

RATE OF RETURN AND REMAINING MINE LIFE

RAIL

2019-2024

ACCESS

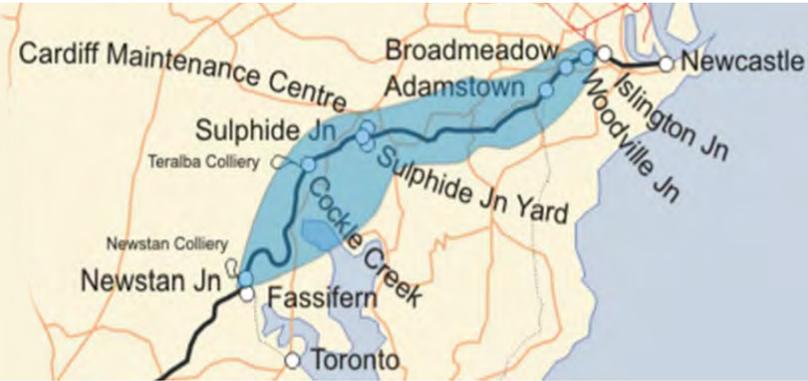
IPART HAS DETERMINED THE RATE OF RETURN AND ESTIMATED THE REMAINING MINE LIFE

APPLYING UNDER THE NSW RAIL ACCESS UNDERTAKING FOR FIVE YEARS FROM 1 JULY 2019

The rate of return applies to all networks under the NSW Rail Access Undertaking

 <p>Country Regional Network</p>	 <p>Sydney Metropolitan Freight Network</p>	 <p>ARTC's non-Hunter Valley network</p>	 <p>RailCorp's Hunter Valley Coal Network</p>
--	---	---	---

The remaining mine life is used to **determine depreciation** for RailCorp's Hunter Valley Coal Network from Woodville to Newstan Junction



Our review process



Submissions closed: 28 May 2019

Our final decisions

A **5.3%** pa real, post-tax rate of return will apply from 1 July 2019



RailCorp's HVCN sectors transport coal for many purposes, but the most significant is supplying the Eraring and Vales Point power stations. These are likely to operate until at least 2032 when Origin Energy (owner of Eraring) has announced it will exit coal-fired generation.

Their future beyond then depends on a number of variables, including current and likely government policies on energy and climate change. On balance, we consider that basing our remaining mine life estimate on a terminal date of 2040 reduces RailCorp's risk of asset stranding, while mitigating customer price impacts.

Our final decision on the rate of return is made in accordance with our standard approach to calculating the weighted average cost of capital (WACC) for a regulated business. This aims to provide regulatory certainty and a buffer against short-term fluctuations in the market. The WACC takes into account recent evidence on industry-specific parameters, including an equity beta of 1.0 and benchmark gearing of 45%.



Our estimated remaining mine life is **21 years**, based on a terminal date of 2040



The NSW Government should ask IPART to **undertake a review** of the NSW Rail Access Undertaking

Since the Undertaking came into effect in 1999, there have been significant changes to the ownership, scope and complexity of the regime and it is no longer meeting the needs of stakeholders.

We propose to improve transparency of our compliance reporting to make it easier for end users and rail operators to work out what they are owed.

Many issues arise from inconsistency and overlap between rail access regimes that would not be addressed by our review. We have written to the Productivity Commission to recommend a national review of rail access regulation.

We would support a **national review** of rail access regimes



How this report is structured

- ▼ **Chapter 1** sets out the context and scope for our review.
- ▼ **Chapter 2** discusses our analysis and final decision on the rate of return.
- ▼ **Chapter 3** discusses our analysis and final decision on the estimated remaining mine life of the relevant Hunter Valley mines utilising the rail sectors.
- ▼ **Chapter 4** discusses our analysis and recommendations about rail access regulation.

Contents

1	Review context and scope	1
1.1	IPART's role in determining rate of return and depreciation	2
1.2	Which rail networks are covered by this review?	4
1.3	Previous decisions on the rate of return and estimates of the remaining mine life	4
2	Determining the rate of return	6
2.1	Final decision on the rate of return	6
2.2	Our approach to estimating WACC parameters	8
3	Estimating the remaining mine life	14
3.1	Final decision on estimated remaining mine life	14
3.2	Our approach to estimating remaining mine life	14
4	Reviewing the rail access regime	27
4.1	We recommend a review of the NSW access regime	27
4.2	The NSW Rail Access Undertaking is not meeting the needs of stakeholders	28
4.3	We will provide more information in our compliance reports	31
A	Proxy company selection and beta estimation	34
B	Mine reserves and production sources	36
C	Copyright for this report	38



The Independent Pricing and Regulatory Tribunal (IPART) provides independent regulatory decisions and advice to protect and promote the ongoing interests of the consumers, taxpayers and citizens of NSW. IPART's independence is underpinned by an [Act of Parliament](#).

The Tribunal Members for this review

Dr Paul Paterson, Chair
Mr Ed Willett
Ms Deborah Cope

Enquiries to this review should be directed to a staff member:

Melanie Mitchell (02) 9113 7743
Ineke Ogilvy (02) 9290 8473

1 Review context and scope

Under Schedule 6AA of the *Transport Administration Act 1988*, the NSW Rail Access Undertaking (the Undertaking) provides for third party access to the rail network in NSW, including specifying certain pricing principles that rail owners must apply in negotiating access prices.

The Undertaking requires IPART to assess the annual compliance of rail owners with these provisions, and also review, every five years, the rate of return and depreciation that rail owners must apply when setting maximum prices.

This chapter discusses IPART's role under the Undertaking, the network covered by our review and our previous decisions. It also discusses our reasons for recommending an independent review of the NSW rail access regime.



We determine the rate of return and estimate remaining mine life every five years



1.1 IPART's role in determining rate of return and depreciation

Schedule 3 of the Undertaking sets out the pricing principles that rail infrastructure owners must apply in negotiating access prices. These principles require prices to include both a return on capital and depreciation of rail assets.

The pricing principles sets out a process that each rail infrastructure owner must follow to estimate the value of their assets in each year (the asset valuation roll forward principles). In doing this, the Undertaking requires them to use:

- ▼ **For all networks covered by the Undertaking**, the rate of return determined by IPART
- ▼ **For the Hunter Valley Coal Network (HVCN) only**, depreciation calculated using the useful life of rail assets, estimated by IPART.

We are required to review and revise these every five years. We are required to estimate the useful life of the HVCN sectors with reference to the estimated remaining mine life of the coal mines that use them.

Specifically, schedule 3, clause 2.1 states that the:

Rate of return means a rate of return in percentage terms approved by IPART for a period of five years to be applied to the average of the Opening and Closing Regulatory Asset Base.

Schedule 3, clause 3.2(c)(i) and (ii) of the Undertaking state that:

- depreciation is to be calculated at the beginning of each financial year using a straight-line methodology and the estimate of the remaining useful life of the assets
- the useful life of a Sector or group of Sectors is to be determined by reference to the remaining mine life of the Hunter Valley coal mines utilising that Sector or those Sectors.

As well as revising these elements every five years, we are also responsible for assessing compliance with the Undertaking, including ensuring that the correct rate of return and depreciation have been used (see Box 1.1).

We assess compliance with the Undertaking annually



Box 1.1 Assessing compliance with the Undertaking

We assess compliance against the requirements of Schedule 3 of the Undertaking annually. The compliance obligations on rail infrastructure owners differ depending on whether the network is part of the HVCN and how much access revenue is received relative to the cost of providing services.

RailCorp's HVCN is the only part of the HVCN that is currently subject to the NSW Rail Access Undertaking. For these sectors, we review compliance under Schedule 3, section 5(b) of the Undertaking, which involves determining RailCorp's compliance with both Asset Valuation Roll Forward Principles (including return of and on capital) and the Ceiling Test^a, having regard to the operation of an 'Unders and Overs' account. The HVCN is subject to greater monitoring as it is more likely, given the volumes of coal traffic, to potentially over-recover costs.

For non-HVCN rail networks, we review compliance under Schedule 3, section 5(f) of the Undertaking. Essentially, this requires the rail infrastructure owners, RailCorp and the ARTC, to demonstrate to our reasonable satisfaction that access revenue is not more than 80% of the full economic cost of providing access under the Ceiling Test for any group of access seekers.

Rail infrastructure owners must submit documents demonstrating compliance with the Undertaking over the past financial year by 31 October each year.

Our five yearly revisions of the rate of return and remaining mine life form the basis for the return on capital for all networks and depreciation for the HVCN.

^a 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 standalone basis for the access seeker or group of access seekers.

