, train control costs are estimated at $615,207 based on the previous year estimate accepted in IPART's final decision, escalated by the rate of change in the consumer price index.[29]

Corporate and system overheads

Corporate and system overheads have been estimated using the same benchmarking approach applied in previous IPART decisions.

Specifically, overheads are estimated as 9.2 per cent of the sum of maintenance and network control costs. This results in estimated overheads of $495,279 in 2021/22 when considering the combined group of access seekers on the TAHE component of the HVCN, $460,147 for coal access seekers and $463,817 for general freight access seekers.

The slight difference in corporate and system overheads between coal and general freight access seekers reflects the difference in direct (variable maintenance) costs relating to each group of access seekers.

---

[28] *The benchmark rates have been escalated by the percentage change in the average Sydney CPI over four quarters between 2020/21 and 2021/22. We note that this may be a conservative estimate of the change in costs of the maintenance activity. If the benchmark rates were escalated by a maintenance cost index, as referenced in IPART's 2020-21 final decision on compliance for the TAHE HVCN, our indicative calculations suggest that benchmark rates would be greater due to a significant increase in the costs of fuel and metal products. See IPART, Final decision – TAHE's compliance for its Hunter Valley Coal Network – 2020-21, May 2022, p 5; and Smart, M, RailCorp compliance with NSW Rail Access Undertaking for 2010-11 year – final report to PART, July 2013.*

[29] *The CPI metric used is the percentage change in the average Sydney CPI over four quarters between 2020/21 and 2021/22.*

Depreciation and the return on the regulatory asset base

Consistent with the requirements of the Undertaking, the allowance for depreciation in the estimate of the full economic costs for the TAHE HVCN has been calculated based on the DORC RAB at the beginning of the financial year, on a straight-line basis and applying the unexpired portion of IPART's remaining mine life (terminal date of 2040).[30]

The return on the RAB has been calculated applying the IPART determined weighted average cost of capital of 5.3 per cent real, post-tax.[31]

Roll forward of the regulatory asset base

Consistent with the requirements of the Undertaking, the RAB set in previous years has been rolled forward to reflect indexation, additions, capital expenditure, depreciation and disposals.

Table 17 sets out the roll forward of the regulatory asset base for TAHE's component of the HVCN from 2018/19 to 2021/22.

Table 17: Roll forward of the regulatory asset base, TAHE Hunter Valley Coal Network, 2018/19 to 2021/22, $

	2018/19	2019/20	2020/21	2021/22
Opening value 30 June	*14,338,286*	*14,080,485*	*13,642,901*	*13,102,839*
Indexation	*293,672*	*232,915*	*142,083*	*196,951*
Additions	*0*	*0*	*0*	*0*
Capital expenditure	*0*	*0*	*0*	*0*
Depreciation	*-551,473*	*-670,499*	*-682,145*	*-699,989*
Disposals	*0*	*0*	*0*	*0*
Closing RAB	*14,080,485*	*13,642,901*	*13,102,839*	*12,599,801*
Average RAB	14,209,386	13,861,693	13,372,870	12,851,320

There were no additions, new capital expenditure, or disposals over the period from 2018/19 to 2021/22.

Compliance with the floor and ceiling tests

In this section, we demonstrate compliance of access revenue with the floor and ceiling tests for the TAHE component of the HVCN. Compliance has been considered across three groupings of access seekers, namely:

[30] *Independent Pricing and Regulatory Tribunal, Rate of return and remaining mine life, 2019-2024, Final Report, July 2019.*

[31] *Independent Pricing and Regulatory Tribunal, Rate of return and remaining mine life, 2019-2024, Final Report, July 2019.*

- *coal access seekers*
- *general freight access seekers; and*
- *combined group of access seekers (coal and general freight).*

Figure 10 demonstrates compliance of TAHE's access revenue for each of the groups of access seekers, as compared with the full economic costs for the TAHE HVCN.

Figure 10: Compliance of access revenue, TAHE Hunter Valley Coal Network, 2021/22, $ million