1.1.1 Are there other legislative factors IPART needs to consider?

In its submission to our Draft Report, The Australia Institute submitted that IPART must have regard to provisions in section 15 of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act), and hence, *The Protection of the Environment Administration Act 1991*.¹

Among other things, section 15 of the IPART Act requires us to take into account the need to maintain ecologically sustainable development and the social impact of its recommendations and determinations. However, it requires us to have regard to those matters only in 'making determinations and recommendations' under the IPART Act.² It does not apply to this review, which we are conducting under the NSW Rail Access Undertaking, not the IPART Act.

However, as discussed in Chapter 3, we have taken into account relevant government and company policies on energy and environmental matters that are likely to impact our estimate of the remaining life of relevant coal mines.

¹ The Australia Institute submission to IPART Draft Report, June 2019, p 4.

² *Independent Pricing and Regulatory Tribunal Act 1992*, Section 15(1).

The rate of return applies to each network covered by the Undertaking. The estimated remaining mine life applies only to RailCorp's sectors of the Hunter Valley Coal Network

1.2 Which rail networks are covered by this review?

Our final decision on the rate of return applies to each of the networks covered by the Undertaking. However, the estimated remaining mine life applies only to the five sectors of the HVCN covered by the Undertaking.

The Undertaking currently covers all or part of four rail networks across NSW including the Country Rail Network (CRN), the Sydney Metropolitan Freight Network (MFN), ARTC's non-HVCN sectors and the five sectors of the HVCN owned by RailCorp.

The HVCN comprises 37 track sectors of which 32 are leased to the ARTC for 60 years from 5 September 2004.³ The ARTC has a separate undertaking with the Australian Competition and Consumer Commission (ACCC) (Hunter Valley Access Undertaking 2011 (HVAU))⁴ and these sectors are regulated under the national regime.

RailCorp owns the remaining five sectors of 21 route kilometres running between Newstan and Woodville Junction (Table 1.1 below). They are used by passenger trains as well as coal and other freight trains.

Table 1.1 RailCorp Hunter Valley Coal Network list of sectors

Sector	Name	Route kilometres
405	Newstan Jct to Cockle Creek	7.18
406	Cockle Creek to Sulphide Jct	3.15
490	Sulphide Jct to Adamstown	8.05
407	Adamstown to Broadmeadow (via Main)	1.60
497	Broadmeadow to Woodville Jct	0.85

Source: NSW Rail Access Undertaking, Schedule 6

1.3 Previous decisions on the rate of return and estimates of the remaining mine life

We set the initial estimate of remaining mine life for all 37 sectors of the HVCN at 40 years from 1 July 1999, giving a terminal date of 2039. This was based on:

- ▼ The estimated rail infrastructure asset life, which was 39.4 years⁵
- ▼ A balance between stakeholder views, which ranged from 30 to 50 years.⁶

³ <https://www.artc.com.au/projects/hv-strategy/>, accessed 2 July 2019.

⁴ <https://www.accc.gov.au/regulated-infrastructure/rail/artc-hunter-valley-access-undertaking>, accessed 2 July 2019.

⁵ IPART, *Aspects of the NSW Rail Access Regime – Final Report*, April 1999, p 44.

⁶ *Ibid*, p 45.

In subsequent reviews, we identified the mines using the track, determined the amount of coal available and the amount likely to be extracted each year, depending on infrastructure capacity and market conditions.

At the time of our 2014 review, the ARTC HVCN sectors no longer fell under the Undertaking, which changed the configuration of coal mines under consideration. Further, the two mines located on the remaining section of track, Newstan and Teralba, were no longer operational and so were not using the line to export coal from Newcastle. However, we determined that while the two power stations south of the line – Eraring and Vales Point – remained operational, there would be potential demand for coal from Hunter Valley mines, as long as the mines could supply it.⁷ We found that the median terminal date of the subset of longest-lived substantial mines was 2044.⁸ We engaged Frontier Economics to advise on the likely economic lives of the power stations, given various energy scenarios. Frontier considered that 2044 was a reasonable estimate of the economic lives.⁹ As such, we extended its estimate of the remaining mine life by five years from the initial terminal date of 2039 to 2044.¹⁰

At our 2014 review, we also moved from a pre-tax to a post-tax WACC, following an IPART-wide change in our WACC method.¹¹

Table 1.2 shows IPART's previous decisions on the rate of return and estimated remaining mine life since the initial Undertaking in 1999.

Table 1.2 Previous IPART decisions

Decision	Remaining mine life	Rate of return
Initial Undertaking (1999)	40 years (to 2039)	real pre-tax WACC 8.0%
2004	35 years (to 2039)	real pre-tax WACC 7.3%
2009	30 years (to 2039)	real pre-tax WACC 8.0%
2014	30 years (to 2044)	real post-tax WACC 5.9%

Source: IPART, *Aspects of the NSW Rail Access Regime, Final Report*, April 1999; IPART, *Report on the determination of remaining mine life and rate of return from 1 July 2004*, May 2005; IPART, *NSW Rail access undertaking – review of the rate of return and remaining mine life from 1 July 2009, Final report and decision*, August 2009; IPART, *NSW Rail access undertaking – review of the rate of return and remaining mine life from 1 July 2014, Final report and decision*, July 2014.

⁷ IPART, *NSW Rail Access Undertaking – Review of the rate of return and remaining mine life – Final Report*, July 2014, p 2.

⁸ *Ibid*, p 27.

⁹ *Ibid*, pp 31-32.

¹⁰ *Ibid*, p 2.

¹¹ *Ibid*, p 12.

2 Determining the rate of return

We aim to provide the operator of the rail network with an estimated rate of return equivalent to that required by the market to invest in those assets. We use this rate of return to calculate the full economic cost of a group of line sectors for the ceiling test.

Since our 2014 review, we have used a real post-tax WACC to estimate the rate of return, and a standard method for determining most market-based parameters.¹² We conduct our own analysis to determine industry-based parameters such as equity beta and gearing.

This chapter outlines our final decision and explains how we have applied our standard method to calculate the WACC. It explains our analysis on the appropriate equity beta and gearing that should apply to the networks under the Undertaking.

2.1 Final decision on the rate of return

Final Decision

- 1 That the rate of return that should apply from 1 July 2019 is 5.3% per annum on a real, post-tax basis.

This is the mid-point of the upper and lower bounds of the range calculated using long-term averages and current market data. Table 2.1 shows the parameters used in our WACC decision.

This is 60 basis points lower than the rate of return that applied from 1 July 2014 of 5.9% per annum on a real, post-tax basis.

It is 50 basis points lower than our draft WACC of 5.8% per annum. The main driver of this difference is a 90 basis point drop in the current risk-free rate, which also contributed to a 60 basis point drop in the current cost of equity.

¹² IPART, *NSW Rail Access Undertaking – Review of the rate of return and remaining mine life – Final Report*, July 2014, p 12

We adopted a WACC of 5.3% on a real, post-tax basis



Table 2.1 Final decision on WACC

	Step 1 – Current and long-term estimates		Step 2 – WACC range		
	Current market data	Long-term averages	Lower	Mid-point	Upper
Nominal risk-free rate ^a	1.8%	3.4%			
Inflation	2.4%	2.4%			
Implied debt margin	2.3%	2.6%			
Market risk premium	8.9%	6.0%			
Debt funding	45%	45%			
Equity funding	55%	55%			
Total funding (D + E)	100%	100%			
Gamma	0.25	0.25			
Corporate tax rate	30%	30%			
Effective tax rate equity	30%	30%			
Effective tax rate debt	30%	30%			
Equity beta	1.00	1.00			
Cost of equity (nominal post-tax)	10.7%	9.4%			
Cost of equity (real post-tax)	8.1%	6.8%			
Cost of debt (nominal pre-tax) ^a	4.1%	6.0%			
Cost of debt (real pre-tax)	1.7%	3.5%			
Nominal Vanilla (Post-tax nominal) WACC	7.7%	7.9%	7.7%	7.8%	7.9%
Post-tax real WACC	5.2%	5.3%	5.2%	5.3%	5.3%
Pre-tax nominal WACC	9.4%	9.4%	9.4%	9.4%	9.4%
Pre-tax real WACC point estimate	6.9%	6.8%	6.8%	6.8%	6.9%

^a We have corrected a calculation error with the cost of debt that we made in our Draft Report. Our draft decision on the nominal, pre-tax cost of debt should have been 4.8%, rather than 5.0%, and the nominal risk-free rate should have been 2.4%, rather than 2.7%.

Source: Bloomberg; IPART analysis.

2.2 Our approach to estimating WACC parameters

Consistent with the requirements of the Undertaking, we estimated a single rate of return, which would apply to the average of the opening and closing RAB for the five year period from 1 July 2019.

We estimated the industry parameters - equity beta and gearing - using a proxy company analysis. To determine the appropriate market parameters, we applied our standard [2018 WACC method](#). For our final decision, we used the following sampling dates to determine our current market parameters:

- ▼ **For the current year, the sampling period ending 31 May 2019**, which is the last available whole month.
- ▼ **For other years, the sampling period ending 31 May**, although consistent with our decision to use a single cost of debt, we assume that the whole of the current debt would be refinanced at the rates applying at the end of May 2019.

This assumes that RailCorp would refinance its entire current debt at the rates applying at the end of May 2019.¹³

In its submission, the ARTC supported our draft rate of return and our approach in balancing long-term and spot market rates to remove volatility in rate determinations and provide greater temporal stability.¹⁴ However, it suggested further improvements to our WACC method via the addition of forward expectations into the formula, noting that in the absence of a future expectations model, the IPART approach is the next most optimal formula.¹⁵

In 2018, we reviewed our WACC method, taking into account a wide range of stakeholder views, including those of the ARTC. We decided that our method of using a default 50-50 weighting between the current and long-term estimates of the cost of debt and equity to estimate the WACC provided the most appropriate balance between forecasting future market conditions, while accounting for short-term market cycles to provide greater stability in regulatory returns.¹⁶

2.2.1 We have used an equity beta of 1.0 and gearing of 45%

The systematic risk of an asset is measured by its 'beta' factor. The beta reflects the extent to which future returns are expected to co-vary with the overall market. Gearing represents the amount of debt capital in a firm's

¹³ Our 2018 WACC method introduced a decision to estimate both the long-term and current cost of debt using a trailing average approach, which updates the cost of debt annually over the regulatory period. However, this is inconsistent with the provisions of the Undertaking, which allow only for a single cost of debt for a five year period.

¹⁴ ARTC submission to IPART Draft Report, May 2019, pp 1-2.

¹⁵ Ibid.

¹⁶ IPART, *Review of our WACC method*, February 2018, p 3.

capital structure. Where the business risk of a firm is high, it is expected that the firm will carry less debt and vice versa.

In our Draft Report, to estimate the equity beta and gearing for the rail networks covered by the Undertaking, we:

1. Compiled a list of comparable transport infrastructure companies using publicly available information from the Thomson Reuters Datastream
2. De-levered each company's equity beta to generate an asset beta, and re-levered the asset beta using the benchmark company's gearing ratio and corporate tax rate
3. Calculated the median, re-levered equity beta and gearing level for the sample
4. Compared the result to equity betas for other industries, and those determined by other regulators.¹⁷

We adopted an equity beta of **1.0** and gearing ratio of **45%** based on a sample of proxy companies

Appendix A explains our process for the first three steps in more detail.

We examined a range of comparator firms and found that the median equity beta was 1.0

In selecting proxy industries, we consider the type of business the firm is in. If we can't directly identify proxy firms that are in the same business, then we consider which other industries exhibit returns that are comparably sensitive to market returns.

There are only a few listed pure-play freight rail infrastructure firms as far as we know. For the Draft Report, we used a relatively narrow set of firms (10 firms) that we considered had a high degree of comparability to RailCorp and ARTC's regulated businesses.¹⁸ Those firms were mainly US and Canadian Class 1 railroad operators. While RailCorp's HVCN does not compete with road transport, other networks under the Undertaking, such as the CRN and MFN transport freight other than coal that competes with road transport and would face greater exposure to market risk, similar to the Class 1 railroad operators.

¹⁷ IPART, *NSW Rail Access Undertaking – Review of the rate of return and remaining mine life*, Draft Report, April 2019, pp 9-10.

¹⁸ *Ibid*, p 10.

Table 2.2 shows our comparator company analysis.

Table 2.2 Summary of beta estimation results

Name	Listed Exchange	Levered beta	Unlevered asset beta	Relevered beta	Gearing
Genesee & Wyoming 'A'	US	1.5	1.1	1.7	36
Norfolk Southern	US	1.4	0.9	1.4	42
Canadian National Railway	US	1.0	0.8	1.2	31
PKP Cargo	Poland	1.0	0.7	1.2	34
CSX	US	1.3	0.7	1.1	54
Kansas City Southern	US	0.9	0.6	1.0	34
Canadian Pacific Railway	US	1.1	0.6	0.9	57
Union Pacific	US	1.0	0.6	0.9	52
Getlink	France	1.2	0.5	0.8	68
Aurizon Holdings	Australia	0.6	0.4	0.6	44
		Median	0.66	1.0	43

Source: Thomson Reuters Datastream and IPART analysis.

We received no submissions on the selection of comparator companies. However, Pacific National submitted that the 5.8% rate of return in our Draft Report was likely to be excessive, noting that our implied equity beta was higher than the ACCC and QCA allowed.¹⁹ Having reviewed those decisions (discussed in more detail in the next section), we found that they are based on using a broader sample of comparator firms, which we consider are not wholly representative of the risk profile of the networks under the Undertaking.

An equity beta of 1.0 is consistent with other regulator’s findings, taking into account the risk profile of comparable industries

In our Draft Report, we considered other regulators’ recent assessments of the gearing and systematic risk faced by comparable rail businesses (see Table 2.3).

¹⁹ Pacific National, Submission to IPART Draft Report, May 2019, p 2.

Table 2.3 Other regulatory decisions on equity beta and gearing

Organisation	Regulator	Gearing	Equity beta	Asset beta
ARTC Interstate Undertaking (2017 – withdrawn)	ACCC	50%	1.2	0.6
ARTC HVAU (2017)	ACCC	52.5%	0.94	0.45
Queensland Rail (2016)	QCA	55%	0.8	0.45
Arc Infrastructure (2017)	ERA	25%	0.9	0.7
Aurizon (2017)	QCA	55%	0.73	0.42
Public Transport Authority (2017)	ERA	50%	0.6	0.3

Source: Source: ERA, *Determination on the 2017 Weighted Average Cost of Capital for the Freight and Urban Railway Networks, and or Pilbara railways*, 2017; ACCC, *Australian Rail Track Corporation's 2018 Interstate Access Undertaking*, December 2018; QCA, *Aurizon Network's 2017 draft access undertaking*, December 2018; QCA, *Queensland Rail's Draft Access Undertaking*, June 2016.

The QCA's most recent WACC decision adopted an asset beta of 0.42 and equity beta of 0.73,²⁰ both of which are lower than the beta values we have adopted. While Aurizon's consultants, the Brattle Group and Frontier Economics, proposed an asset beta of 0.55 to 0.65²¹ and a higher equity beta²², based on North American pipeline and rail freight transport comparators, the QCA stated that it:

...does not consider that North American pipelines or rail freight transportation businesses are appropriate comparators for Aurizon Network. In comparing those relevant characteristics that are expected to affect systematic risk and examining the underlying economic fundamentals, the QCA considers regulated energy and water businesses are comparable firms of similar systematic risk to Aurizon Network at this time.²³

The end use of the rail infrastructure that is subject to the Undertaking is a mix of transporting coal either for export or for domestic electricity generation, and grain and general freight to Ports Botany, Kembla and Newcastle. Some of these networks face substantial competition from road freight. On balance, we consider that the rail infrastructure owners' systematic risk would be more similar to that of a Class 1 railroad operator than a regulated energy and water utility.

Pacific National also submitted that government ownership of RailCorp likely made its returns less risky than private sector peers.²⁴

²⁰ QCA, *Aurizon Network's 2017 draft access undertaking - Appendices*, December 2018, p 70.

²¹ The Brattle Group, *Aurizon Network 2016 Access Undertaking, Aspects of the WACC*, November 2016, p 3.

²² Frontier Economics, *Equity beta, Report prepared for Aurizon Network*, November 2016, p 15.

²³ QCA, *Aurizon Network's 2017 draft access undertaking - Appendices*, December 2018, p 70.

²⁴ *Ibid.*

Our analysis of a broader set of comparable firms supports our equity beta estimate

We set the WACC of a benchmark efficient entity, irrespective of its ownership. Whoever owns that entity earns the relevant return. In some cases, a smaller firm is owned by a larger firm.

Analysis of a broader set of comparable firms supports our estimate of an equity beta of 1.0

While we do not propose to adopt the same comparator industries as the ACCC and QCA, we have considered whether the use of a broader set of comparators would lead to a different result.

We considered that three broader proxy industries could include: coal mining, coal-fired electricity generation, and a broader set of rail transport businesses. We found that:

- ▼ **Asset beta:** Across both time periods, the median asset betas were 0.67 for coal mining, 0.58 for electricity generation and 0.70 for rail transport. The median of all three industries is an asset beta of 0.64
- ▼ **Gearing:** Across both time periods, the median gearing ratios were 48% for coal mining, 47% for electricity generation and 38% for rail transport. The median of all three industries is a gearing ratio of 45%
- ▼ **Equity beta:** The resulting median equity betas were 1.1 for coal mining, 0.9 for electricity generation and 1.1 for rail transport. The median of all three industries is an equity beta of 1.0.