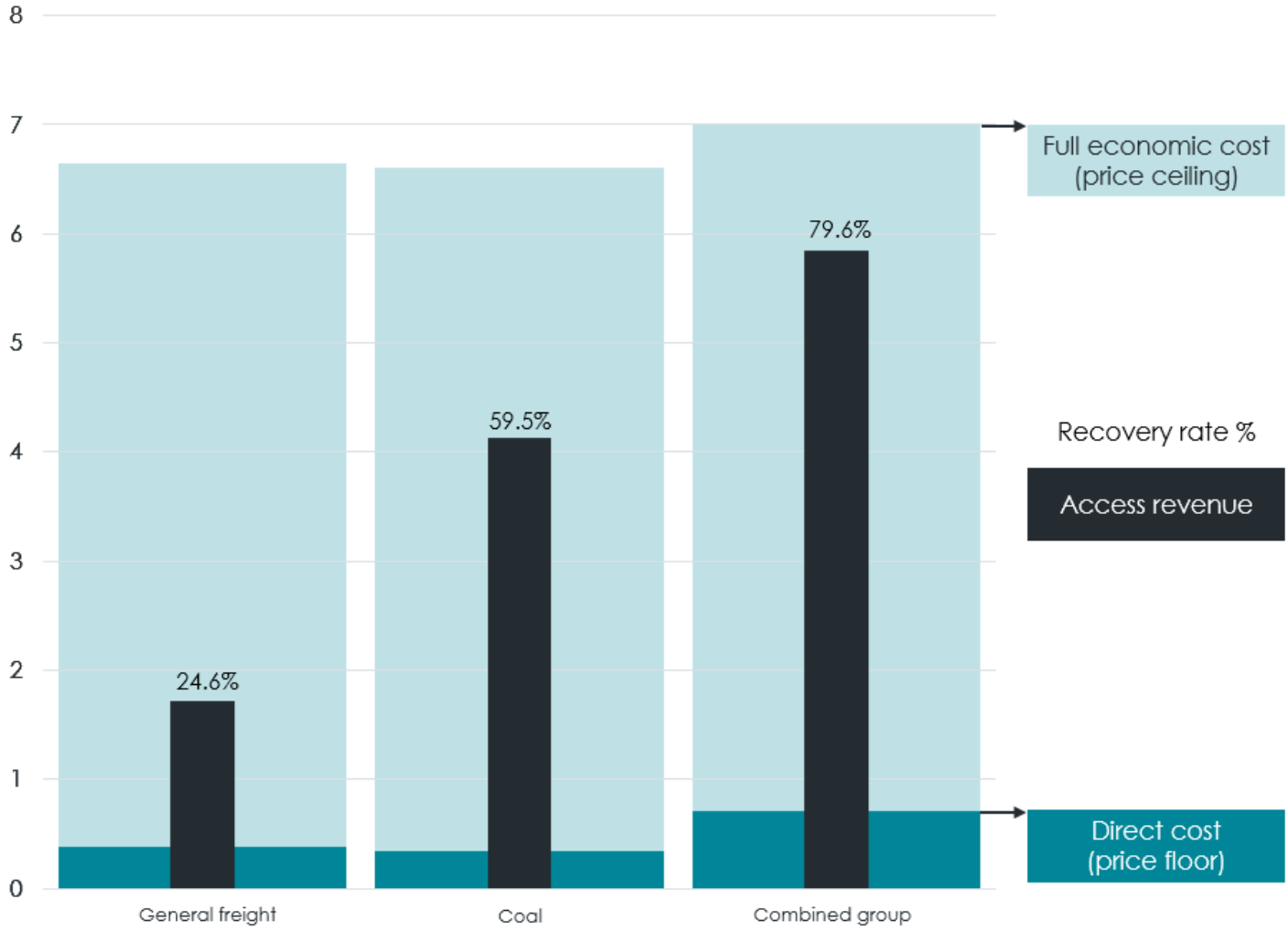


Table 18 demonstrates compliance of TAHE's access revenue with the floor and ceiling test for each of the access seeker groupings for the TAHE HVCN.

Table 18: Detailed breakdown of compliance with floor and ceiling tests, TAHE Hunter Valley Coal Network, 2028/19 to 2021/22, $

	2018/19	2019/20	2020/21	2021/22
Coal access seekers				
Variable maintenance costs (direct cost estimate)	*407,521*	*416,622*	*260,343*	*335,920*

	2018/19	2019/20	2020/21	2021/22
Fixed maintenance costs	*3,675,308*	*3,755,440*	*3,811,889*	*3,961,074*
Train control costs	*564,403*	*571,250*	*579,837*	*602,530*
Corporate and system overheads	*427,545*	*436,385*	*427,990*	*450,756*
Total O&M	*5,074,777*	*5,179,697*	*5,080,059*	*5,350,280*
Depreciation	*551,473*	*670,499*	*682,145*	*699,989*
Return on RAB	*838,354*	*734,670*	*708,762*	*681,120*
Tax allowance	*227,350*	*207,925*	*200,593*	*192,770*
Full economic cost (FEC)	*6,691,954*	*6,792,791*	*6,671,559*	*6,924,159*
Access revenue	*6,739,328*	*6,555,240*	*3,219,801*	*4,122,691*
Access revenue less FEC	*47,374*	*-237,551*	*-3,451,758*	*-2,801,468*
Recovery rate	***100.7%***	***96.5%***	***48.3%***	***59.5%***

General freight access seekers				
Variable maintenance costs (direct cost estimate)	*378,686*	*351,987*	*362,752*	*375,096*
Fixed maintenance costs	*3,675,308*	*3,755,440*	*3,811,889*	*3,961,074*
Train control costs	*564,403*	*571,250*	*579,837*	*602,530*
Corporate and system overheads	*424,893*	*430,438*	*437,412*	*454,360*
Total O&M	*5,043,290*	*5,109,115*	*5,191,890*	*5,393,061*
Depreciation	*551,473*	*670,499*	*682,145*	*699,989*
Return on RAB	*838,354*	*734,670*	*708,762*	*681,120*