Our estimated asset beta is at the top of the range adopted by IPART for other industries

The proposed median asset beta of 0.64 is at the top of the range of asset betas previously adopted by IPART (see Table 2.4).

Table 2.4 Range of asset beta values previously adopted by IPART

Industry	Asset beta adopted by IPART
Rate of return and remaining mine life (Final Report 2019)	0.64
Cruise terminal	0.60
Private ferries, Sydney ferries	0.45
Rural and regional buses	0.43
Rail access (freight rail)	0.38
Sydney and NSW Trains (passenger rail)	0.36
Light rail	0.35
Valuer General (2014, implied from equity beta and gearing)	0.34
Valuer General (2019 Determination)	0.29
Water industry	0.28

Note: Equity beta values will be higher than these asset betas because they also reflect financial risk. The conversion between the two depends on each firm's gearing and the prevailing corporate tax rate.

Source: IPART, *Review of prices for land valuation services provided by the Valuer General to councils*, Final Report, May 2019, p 73.

However, we note that the asset beta is lower than what we have found previously for the electricity generation (0.74) and retail (0.87) sectors, although we no longer determine prices for electricity.²⁵

²⁵ IPART, *Review of regulated retail prices and charges for electricity – Final Report*, June 2013, p 204.

3 Estimating the remaining mine life

The Undertaking requires us to estimate the useful life of a rail sector or group of sectors by reference to the remaining life of Hunter Valley coal mines that use those sectors. It is used as a proxy to calculate depreciation to determine compliance with the ceiling test and roll forward the Regulatory Asset Base (RAB). The Undertaking requires depreciation to be calculated on a straight-line basis.

This chapter sets out our final decision on our estimate of the remaining mine life, explains how we reached our conclusion and the implications for maximum prices. It discusses the current and potential coal traffic flows on the RailCorp HVCN sectors, the longest-lived substantial mines using the sectors, their reserves and output, and what this means for the terminal date.

3.1 Final decision on estimated remaining mine life

Final Decision

- 2 IPART's estimate of the remaining mine life from 1 July 2019 is 21 years, based on a terminal date of 2040.

Our estimate is based on an expected terminal date that is four years earlier than the current terminal date of 2044. Using this estimate as the basis for depreciation charges for RailCorp's HVCN sectors would result in an increase in maximum rail access prices of around 4.4% per annum, all else constant. We consider this an appropriate balance between reducing the risk of asset stranding to the owner and mitigating customer price impacts.

3.2 Our approach to estimating remaining mine life

Our approach is to consider a range of factors that would affect the remaining lives of the mines that use RailCorp's sectors of the Hunter Valley Coal Network and then to make a judgment on the remaining life of those mines.

The factors we have taken into account include:

1. Current and potential uses of the line to transport coal²⁶
2. Changes to demand for coal-fired electricity generation and the economic lives of the Eraring and Vales Point power stations

²⁶ At our 2014 review, we considered that the relevant mines need not necessarily be located along the sector, but may include any mine with the production capacity to supply the power stations, whether it was currently supplying, or could potentially supply, the power station in the foreseeable future. See IPART, *NSW Rail Access Undertaking – Review of the rate of return and remaining mine life - Final Report*, July 2014, p 25.

3. Changes to BlueScope Steel’s demand for Hunter Valley coal
4. The outlook for other coal users of the line
5. The longest-lived substantial mines (LLSM) using the line, their marketable reserves and production levels.

We also considered how the risks of asset stranding have changed since our 2014 review, and the relative price impacts of a change to the terminal date.

In its submission, The Australia Institute stated that our approach:

...does not consider the climate change or health impacts caused by the coal transported on the rail networks under their projected operations.²⁷

As noted in Chapter 1, because we are not undertaking this review under section 15 of the IPART Act, we are not required to consider environmental and social factors when setting the rate of return and estimating the remaining mine life. The estimated remaining mine life is used only as a proxy to calculate depreciation for RailCorp’s HVCN assets. Our estimate has no bearing on the actual lives of the power stations or mines. However, in assessing the economic lives of the power stations and future demand for coal in Australia and globally we have had regard to current and likely government policies on energy and climate change.

3.2.1 The line is used to transport coal in both directions and for a range of purposes

This section of the rail line, subject to our estimate of the remaining mine life, runs south of Newcastle, from Woodville Junction to Newstan. The line is used to transport coal from the Hunter Valley to the Eraring and Vales Point power stations, to BlueScope Steel and Port Kembla, as well as from south and western mines to export at Newcastle. Hunter Valley mines do not use the line to export coal at Newcastle, but they do use the line to transport coal to supply the two power stations at Eraring and Vales Point.

There are no operational mines located along the track, because Newstan Colliery and Teralba Colliery were placed on ‘care and maintenance’ in 2014 and 2001 respectively. However, Newstan Colliery loop acts as a turnaround point for coal trains destined for the power stations arriving from the south. Newstan Colliery’s facilities are also used for some processing tasks for coal transported from Mandalong.²⁸

Figure 3.1 shows a map of the line segment, including the location of the power stations, Newcastle and Newstan and Teralba mines.

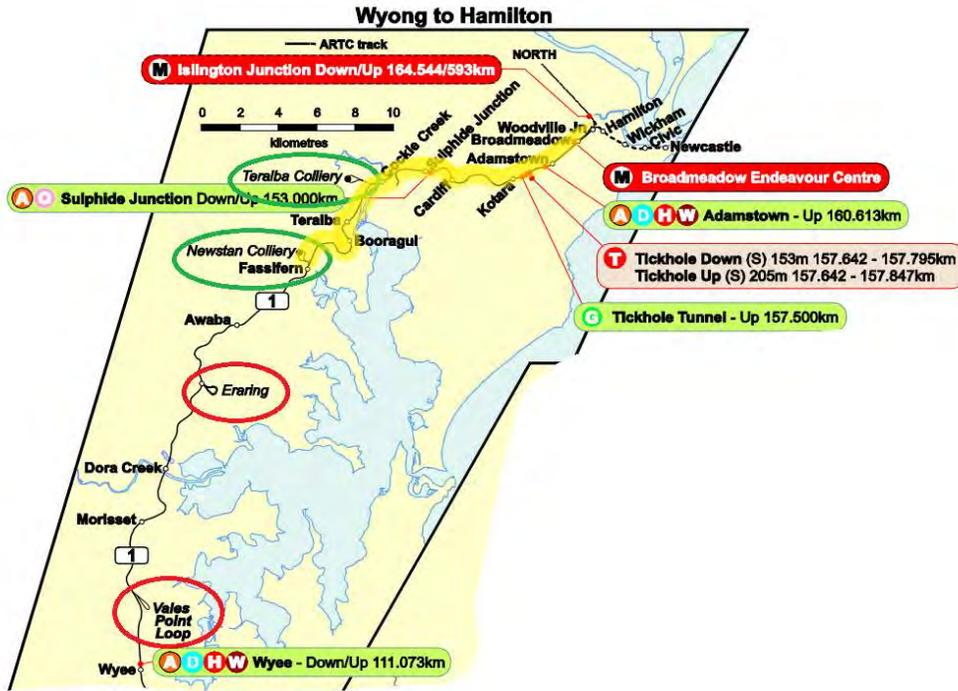
The line from Woodville to Newstan Junction is used mainly to transport coal to power stations, Port Kembla and the Port of Newcastle



²⁷ The Australia Institute submission to IPART Draft Report, June 2019, p 5.

²⁸ IPART consultation with Centennial Coal, May 2019.

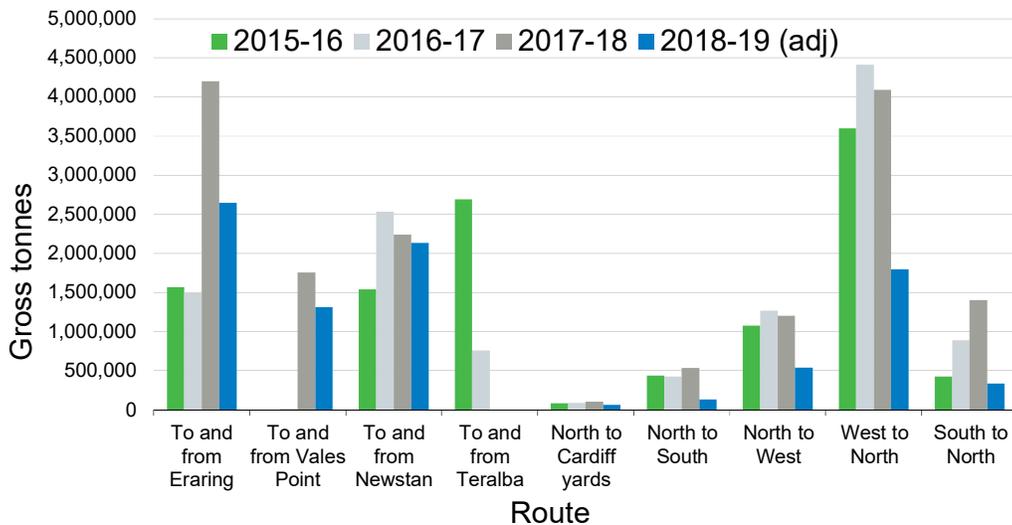
Figure 3.1 RailCorp's HVCN rail line showing the location of the power stations and mines



Data source: RailCorp, TOC Operating Conditions Manual version 9.0, April 2017, p 35.