	2018/19	2019/20	2020/21	2021/22
Tax allowance	*227,350*	*207,925*	*200,593*	*192,770*
Full economic cost (FEC)	*6,660,467*	*6,722,209*	*6,783,390*	*6,966,939*
Access revenue	*1,850,964*	*1,644,522*	*1,521,490*	*1,716,933*
Access revenue less FEC	*-4,809,503*	*-5,077,687*	*-5,261,900*	*-5,250,006*
Recovery rate	***27.8%***	***24.5%***	***22.4%***	***24.6%***
Combined group				
Variable maintenance costs (direct cost estimate)	*786,207*	*768,609*	*623,095*	*711,017*
Fixed maintenance costs	*3,675,308*	*3,755,440*	*3,811,889*	*3,961,074*
Train control costs	*564,403*	*571,250*	*579,837*	*602,530*
Corporate and system overheads	*462,384*	*468,767*	*461,363*	*485,265*
Total O&M	*5,488,303*	*5,564,066*	*5,476,184*	*5,759,886*
Depreciation	*551,473*	*670,499*	*682,145*	*699,989*
Return on RAB	*838,354*	*734,670*	*708,762*	*681,120*
Tax allowance	*227,350*	*207,925*	*200,593*	*192,770*
Full economic cost (FEC)	*7,105,480*	*7,177,160*	*7,067,684*	*7,333,764*
Access revenue	*8,590,292*	*8,199,762*	*4,741,291*	*5,839,624*
Access revenue less FEC	*1,484,812*	*1,022,602*	*-2,326,393*	*-1,494,140*
Recovery rate	***120.9%***	***114.2%***	***67.1%***	***79.6%***

The return on capital component of the ceiling was calculated by multiplying the average of the opening and closing RAB for each year by the regulated rate of return.

The results show that TAHE's access fees were within the floor and ceiling test bounds for all access seekers in the year 2021/22. TAHE's access fees were also within the floor and ceiling test bounds for coal and general freight access seeker groups.

Unders and overs account

Table 12 shows the unders and overs account for the HVCN for 2020/21 to 2021/22. In light of reductions to access fees in 2021/22, the balance in the account has fallen by $1.5 million.

TAHE is currently developing its policy for the unders and overs account, with the intention of returning over recovery within a period that is longer than 12 months. This reflects concerns, on the part of TAHE and IPART, about TAHE's ability to recover the remaining asset value within the current remaining mine life assumptions, given the earlier than anticipated exit of Eraring Power Station and the general uncertainty of the coal market. This approach is intended to reduce price volatility for all network users.

Consistent with IPART's final decision in relation to TAHE's compliance for its HVCN in 2020/21, TAHE intends to complete its consultation with access seekers on its unders and overs account policy and submit it for approval early in 2023.

Table 19: Unders and overs account – TAHE Hunter Valley Coal Network, 2020/21 to 2021/22

	All access seekers
Balance at 30 June 2020	$10,463,886
2020/21 revenue minus costs	-$2,326,393
Balance at 30 June 2021	$8,137,493
2021/22 revenue minus cost	-$1,494,140
Balance at 30 June 2022	$6,643,352

Summary statement on compliance

In summary, TAHE has complied with the requirements of the Undertaking for the TAHE components of the HVCN, specifically:

- *access revenue for each group of access seekers in 2021/22 is within the ceiling and floor bounds;*
- *TAHE is currently consulting on its proposed unders and overs account policy, and once finalised, will be seeking the approval of IPART for the policy; and*
- *the roll forward of the RAB is consistent with the requirements of the Undertaking.*

Compliance of access fees for TAHE's remaining rail sectors

Key points

- *Our analysis demonstrates that TAHE complies with all the compliance requirements of the Undertaking in 2021/22 for the CRN, NSRC and the MRN-FS.*
- *The recovery rates in 2021/22, measured as a percentage of operations and maintenance expenditure were:*
  - *12.3 per cent for the Country Regional Network;*
  - *84.1 per cent for the Northern Sydney Rail Corridor – Freight Services; and*
  - *79.5 per cent for the Metropolitan Rail Network – Freight Services.*

Country Regional Network

The Country Regional Network (CRN) is owned by TAHE and is operated and maintained by our rail infrastructure manager. The responsibility for operations and maintenance was transferred from John Holland Rail to UGL in 2021/22. Transport for NSW acts as the TAHE agent for management of the UGL contract. Mobilisation costs associated with this transition have been included in the full economic cost as set out in Table 20 below.

The CRN links broad areas of regional NSW to interstate and metropolitan rail systems and, in addition to this passenger taks, it also supports customers transporting coal, grain, cotton, minerals and containerised freight to domestic and export markets.

The network covers 2,386 route kilometres of operational passenger and freight rail lines and 3,139 route kilometres of non-operational lines. It comprises 27,000 hectares of land and infrastructure including:

- *1,312 level crossings (300 active)*
- *1,200 property assets (including 356 heritage)*
- *600 rail under-bridges and 384 road over-bridges*

About 996 km of branch line track used predominantly for haulage of grain, with lower mass and speed limits than other parts of the network.

The CRN's key market segments can be broadly split into passenger, grain and freight (including general freight), minerals and coal. Its major customers are above rail freight and passenger operators and their customers include farmers, miners and passengers.

Table 20 sets out the ceiling test for the CRN from 2018/19 to 2021/22. This compliance statement has been developed using actual maintenance and operating costs together with revenue from all rail operators. It demonstrates that TAHE's access fees for the CRN are well below the full economic cost of providing access.

Consistent with previous statements, estimates of depreciation and return on RAB have not been developed because TAHE has taken a proportional approach to demonstrating compliance for networks that are exempt from the full compliance reporting process under the Undertaking.[32] If these were estimated and included, this would serve to increase the ceiling and reduce the recovery rate even further.

Table 20: Compliance statement, Country Regional Network, 2018/19 to 2021/22, $

	2018/19	2019/20	2020/21	2021/22
Maintenance costs	52,785,108	48,678,219	57,893,172	61,120,876
Network control costs	9,753,312	8,976,380	8,886,617	7,617,814
Corporate and system overheads	16,189,530	14,673,717	13,246,279	10,702,798
Mobilisation payment				36,999,427
Total operations and maintenance (O&M)	78,727,949	72,328,316	80,026,068	116,440,915
Access revenue	8,770,459	9,154,878	12,065,410	14,344,889
Access revenue less O&M	-69,957,490	-63,173,438	-67,960,658	-102,096,026
Recovery rate for O&M	11.1%	12.7%	15.1%	12.3%

Northern Sydney Rail Corridor – Freight Services

The Northern Sydney Rail Corridor (NSRC) is a rail corridor linking Sydney and Newcastle that is owned by TAHE. The assets used on this corridor are part of the Metropolitan Rail Network. While both passenger and freight services access the NSRC, for compliance purposes it is considered as a theoretical stand-alone freight-only network. Therefore, freight access seekers are the group of access seekers being assessed in

[32] *See NSW Rail Access Undertaking, 1999, Schedule 3, Clause 5(f).*

the NSRC compliance statement. Access by passenger services to this part of the network is covered as part of the compliance submission for the MPN.

Table 21 sets out the ceiling test for the NSRC from 2018/19 to 2021/22. This compliance statement has been developed utilising both the amounts and methodologies for maintenance, network control and corporate and system overheads which relate to the provision of access for freight operations accepted in previous IPART decisions, together with revenue from freight operations on the NSRC. In particular:

- *maintenance costs have been estimated using a benchmark rate of $8 per thousand GTK based on IPART's decision on the 2017/18 compliance statement from RailCorp and TfNSW, escalated by CPI;*
- *network control costs have been estimated using the cost submitted by RailCorp and accepted by IPART in 2017/18 escalated by CPI; and*
- *corporate and system overheads have been estimated using a benchmark of 9.2 per cent of maintenance and network control costs, consistent with previous IPART decisions.*

Table 21 indicates that TAHE's access fees for the NSRC are approximately 84.1 per cent of the operating and maintenance costs.

Consistent with previous statements, estimates of depreciation and return on RAB have not been developed because TAHE has taken a proportional approach to demonstrating compliance for networks that are exempt from the full compliance reporting process under the Undertaking.[33] If these were estimated and included, this would serve to increase the ceiling and reduce the recovery rate. Therefore, TAHE is confident that its access fees for the NSRC are below 80 per cent of the full economic cost of providing access.

Table 21: Compliance statement, Northern Sydney Rail Corridor – Freight Services, 2018/19 to 2021/22, $

	2018/19	2019/20	2020/21	2021/22
Maintenance costs	19,820,084	18,810,764	17,542,297	20,525,917
Network control costs	3,416,566	3,382,400	3,521,078	3,658,882
Corporate and system overheads	2,137,772	2,041,771	1,937,831	2,225,001
Total operations and maintenance (O&M)	25,374,422	24,234,935	23,001,206	26,409,800
Access revenue	23,540,923	22,021,420	17,549,134	22,204,663
Access revenue less O&M	-1,833,499	-2,213,515	-5,452,072	-4,205,137
Recovery rate for O&M	92.8%	90.9%	76.3%	84.1%

[33] *See NSW Rail Access Undertaking, 1999, Schedule 3, Clause 5(f).*

Metropolitan Rail Network - Freight Services

Multiple segments of the Metropolitan Rail Network (MRN) owned by TAHE are accessed by both passenger and freight operators. This compliance statement relates to the provision of access to freight operators on the MRN excluding the NSRC and the HVCN. This includes Illawarra, South, Inner City, North Shore and Western segments. Access by passenger services to this part of the network is covered as part of the compliance submission for the MPN.

Table 22 sets out the ceiling test Metropolitan Rail Network – Freight Services (MRN-FS) from 2018/19 to 2021/22. This compliance statement has been developed utilising both the amounts and methodologies for maintenance, network control and corporate and system overheads which relate to the provision of access for freight operations accepted in previous IPART decisions, together with revenue from freight operations on the MPN. In particular:

- *maintenance costs have been estimated using a benchmark rate of $8 per thousand GTK based on IPART's decision on the 2017/18 compliance statement from RailCorp and TfNSW, escalated by CPI;*
- *network control costs have been estimated using the cost submitted by RailCorp and accepted by IPART in 2017/18 escalated by CPI; and*
- *corporate and system overheads have been estimated using a benchmark of 9.2 per cent of maintenance and network control costs, consistent with previous IPART decisions.*

Table 22 indicates that TAHE's access fees for the MRN-FS are approximately 79.5 per cent of the operational and maintenance costs incurred to provide access.

Consistent with previous statements, estimates of depreciation and return on RAB have not been developed because TAHE has taken a proportional approach to demonstrating compliance for networks that are exempt from the full compliance reporting process under the Undertaking.[34] If these were estimated and included, this would serve to increase the ceiling and reduce the recovery rate. Therefore, TAHE is confident that its access fees for the remaining freight sectors of the MRN are below 80 per cent of the full economic cost of providing access.