Figure 3.2 shows the annual coal traffic on the line over the last four years.

Figure 3.2 Coal traffic on RailCorp's HVCN since 2015-16 (gross tonnes per annum)



Note 1: Figures for Newstan and West to North include some coal traffic whose ultimate destination is Eraring, because the network configuration means that traffic heading from the south or west into Eraring has to use the Newstan crossings to turn around.

Note 2: Data for 2018-19 has been extrapolated to give a full year forecast.

Data source: Transport for NSW.

Given the rise of renewables, and environmental opposition to new coal mines and carbon emissions, there is uncertainty about the future of coal-fired power stations beyond 2032



Historically, BlueScope Steel at Port Kembla has purchased small amounts of coking and thermal coal from Hunter Valley mines.²⁹ However, BlueScope currently sources all its coking coal from the Illawarra region.³⁰

Some mines in the south-west transport coal along the main line and on to RailCorp's network to the port at Newcastle. They also use the Newstan loop to turn around trains going to the power stations. There is also a small amount of coal-related traffic that goes to and from Cardiff rail yards in the north-west.³¹

In 2017-18 and 2018-19, the amount of coal traffic to Eraring and Vales Point increased, while the proportion of coal traffic from the southern and western mines to Newcastle decreased. Other coal traffic has remained mostly stable, in smaller volumes.

3.2.2 There is uncertainty about the future of coal-fired power stations beyond 2032

Since our 2014 review, a number of other coal-fired power stations have publicly announced their intention to close. In 2015 and 2017, AGL announced its intention to close the Liddell Power Station in 2022.³² In November 2014, EnergyAustralia announced it would permanently close the newly acquired Wallerawang power station due to ongoing reduced energy demand, lack of access to competitively priced coal and the power station's high operating costs.³³ Wallerawang power station has subsequently closed.

IBISWorld reports make the following comment about the fossil fuel generation industry:

The rising cost efficiency of renewable forms of energy, staunch environmental opposition to new coal mines and regulatory changes regarding carbon emissions are all significant impediments to the industry's growth. Investment in new fossil fuel generation plants has waned over the past five years due to regulatory uncertainty, while most new generation investment has been directed to wind and solar plants. Furthermore, energy usage per capita has fallen over the past decade due to increased energy efficiency of appliances, the uptake of photovoltaic solar panels and other measures, which have reduced long-term demand for fossil fuel generated power.³⁴

²⁹ ACCC, *Statement of Issues – South32 – proposed acquisition of Metropolitan*, February 2017, p 5.

³⁰ *Ibid.*

³¹ Based on the gross tonne weight per train, this does not appear to be coal traffic, but may be coal wagons being serviced at the Cardiff yards.

³² See <https://www.agl.com.au/about-agl/how-we-source-energy/agl-macquarie>, accessed 2 July 2019.

³³ See <https://www.energyaustralia.com.au/about-us/energy-generation/wallerawang-power-station-closure>, accessed 2 July 2019.

³⁴ IBISWorld, Industry market research, Fossil fuel electricity generation, accessed April 2019.

We also consulted Origin Energy and Delta Electricity about the economic outlook for Eraring and Vales Point power stations.

Origin intends to be out of coal by 2032

Origin has recently increased its output, but has announced that it will exit coal fired generation by 2032.³⁵ Origin currently uses more than 6 mtpa of coal, up from the 4 mtpa in 2014, reflecting higher production levels to support energy requirements, because of the closure of other power stations.³⁶

Origin currently has a number of short and medium-term contract arrangements with various mines for the supply of coal. Since 2014, it upgraded its rail to 30 tonne axle load and upgraded wagon trains to 120 tonnes and now purchases around 2 mtpa of coal from a number of Hunter Valley coal mines, including those in the lower, and upper Hunter Valley (Zones 1 and 2), as well as domestic coal from mines in the south-west region.³⁷ Origin noted that the future stated closure of Liddell power station could free up further rail capacity and thermal coal supply in the Upper Hunter, although coal from this zone faces a range of logistical issues in supplying Eraring.³⁸

The continuation of the power station would therefore depend on the availability of a buyer and market conditions at the time, including emissions reduction and clean energy policies, as well as the status of the potential SA-NSW transmission interconnector³⁹, which may affect demand for local generation.

Delta Electricity's effective economic life for Vales Point is 2029

We consulted Delta Electricity about the economic outlook for Vales Point power station. Delta Electricity uses a consistent volume of 3 mtpa of coal, of which two thirds is contracted locally from mines that do not use the RailCorp HVCN. Delta Electricity has contracts with various Hunter Valley mines to supply 1.3 mtpa of coal per annum up to 2022, and often purchases 'small bites' of coal (around 500 kt at a time) on the spot market when the price is favourable. Delta Electricity stated that at the end of this contract, it could source up to 50% of its coal either locally or from the Hunter Valley. This could come from a number of mines, including Bengalla, Bulga, Mangoola, Airly and Wallarah 2.⁴⁰

³⁵ See <https://www.originenergy.com.au/blog/big-picture/commitment-renewables-gets-big-boost.html>, accessed 2 July 2019.

³⁶ IPART consultation with Origin Energy.

³⁷ Ibid.

³⁸ Ibid.

³⁹ See <https://infrastructurepipeline.org/project/sa-to-nsw-high-capacity-interconnector/>, accessed 2 July 2019.

⁴⁰ IPART consultation with Delta Electricity.

Delta Electricity states that the expected life of Vales Point is 2029, but this would depend on trends in electricity pricing and government policy.⁴¹ It is currently investing in capital expenditure on an annual basis for 2029 and potentially beyond.⁴²

3.2.3 Coal revenue is projected to decline over the next five years

IBISWorld states that the coal mining industry is in the mature stage of its economic life cycle and notes that 'black coal is increasingly being viewed as an outdated and inefficient way to generate electricity due to the associated adverse environmental effects'⁴³. However, it states that global demand for steaming (thermal) and coking coal is likely to strengthen over the next five years, as the Australian dollar remains weak, although Australian producers will be subject to increased competition from global suppliers. Domestic demand is expected to decline over the next five years, as the energy industry moves towards renewable energy alternatives.⁴⁴

BlueScope Steel has historically purchased coal from the Hunter Valley, but its demand is likely to decline

BlueScope operates the Port Kembla Steelworks in the Illawarra region of NSW. It uses both coking coal and thermal coal in its operations. Historically, BlueScope has sourced small amounts of both coking coal and thermal coal from the Hunter Valley.⁴⁵ There is a good supply of coking coal in the Illawarra region, and BlueScope has a long-term contract with South32 to supply coking coal until 2032.

In 2018, BlueScope signed a 7-year solar power purchasing contract to underpin a 500,000 panel solar farm in the Riverina district to reduce its rising energy costs. This would supply around 20% of BlueScope's Port Kembla electricity needs.⁴⁶ This would be likely to reduce BlueScope's potential future demand for Hunter Valley thermal coal.

IBISWorld reports the steel manufacturing industry to be in decline. It has benefited recently from decrease in Chinese steel capacity, higher global steel prices and government tax concessions. However, it faces risks in higher energy prices, raw material prices, exchange rate fluctuations and competition from other suppliers and materials in future.⁴⁷

⁴¹ Ibid.

⁴² Ibid.

⁴³ IBISWorld, Industry market research - Black Coal Mining, accessed 6 June 2019.

⁴⁴ Ibid.

⁴⁵ ACCC, *Statement of Issues – South32 – proposed acquisition of Metropolitan*, February 2017, p 5.

⁴⁶ BlueScope Steel, *BlueScope underwrites investment in 500,000 panel solar farm*, Media release, July 2018.

⁴⁷ IBISWorld, Industry market research – Iron smelting and steel manufacturing, accessed April 2019.

South-west mines export coal at Newcastle and supply the power stations

Currently, there are a few mines in the south-west, such as Clarence, Springvale and Mandalong that use the line to transport coal to Newcastle, and supply the power stations via the Newstan Colliery loop (for which they pay an access charge to RailCorp). We consider that this is because:

- ▼ **Global coal prices have increased:** This is due to tighter production regulations in China, which may make it more economic for these mines.
- ▼ **Recent industrial action at Port Kembla⁴⁸:** This may have reduced productivity at the port.
- ▼ **Price differentials between Port Kembla and Newcastle:** Port Kembla has a volume-driven price strategy. However, it has lost some volume from local mines recently, which has increased the cost per tonne for other users.