Table 22: Compliance statement, Metropolitan Rail Network – Freight Services, 2018/19 to 2021/22, $

	2018/19	2019/20	2020/21	2021/22
Maintenance costs	22,590,849	20,358,860	23,790,619	28,689,912
Network control costs	3,979,174	3,939,382	4,100,897	4,261,393
Corporate and system overheads	2,444,442	2,235,438	2,566,019	3,031,520
Total operations and maintenance (O&M)	29,014,465	26,533,681	30,457,535	35,982,825
Access revenue	24,053,944	22,811,134	23,860,920	28,612,365

[34] *See NSW Rail Access Undertaking, 1999, Schedule 3, Clause 5(f).*

	2018/19	2019/20	2020/21	2021/22
Access revenue less O&M	*-4,960,521*	*-3,722,547*	*-6,596,615*	*-7,370,460*
Recovery rate for O&M	*82.9%*	*86.0%*	*78.3%*	*79.5%*

Appendix A – Methodology for estimating the floor and ceiling tests for TAHE

This appendix describes the methodology that has been used to estimate the floor and ceiling tests for access fees across TAHE's rail networks in greater detail.

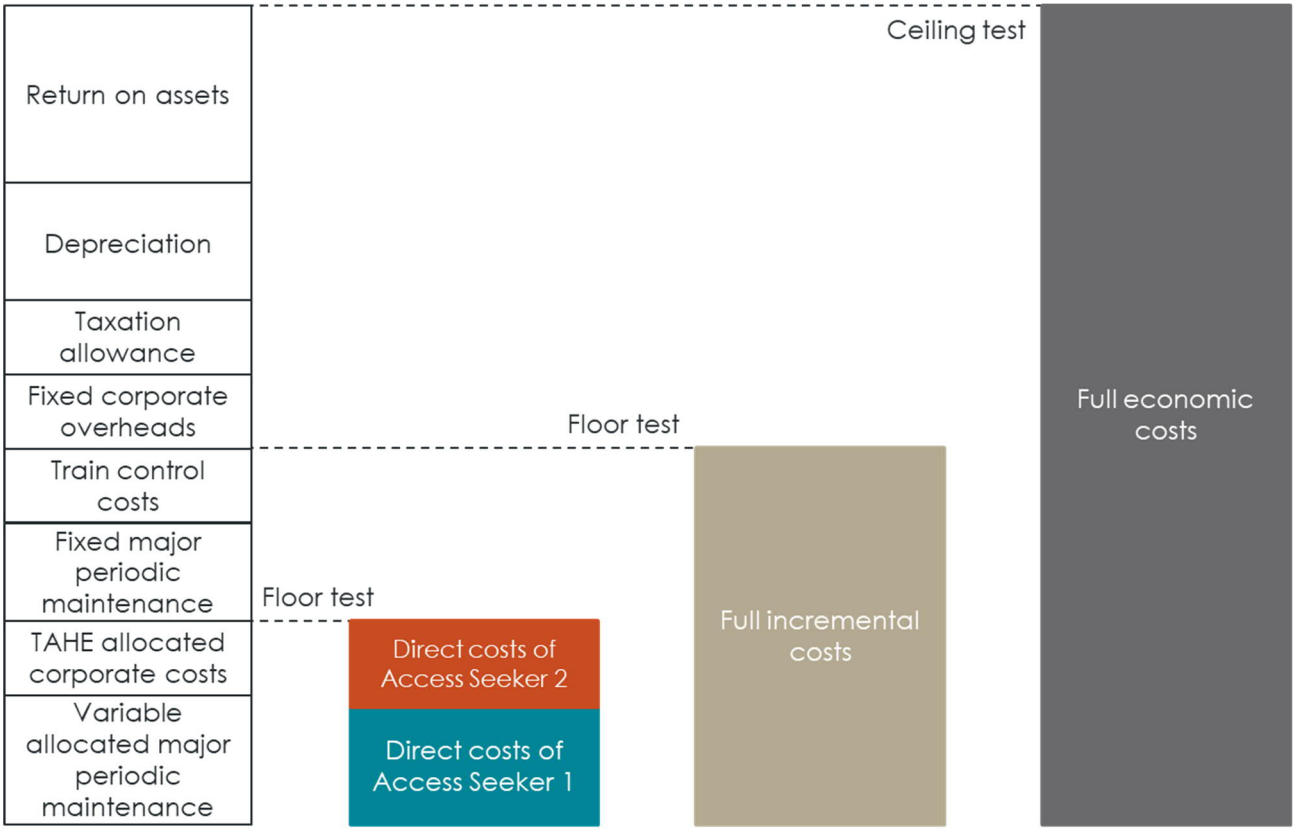
The floor and ceiling test for the rail transport cluster

Figure 11 illustrates the cost categories included within the floor and ceiling tests as defined in the Undertaking. The cost categories included in this definition include:

- *direct costs, namely:*
  - *variable allocated major periodic maintenance; and*
  - *TAHE allocated corporate costs incurred as a direct consequence of providing access to the access seeker;*
- *full incremental costs, namely:*
  - *the sum of direct costs for each access seeker; plus*
  - *fixed major periodic maintenance; and*
  - *train control costs;*
- *full economic costs, namely:*
  - *full incremental costs plus;*
  - *TAHE fixed corporate overheads;*
  - *taxation allowance;*
  - *depreciation; and*
  - *return on assets.*

The remainder of this appendix describes each of the economic cost concepts set out in the Undertaking and our approach to estimating these costs in greater detail.