These are smaller mines, with lower levels of production and comparatively shorter mine lives. They are also price sensitive and ports at Port Kembla or Newcastle are highly substitutable. We consider that in the absence of other users on the line, RailCorp would be unlikely to recover its depreciation costs from these users alone.

3.2.4 The longest-lived substantial mines (LLSM) have an expected life until at least 2044

In our 2014 review, we estimated remaining mine life by:

- ▼ Identifying mines whose annual production was **substantial** enough to supply the power stations (ie, their annual production was above a minimum threshold)
- ▼ Determining the **longest-lived** mines by dividing marketable coal reserves by annual production levels.

In this review, we have added a further step, which is to consider the impact of regulatory uncertainty, particularly around investment in fossil fuel, and increased energy efficiency and cost efficiency of renewable energy forms. We have used this information to determine an appropriate balance between reducing the risk of asset stranding and moderating customer price impacts.

For this review, we used a minimum threshold of 3 mtpa, which is what Delta Electricity advised us that Vales Point uses each year. This is slightly lower than our 2014 threshold of 4 mtpa. However, it does not make much

⁴⁸ Australian Financial Review, *'No joy': BlueScope steelworkers to strike at Port Kembla over pay*, January 2019; Illawarra Mercury, *Port Kembla Coal Terminal workers to strike after lockout ends*, January 2019; Illawarra Mercury, *Port Kembla Coal Terminal workers on strike until Monday*, February 2019; The Australian, *Port Kembla Coal Terminal industrial dispute: union claim win in bitter dispute*, April 2019.

difference to our sample of mines because most mines produce either a substantial amount of coal, or very small amounts.

Marketable reserves and recent production provide the best estimate of mine life

We used 2018 (or most recent) annual production levels as a proxy for expected production levels going forward, and marketable proved plus probable reserves, consistent with our 2014 review. In our 2014 review, we obtained this information from the NSW Coal industry Profile 2013. However, this publication is no longer available. We have relied on various sources, including individual mining websites and annual reports, and submissions to the ACCC in relation to ARTC's access undertakings.

The ARTC submitted that IPART's method fails to consider supply side factors such as licence terms and the risk posed by using proved and probable reserves in the mine life calculation. It stated that 'the equation assesses Proven and Probable reserves as being equally certain of production, which...ensures that network owners are accepting an element of reserves risk in the [remaining mine life] calculation'⁴⁹. It also assumes mines continue production until all reserves are depleted notwithstanding the presence of studies which highlight this is not the case'⁵⁰.

We acknowledge that there is uncertainty in estimating the remaining life of a mine. However, we consider that the use of proved and probable marketable reserves provides the best estimate of useful remaining reserves at this time. Remaining reserves are affected by many factors, including production rates, production technology, maintenance and stoppages, and the discovery of new deposits. Coal mining companies periodically review their reserves in light of these factors. Since our 2014 review, they have changed quite substantially for some of our longest-lived mines, including increases of 71% for Wambo, 68% for Hunter Valley Operations, and 42% for Bengalla.⁵¹ By reviewing and updating for these changes every five years, we aim to ensure that any changes to the estimated remaining mine life can be incorporated without large price shocks.

The ARTC also submitted that 'the assumption of perpetual extension [of licenses] is no longer appropriate, as there is no certainty such extensions will be granted. The assumed life of a mine for regulatory depreciation purposes should therefore be limited to the term of its current license'⁵².

While there are some risks associated with licence renewal, we do not consider licence term to be a suitable proxy for remaining mine life. Licences are a technical construct that would underestimate the remaining economic life of the mine, based on its proven and probable reserves.

⁴⁹ ARTC submission to IPART Draft Report, May 2019, p 2.

⁵⁰ Ibid.

⁵¹ IPART, *NSW Rail Access Undertaking – Review of the rate of return and remaining mine life*, Final Report, p 27.

⁵² Ibid.

We consider that while the power stations continue to supply baseload generation, their demand would necessitate adequate supply, so long as the mines have adequate reserves to provide this. Limiting the economic life to the term of the licence would have the effect of substantially increasing depreciation and hence, access prices for customers. That, in turn, may reduce traffic on the line and RailCorp's ability to recover its depreciation expense.

We have not included prospective or non-substantial mines

We have not included prospective mines where we do not have information about their reserves, production levels and commencement dates. Should new mines commence operations or extensions to existing mines be granted, we would consider them at our next review.

As such, we have not included Wallarah 2. While Wallarah 2 received approval in January 2018, its start date is uncertain. Once it commences operations, it is expected to produce around 5 mtpa for 28 years. Likewise, we have not included Watermark, which is still prospective and likely to produce around 3.3 mtpa.

Table 3.1 shows the list of relevant mines and their remaining life.

There are a number of mines that could continue to supply coal up to and beyond our estimated terminal date



Table 3.1 Longest-lived substantial mines (LLSMs) in the HVCN

Name	Marketable coal reserves at 30 June 2018 (Mt)	Production 2018 (Mt)	Marketable reserves / production 2018 (Mt)	Estimated remaining mine life at 30 June 2019 (years)	Implied terminal date
Wambo UG and OC	257	5.4	47.4	46	2065
Maules Creek	440	9.7	45.5	45	2064
Hunter Valley Operations OC	554	12.8	43.3	42	2061
Narrabri	222	5.8	38.0	37	2056
Wilpinjong OC	148	5.0	29.6	29	2048
Bengalla OC	187	8.9	21.1	20	2039
Mount Thorley / Warkworth OC	225	12.0	18.8	18	2037
Mt Arthur OC	328	19.0	17.3	16	2035
Boggabri	119	7.1	16.7	16	2035
Ravensworth Narama & North	148	9.5	15.6	15	2034
Ulan UG and West	140	11.5	12.2	11	2030
Bulga OC	90	8.1	11.1	10	2029
Moolarben OC	148	17.6	8.4	7	2026
Mangoola	84	10.6	8.0	7	2026
Mt Owen	51	8.6	5.9	5	2024

Note 1: OC = open cut. UG = underground.

Note 2: Production for 2018 may include a combination of forecast and actuals, based on company reports.

Source: See Appendix B. IPART calculations.

The longest-lived mine is the Wambo open cut and underground complex, with a terminal date of 2065. Maules Creek and Hunter Valley Operations also have longer expected lives, due to increased estimates of marketable reserves since our 2014 review, and lower than expected production at Maules Creek. Along with Narrabri, the terminal dates for these mines are later than the next LLSMs, which are mostly clustered around terminal dates in the 2030s.

It appears likely that, even with increased output due to high coal prices since 2016, a number of mines could continue to supply coal up to and beyond 2044. However, we consider that the more relevant factor for determining the depreciation rate for RailCorp's HVCN is how long the power stations would continue to have demand for coal.

South and western coal mines are not likely to be substantial and long-lived

The mines in the south and west that transport coal north via the HVCN include Clarence, Airly, Springvale and Mandalong. Airly is the longest-lived mine in this group with the volume of marketable coal reserves allowing production to continue at current levels for over 30 years (see Table 3.2). It was placed on 'care and maintenance' in 2012, but re-opened in 2014 and currently transports a small amount of coal annually - less than 0.9 mtpa. However, Airly is likely to increase output up to 2.0 mtpa in the near future, which would reduce its remaining life.⁵³

Springvale, Clarence and Mandalong have higher levels of annual production, but shorter lives (see Table 3.2).

Table 3.2 Reserves and production of western mines

Name	Marketable coal reserves (Mt) at 30 June 2018	Production (Mt)	Reserves / production (Mt)a	Implied end year	Remaining mine life at 30 June 2019 (years)
Clarence	38	2.5	15	2033	14
Airly	31	0.9	34	2052	33
Mandalong	79	5.6	14	2032	13
Springvale	26	4.4	6	2024	5

Source: See Appendix B. IPART calculations.

While some of these mines supply the power stations, their current production rates and estimated remaining lives suggest that they would not be LLSMs.

3.2.5 Changing the terminal date would have implications for prices

While a number of mines could continue to supply coal to the power stations up to and beyond the current terminal date of 2044, this is likely to be limited by the economic life of the power stations. As such, we have decided to reduce our estimate of the remaining mine life to 2040.

If the power stations were to close before 2044, it is unlikely that the line would be able to recover its full economic costs. Even if there were smaller mines using the line to transport coal to Newcastle, or BlueScope in Port Kembla, the necessary increase in prices to cover return on capital would probably make it uneconomic for those users to continue to use the line.

There may be more certainty when we next undertake this review in 2024. At that stage, we can adjust the estimated remaining mine life and depreciation schedule to reflect the longer or shorter remaining life. However, if we wait

⁵³ IPART consultation with Centennial Coal, June 2019.

until our next review, in 2024, when there may (or may not) be more certainty about the future of coal-fired generation, we would create substantial price shocks for access seekers if we reduce our terminal date.

Alternatively, reducing our estimate of the remaining mine life now spreads the price increase over a longer period. If we find at the next review that the power stations are likely to continue beyond the terminal date then we can adjust the depreciation schedule at that time.

In making our final decision, given the above uncertainty we have reviewed the price impacts of different options and selected one that provides an appropriate balance between ensuring that our decision does not create stranded assets for RailCorp or unnecessary price impacts for access seekers.

We have reviewed a number of different scenarios (Table 3.3) and calculated the impact on RailCorp's ceiling prices.

Table 3.3 Different options for terminal dates

Scenario	Description
Base case	Maintain the current terminal date of 2044
Option 1	Bring forward the terminal date to 2032, Origin's announced exit from coal fired generation
Option 2	Bring forward the terminal date to 2036
Option 3	Bring forward the terminal date to 2040
Option 4	In 2024, bring forward the terminal date to 2032
Option 5	In 2024, bring forward the terminal date to 2036
Option 6	In 2024, bring forward the terminal date to 2040

We have used RailCorp's operating costs from their most recent, published compliance assessment and adjusted the depreciation component, assuming all other costs remain constant.⁵⁴

The results are shown in Table 3.4.

⁵⁴ On 16 April 2019, TfNSW submitted overdue compliance statements for 2015-16 to 2017-18 financial years.

Basing our estimate of the remaining mine life on a terminal date of 2040 would result in a moderate increase of 4.4% in allowed revenue, all else constant

Table 3.4 Impact of a change of terminal date on ceiling prices

	Review date	Terminal date	Depreciation rate	Total depreciation (\$2014-15pa)	Increase in allowed revenue %
Base case	2014	2044	3.3%		
Option 1	2019	2032	7.7%	1,201,112	13.5%
Option 2	2019	2036	5.9%	918,497	7.9%
Option 3	2019	2040	4.8%	743,546	4.4%
Option 4	2024	2032	12.5%	1,951,807	28.3%
Option 5	2024	2036	8.3%	1,301,205	15.4%
Option 6	2024	2040	6.3%	975,904	9.0%

Source: IPART, *Compliance with the NSW Rail Access Undertaking 2014-15 – Information Paper*, 2017; IPART calculations.

Reducing our estimate of remaining mine life now would result in an increase in RailCorp’s allowed revenue of 4.4% to 13.5%. However, waiting until 2024 could result in a much larger increase of 9.0% to 28.3%, because of the shorter time period until termination to recover costs.

These calculations represent the maximum ceiling revenue that RailCorp could recover. According to its most recent compliance statement, RailCorp is recovering more than its full economic costs (ceiling revenue) on the line and has an over recovery balance in its Unders and Overs account. Railcorp is required to manage this account so that its balance should not exceed +/- 5% of forecast access revenue. This over recovery amount could be used to offset the impact of the reduction in the terminal date for current access seekers.

On balance, given the price impacts, we consider that basing our estimate of the remaining mine life on a terminal date of 2040 would provide an appropriate balance between reducing the risk of stranding the line and moderating price impacts for access seekers.

4 Reviewing the rail access regime

The NSW Undertaking was drafted in 1999. Since then, there have been changes in the ownership, scope and complexity of the networks covered by the regime. Regulatory practice has also evolved substantially.

This chapter discusses our analysis of issues with the current regime and its interaction with other rail access regimes. We considered matters raised in submissions and from our own experience as the regime regulator.

The NSW rail access regime requires review in light of changes in the ownership, scope and complexity of the networks it covers, to ensure it meets the needs of stakeholders

4.1 We recommend a review of the NSW access regime

Recommendation

- 1 That the NSW Government should ask IPART to undertake a review of the NSW Rail Access Undertaking.

Based on our experience and submissions from rail infrastructure owners, access seekers and other regulators, it is apparent that current access regulation is no longer meeting stakeholder needs.

We consider that there would be merit in a national review of rail access regimes and have made a submission to the Productivity Commission's Inquiry into National Transport Regulatory Reform to express support for a national review, and request that COAG continue to implement its National Rail Vision and Work Program.

However, as a national review would take some time to commence, we maintain our recommendation for IPART to undertake an independent review of the NSW Rail Access Undertaking. An independent review would ensure that access charges reflect the full economic cost of providing access (but not more), simplify the relationship between the NSW and national access regimes and better meet the needs of access seekers.

In the interim, we will:

- ▼ Explore what information we can publish as part of our compliance reports to assist end use customers to obtain refunds where they have paid more than the full economic costs, and
- ▼ Work with TfNSW to review and update RailCorp's Unders and Overs policy to improve transparency about how annual price adjustments would be managed.

4.2 The NSW Rail Access Undertaking is not meeting the needs of stakeholders

In our Draft Report, we identified the following concerns with the way the regime is operating:

- ▼ **Compliance/enforcement of the regime is inadequate.** For some networks, access charges have exceeded the full economic cost of providing access for several years. Currently, the onus is on the access seeker to pursue legal recourse. This has not proved to be an effective means of protecting access seekers from being overcharged.
- ▼ **The relationship between the NSW and federal regimes requires review.** Currently rail operators can choose which regime to be regulated under (the NSW regime or the Commonwealth regime administered by the ACCC). This leaves access seekers potentially dealing with multiple regimes. It also allows operators to select regulatory outcomes in order to maximise returns.
- ▼ **The current regime is not meeting the needs of access seekers.** There appears to be increasing dissatisfaction with the current regime. In June 2018, a group of access seekers obtained authorisation from the ACCC to collectively negotiate non-price terms of access with RailCorp as individual negotiations had failed.⁵⁵

We recommended that it would be timely for IPART to undertake an independent review of the Undertaking.

4.2.1 Stakeholders strongly supported a review of the regime, and raised a number of concerns with its current operation

There was strong support for a review of the current NSW regime and its interface with other access regimes, with stakeholders raising a number of concerns with its current operation:

- ▼ There is limited guidance to arbitrators on arbitrating an access price between floor and ceiling, which diminishes the efficacy of the negotiate-arbitrate model⁵⁶, and IPART has limited power to monitor, audit and enforce access provisions⁵⁷
- ▼ It is not effective in addressing network interface risks, standards and performance⁵⁸, and access seekers are the ones who manage the inefficiencies of dealing with multiple regimes⁵⁹

There was strong support for a review of the NSW access regime

⁵⁵ Pacific National submission to IPART Draft Report, May 2019, p 2.

⁵⁶ Aurizon submission to IPART Draft Report, May 2019, p 2.

⁵⁷ Pacific National submission to IPART Draft Report, May 2019, p 1.

⁵⁸ Aurizon submission to IPART Draft Report, May 2019, p 2.

⁵⁹ Pacific National submission to IPART Draft Report, May 2019, p 1.

-
- ▼ It does not effectively balance commercial outcomes⁶⁰, and protect access seekers from being overcharged⁶¹
 - ▼ It constrains rail operators from modifying their operations to improve productivity and innovation.⁶²

The ARTC noted that a number of other jurisdictions were undertaking reviews of state-based access regulation, including the:

- ▼ Queensland Competition Authority review of its Declaration of Rail Assets
- ▼ WA Treasury review of the WA Rail Access Regime, and
- ▼ Essential Services Commission of South Australia's draft guidelines on the rail guidelines for the Tarcoola to Darwin railway.⁶³

Many of these access problems extend beyond the NSW regime and require consideration of the interface between regimes

While stakeholders supported an IPART review of the NSW Undertaking, they noted that many issues were a function of inconsistency between regulatory models⁶⁴. Aurizon recommended that IPART make a submission to the Productivity Commission's Inquiry into Transport Regulation with respect to the productivity and consistency benefits that could be released from harmonisation and consistency in rail access regulation.⁶⁵ Pacific National stated that ...'two access regimes regulate the Hunter Valley coal network creating unnecessary duplication of regulatory effort and the potential for interface problems...'.⁶⁶

The ARTC stated that it would '...strongly support an enquiry by the [Productivity Commission] of greater national integration of rail economic regulation, which would incorporate the proposed [NSW Rail Access Undertaking] review and provide greater integration benefits to the rail industry than a further (isolated) review of a state specific regulatory instrument'.⁶⁷

We would support a national review of rail access regulation

We acknowledge stakeholders' concerns that many of these issues relate to regulatory duplication, uncertainty, and interface issues between regimes that a state-based review may not wholly address. We would support a national review of rail access regulation should the Australian Government commission one.

⁶⁰ Aurizon submission to IPART Draft Report, May 2019, p 2.

⁶¹ Pacific National submission to IPART Draft Report, May 2019, p 1.