Figure 11: Cost categories within each of the floor and ceiling tests for cluster costs



Estimating direct costs

The starting point for the floor test is to estimate the direct costs imposed by each access seeker from using the relevant rail network regulated assets.

In practical terms, the direct costs include all those costs that vary according to usage of the network by each access seeker. The relevant cost categories for direct costs as set out in the Undertaking include:

- *TAHE corporate costs that are incurred to support the provision of access to each access seeker, and so could be avoided if access was not provided; and*
- *major periodic maintenance that is incurred as a direct consequence of usage of the relevant assets, including for example rail replacement and resurfacing.*

The Undertaking requires that the relevant major periodic maintenance cost to be included in direct costs in a year is calculated on a levellised cost basis. This reflects an expectation that these costs may significantly vary year-on-year.

Importantly, we would expect that the direct costs will vary between access seekers across each rail network. This reflects that the nature of use of the infrastructure can be considerably different between access seekers, which will affect the allocation of avoidable corporate costs and avoidable major periodic maintenance.

Finally, variable allocated major periodic maintenance is based on actual expenditure incurred by Sydney Trains and UGL as the entities responsible for maintenance of the MPN and CRN respectively. Variable

allocated major periodic maintenance has been estimated using benchmarks for the HVCN, the Northern Sydney Rail Corridor and the Metropolitan Rail Network – Freight Services.

Estimating full incremental costs

The full incremental costs as defined in the Undertaking are all costs that could be avoided if a sector[35] of the relevant rail network was removed from the system. It follows that it is all costs that could be avoided if a sector was no longer provided to all access seekers.

The full incremental costs are therefore:

- *the sum of direct costs for each access seeker; plus*
- *any fixed major periodic maintenance for the relevant rail network; plus*
- *train control costs.*

The inclusion of all fixed major periodic maintenance and train control costs in the concept of full incremental costs stems from the definition in the Undertaking that the rail network is assumed to be removed from the system for the purpose of estimating full incremental costs. In this circumstance all maintenance expenditure would no longer be incurred, ie, both fixed and variable maintenance and there would also be no need to incur train control costs. As such, all these costs would be avoided. It follows that these costs can be considered as incremental to the provision of access to the relevant rail network.

Estimating full economic costs

The full economic costs are all costs incurred to operate, maintain and provide the infrastructure used by an access seeker.

The starting point is to define the infrastructure that is used by the access seeker. This requires consideration of those sectors of the relevant rail network that each access seeker (eg, Sydney Trains or NSW Trains) makes use of in the provision of train services.

The cost categories included in full economic costs for each access seeker include:

- *direct costs incurred by TAHE which vary according to the usage of the infrastructure by each access seeker;*
- *any fixed major periodic maintenance for the relevant rail network;*
- *train control costs;*
- *remaining corporate overheads and system costs that have not been allocated to direct costs or full incremental costs;*
- *return of assets employed to provide access to the access seeker, ie, depreciation of the RAB;*
- *return on assets employed to provide access to the access seeker; and*

---

[35] *'Sector means a continuous length of track with end points, usually delineated by major junctions or traffic origins and including all facilities associated with the track on that sector'. See: The NSW Rail Undertaking, Schedule 7, p 3.*

– *an allowance for expected tax payments.*

Capitalised major periodic maintenance incurred by Sydney Trains is added to TAHE incurred capital expenditure and rolled into the RAB. It follows that it is included in full economic costs as part of the return on the RAB and depreciation allowances.

The first three cost categories are described earlier. The remainder of this section describes our approach to estimating the remaining cost categories.

Corporate overheads and system costs

TAHE incurs corporate and system costs in the conduct of its business. Some of these costs are allocated to direct costs incurred by an access seeker, as they are related to the use of the network by the access seeker and so could be avoided if the access seeker no longer used the rail network. Any remaining TAHE corporate costs, associated with the operation of the business such as head office rent and other corporate overheads that are not related to use of the network are properly included in full economic costs.

Similarly, some operating expenditure for the provision of access services is incurred on behalf of TAHE by access seekers or Transport for NSW. This non-TAHE incurred operating expenditure also has a component that varies with the use of the network by an access seeker and a component that does not. The component of non-TAHE incurred operating expenditure that does not vary with the use of the network, ie, the overheads, is also included in the full economic costs of providing access services.

Depreciation

Depreciation is calculated with reference to the value of the RAB on a straight-line basis over the remaining useful life of the assets.

Return on assets

The return on assets is calculated each year as the sum of the return on the existing capital base and the return on new capital investment made during that year. The return on the existing capital base is calculated by multiplying the opening RAB in each year by the IPART determined real post-tax weighted average cost of capital (WACC). The return on new capital expenditure is calculated by converting the annual WACC estimate to a half-yearly value and then multiplying this half-yearly value by the value of new capital investment made during the year. This approach assumes that capital expenditure is incurred evenly throughout the year.

The latest value of the WACC for the Undertaking was determined by IPART in July 2019 and was 5.3 per cent, real, post-tax.[36]

[36] *IPART, Rate of return and remaining mine life 2019-2024 | Final Report, July 2019, p 7.*

Appendix B – Additional inputs and assumptions

This appendix sets out several additional inputs and assumptions used in the development of the floor and ceiling tests.

The assets employed to provide access services

The starting point for applying the floor and ceiling tests is to determine the infrastructure upon which access fees relate. The Transport Administration Act 1988 provides the following definition of the NSW rail network.[37]

NSW Rail Network means the railway lines vested in or owned by or managed or controlled by a rail infrastructure owner (including passing loops and turnouts from those lines and loops and associated rail infrastructure facilities that are so vested or owned or managed or controlled), but does not include any part of a metro.

This definition hinges on the term 'rail infrastructure facilities', which is also defined in the Transport Administration Act 1988 by reference to specific types of assets. By definition, rail infrastructure facilities:[38]

> ***(a) Includes railway track, associated track structures, over track structures, cuttings, drainage works, track support earthworks and fences, tunnels, bridges, level crossings, service roads, signalling systems, train control systems, communication systems, overhead power supply systems, power and communication cables, and associated works, buildings, plant, machinery and equipment, but***
>
> ***(b) Does not include any stations, platforms, rolling stock, rolling stock maintenance facilities, office buildings or housing, freight centres or depots, private sidings or spur lines connected to premises not vested in or owned by or managed or controlled by a rail infrastructure owner.***

Items in the former of these two groups, ie, item (a), are classified as regulatory assets, where regulatory assets are defined in the Undertaking as follows.[39]

---

[37] *Transport Administration Act 1988 No 109, Part 1: Preliminary, Section 3: Definitions, 4 March 2022 version.*

[38] *Transport Administration Act 1988 No 109, Part 1: Preliminary, Section 3: Definitions, 4 March 2022 version.*

[39] *NSW Rail Access Undertaking, 1999, Schedule 3, p 2.*

Regulatory Assets means the facilities and associated assets used in the provision of Access to the NSW Rail Network and where the term is used in relation to a Sector or group of Sectors shall include the facilities and associated assets used in the provision of Access to that Sector or those Sectors and includes non-Sector Specific Assets.

TAHE has determined that its regulatory assets include the asset categories listed in Table B 1.

Table B 1: Asset categories within TAHE's regulatory asset base and associated economic life

Category	Economic asset life
Rail infrastructure	45
Land	-
Electrified network	35
Signals	33
Network control	9
Earthworks	200
Capitalised major periodic maintenance	7

Source: TAHE assumption.

We note that land is not a depreciable asset and so is not allocated an economic life.

Sections of the metropolitan rail network which are used by Sydney Trains and NSW Trains

Sydney Trains is responsible for operating and maintaining *the MPN – a map of which is presented in Figure B 1. We note that the network represented in Figure B 1 can be segmented into three distinct components:*

- *parts of the MPN that are managed and serviced by Sydney Trains – represented by the orange lines;*
- *parts of the MPN that are managed by Sydney Trains but serviced by NSW Trains – represented by the dark grey lines; and*
- *the metro network, which is not part of the MPN – represented by the teal lines.*

According to Sydney Trains:[40]

Our maintenance responsibility extends beyond the area we provide service to and includes the area bounded by Bomaderry, Lithgow and the Newcastle Interchange. We partner with and maintain a large portion of the infrastructure and fleet used by NSW TrainLink – the intercity and regional train fleets.

Sydney Trains operates suburban services entirely within the section of the MPN that it is responsible for managing. NSW Trains operates intercity and regional services that use the MPN but that may have an origin or destination outside of the MPN. The parts of the MPN serviced by NSW Trains and not Sydney Trains includes a number of extensions to the suburban network. The extensions that are serviced by NSW Trains only include:

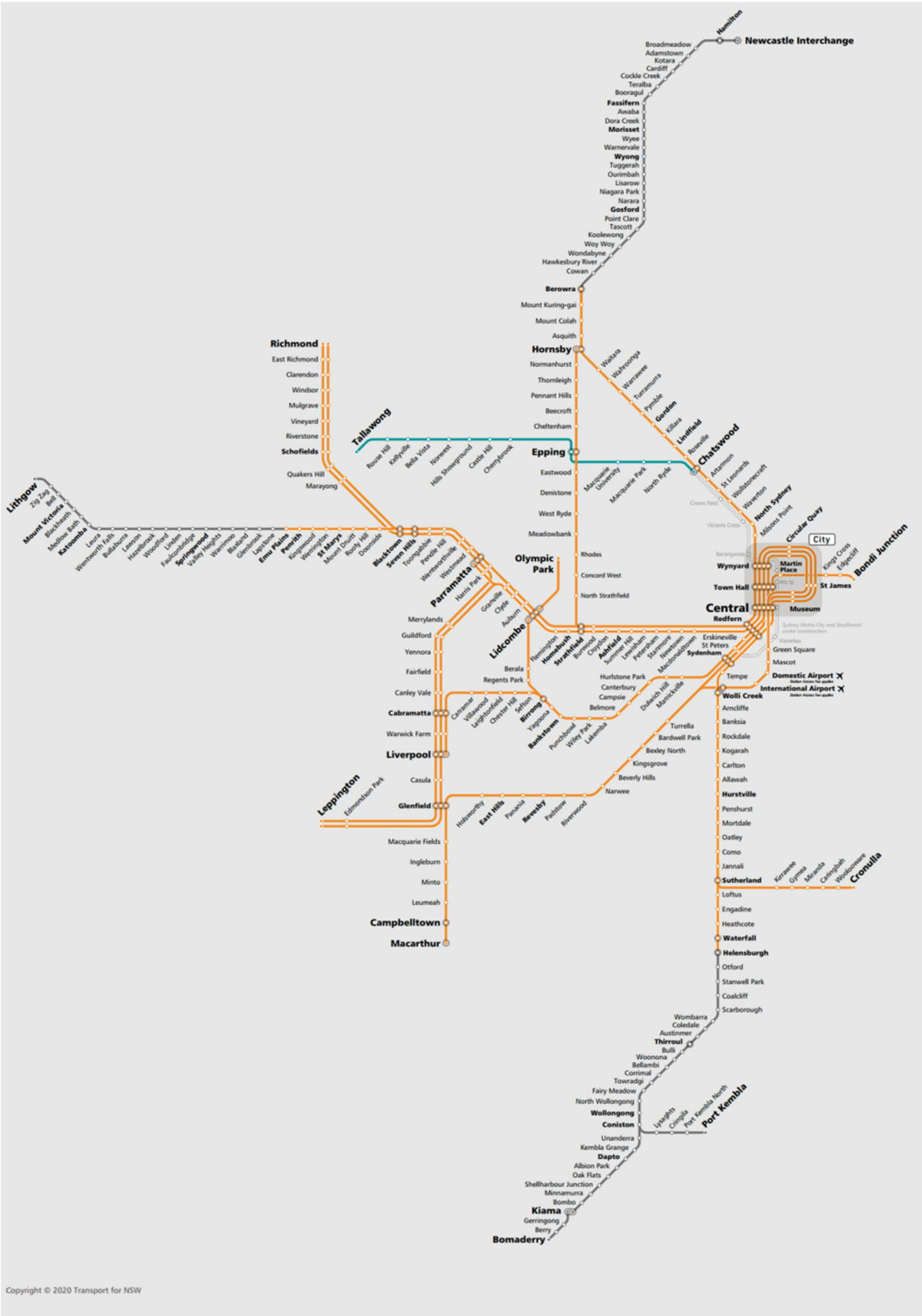
- *the South Coast line – which extends south past Waterfall to Port Kembla and Bomaderry;*
- *the Blue Mountains line – which extends west past Emu Plains to Lithgow and Bathurst;*

[40] *Sydney Trains, Annual Report 2020/21 | Volume 1, November 2021, p 10.*

- the Central Coast and Newcastle lines – which extends north past Berowra to Newcastle; and
- the Southern Highlands line – which extends south-west past Macarthur and Campbelltown to Goulburn.

It follows that neither Sydney Trains nor NSW Trains uses the entirety of the MPN although significant portions of the network are used by both operators.

Figure B 1: Sydney Trains' asset management boundaries



Source: Sydney Trains, Annual Report 2020/21 | Volume 1, November 2021, p 17.
Note: the orange network represents the part of the MPN managed and serviced by Sydney Trains, the dark grey network represents the part of the MPN managed by Sydney Trains but serviced by NSW Trains and the teal network represents the 'Metro' network which is not part of the MPN as per the definition in the Transport Administration Act 1988 No 109.

Cost allocation methodology

A central component of the economic principles underpinning the floor and ceiling tests is the appropriate allocation of different types of costs between access seekers.

The approach to allocating TAHE operating expenditure for the purpose of determining the direct costs, full incremental costs, and TAHE incurred full economic costs involved three steps, namely:

- *Step 1: Determine the proportion of TAHE's operating costs related to each of the relevant networks;*
- *Step 2: Allocate TAHE's operating costs between those related to regulated assets, and those related to unregulated assets; and*
- *Step 3: Determine what proportion of TAHE's operating costs for regulated assets vary with network use, and allocate those costs based on a cost driver.*

There are several cost drivers that could be used to allocate variable operating expenditure as direct costs for regulated and unregulated assets. These include:

- ***trip length*** *– as measured by the aggregate length of trips by each access seeker;*
- ***carriage weighted trip length*** *– as measured by the aggregate length of trips by each access seeker weighted by the length of train or number of carriages used;*
- ***gross tonne kilometres*** *– as measured by the aggregate length of trips by each access seeker weighted by the volume or weight of each trip; or*
- ***service count*** *– as measured by the total number of trips by each access seeker.*

Variable TAHE operating expenditure for the MPN was allocated on the basis of trip length. This reflects an opinion that the relative effort of TAHE in managing access between Sydney Trains and NSW Trains can be approximated by trip length, which resulted in an allocation of 69 per cent of these costs to Sydney Trains, with the remaining 31 per cent to NSW Trains.

Variable major periodic maintenance expenditure for the MPN was allocated on the basis of gross tonne kilometres. This reflects an opinion that variable major periodic maintenance is related to the number of weight of trips. This resulted in 73 per cent of these costs being allocated to Sydney Trains, with the remaining 27 per cent being allocated to NSW Trains.

All non-TAHE operating expenditure was allocated to regulated assets as it was considered to be related directly to those activities.