⁶² Aurizon submission to IPART Draft Report, May 2019, p 2.

⁶³ ARTC submission to IPART Draft Report, May 2019, p 3.

⁶⁴ Aurizon submission to IPART Draft Report, May 2019, p 3.

⁶⁵ Ibid.

⁶⁶ Pacific National submission to IPART Draft Report, May 2019, p 2.

⁶⁷ ARTC submission to IPART Draft Report, May 2019, p 2.

We would support a national review of access regulation, and have written to the Productivity Commission to recommend one



We note that COAG's Transport and Infrastructure Council included in their National Rail Vision and Work Program that, among other things, they would:

- ▼ Review the different rail access regimes and charges calculation methods by the end of 2016.
- ▼ Review the costs and benefits of having multiple access regimes for rail operators and customers by early 2017.
- ▼ Develop possible options for a national/harmonised rail access regime by the end of 2017, including assessment of possible approaches against mechanisms proposed for road pricing and against national competition policy.⁶⁸

However, this does not appear to have happened. In 2018, the Department of Infrastructure, Regional Development and Cities (DIRDC) engaged PwC Consulting to look at specific aspects of the current rail access regimes in each jurisdiction.⁶⁹ However, while this is a useful document, it does not advance the issues.

We have made a submission to the Productivity Commission's Inquiry into National Transport Regulatory Reform to:

- ▼ Suggest that it may be timely for the Australian Government to reconsider whether the current rail access regimes are working effectively together
- ▼ Encourage COAG to continue to implement its National Rail Vision and Work Program
- ▼ Express our support for a national review of rail access regulation.

However, we note that it would take some time for a national review to be organised. In the meantime, we maintain our recommendation that IPART conduct a review of the NSW undertaking. Our review could address state-specific issues and make recommendations that feed into a national review.

Regulatory overlap may reduce efficacy of the rail access regimes

Currently, rail infrastructure owners in NSW can choose to give voluntary written undertakings to the ACCC and be subject to the national access regime. Otherwise, they fall under the NSW Undertaking.

As a consequence, the ACCC submitted that this has led to rail infrastructure owners having the incentive and ability to switch and choose between Commonwealth or NSW regulation, depending on which regulatory framework is likely to provide a better outcome at a given time.⁷⁰ The ACCC

⁶⁸ Transport and Infrastructure Council, *National Rail Vision and Work Program*, p 5.

⁶⁹ Department of Infrastructure, Regional Development and Cities PwC, *Rail Access Regimes*, May 2018.

⁷⁰ ACCC submission to IPART Draft Report, May 2019, p 2

Increased transparency in calculating and refunding any overcharges would be an effective interim measure for access seekers

also stated that there have been instances where industry has traded-off regulatory certainty for less favourable access terms and conditions.⁷¹

While a review of the NSW undertaking would not address the issue of overlapping regimes, it would identify any outdated provisions in the NSW regime, and ensure it remains fit for purpose in light of changes in economic and industry conditions since 1999.

We considered whether changes to the *Transport Administration Act 1988* could discourage regime switching, but decided this should form part of our review

Given that a review of the Undertaking would be a longer-term solution, we considered whether the government could make minor changes to the provisions of the *Transport Administration Act 1988* (TAA) that govern access undertakings to provide greater regulatory certainty in the interim.

Section 99C(2) of the NSW *Transport Administration Act 1988* (TAA) states that such an undertaking may be made, withdrawn or varied with the approval of the Minister and concurrence of the Premier. However, the ARTC is explicitly exempt from this provision.

We considered whether removing this exemption would set a higher bar for the rail infrastructure owner to switch between regimes. However, we consider that any changes to the legislation should be looked at and consulted on as part of a broader review.

4.3 We will provide more information in our compliance reports

Stakeholders' raised concerns that access charges have exceeded full economic costs in recent times, and the current regulatory regime has not proved effective in protecting access seekers from being overcharged.⁷²

The rail operator (access seeker) has limited incentives to approach the rail infrastructure owner for a refund of any over-recovery of access charges, because it generally passes through access costs in full to its customers. The rail infrastructure owner has no incentive to provide information about access charge over-recovery to end use customers (mine owners), because it has no commercial agreement with them, only the rail operator. While end use customers could negotiate their own access contracts with the rail infrastructure owner, there are additional overhead costs associated with this.

Each year we assess RailCorp's compliance with the Asset Valuation Roll Forward Principles and determine whether they have complied with the

⁷¹ ACCC submission to IPART Draft Report, May 2019, p 3.

⁷² Pacific National submission to IPART Draft Report, May 2019, p 1.

Ceiling Test having regard to the operation of the Unders and Overs Account. We consult on RailCorp's compliance proposal, and our Draft Decision, before publishing a Final Decision. In previous decisions we have published information on the closing RAB and full economic costs of the sectors and compared this to access revenue received on an annual basis.

We will explore what information we can publish as part of our compliance assessment reports to assist end use customers to obtain refunds where they have paid more than the full economic costs. We are currently assessing RailCorp's compliance for the 2015-16 to 2017-18 financial years and will consult on specific measures as part of our draft decisions on RailCorp's compliance, which we expect to release later in July 2019.

We will also work with Transport for NSW to review and update RailCorp's Unders and Overs policy, which would assist in promoting transparency about how annual price adjustments would be managed. Railcorp is required to manage this account so that its balance should not exceed +/-5% of forecast access revenue. The policy should outline how any over-recovery would be refunded or used to offset access prices for access seekers.

Appendices

A Proxy company selection and beta estimation

The industry of the benchmark efficient firm is a proxy for the risk profile of that firm. That is, all firms within a common industry group face the same or similar business risks. To determine a list of proxy firms, we searched for firms in the Thomson Reuters Datastream that:

- ▼ Operate in the nominated industry (in this case, 'Industrial transportation - Railroads')
- ▼ Undertake their activities in markets that are sufficiently similar to Australia.

We then considered whether the firm's sovereign government bond and equity markets were sufficiently deep and liquid. This excluded some firms operating in China, Russia and some African companies.

We further excluded:

- ▼ Firms that are no longer trading
- ▼ Thinly traded stocks, as these could produce distorted estimates due to stale price data
- ▼ Firms that don't earn revenue predominantly in the nominated industry (most of our comparators are diversified and have several business segments, which span different activities in transport logistics and services).

Our list of proxy firms resulted in 10, mainly US and Canadian firms which own and operate railway infrastructure as their primary business activity.

The modelled beta estimate (levered beta) incorporates financial leverage which can affect a company's performance. Higher levels of debt tend to increase the volatility of a firm's stock price and therefore influence its beta. This variability reflects financing decisions rather than any fundamental difference in operational risk. For this reason, the estimate is unlevered to generate an asset beta which reflects a capital structure with no debt. This asset beta is then relevered using the benchmark firms gearing ratio and corporate tax rate.

Analysis using a broader set of comparable firms

We consider three broader proxy industries could include: coal mining, coal-fired electricity generation, and a broader set of rail transport businesses.

We examined two time periods: January 2003 to April 2019 (representing the longest available time series) and April 2016 to April 2019 (representing the most recent three year period). For the longer period, there were 21 coal mining firms, 40 electricity generation firms and 74 rail transport firms with sufficient data. For the shorter, more recent period, there were 7 coal mining firms, 18 electricity generation firms and 52 rail transport firms with sufficient data.

We are presently consulting on our automated method of performing proxy company analysis to determine equity beta and target gearing for a Benchmark Efficient Entity.

<https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-seawacc-methodology-2017/fact-sheet-estimate-equity-beta-1-april-2019.pdf>

B Mine reserves and production sources

Table B.1 Mine data sources

Mine name	Majority shareholder	Reserve source	Production source
Hunter Valley Operations OC	Yancoal/Glencore	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.
Maules Creek	Whitehaven	Whitehaven Coal, <i>Annual Report 2018</i> , p 55.	Whitehaven Coal, <i>Annual Report 2018</i> , p 33.
Narrabri	Whitehaven	Whitehaven Coal, <i>Annual Report 2018</i> , p 55.	Whitehaven Coal, <i>Annual Report 2018</i> , p 33.
Ravensworth Narama & North	Glencore	Glencore, <i>Resources and Reserves as at 31 December 2018</i> , p 48.	Glencore, <i>Ravensworth Open Cut Annual Review 2017</i> , December 2017, p 32.
Bulga OC / Blakefield South UG	Glencore	Glencore, <i>Resources and Reserves as at 31 December 2018</i> , p 48.	Glencore, <i>Bulga Coal 2018 Annual Review</i> , March 2019, p 16.
Mount Thorley / Warkworth OC	New Hope	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.
Bengalla OC	New Hope Group	New Hope Group, <i>Annual Report 2018</i> , p 14.	Hansen Bailey, <i>Bengalla Annual Review 2017</i> , p 16.
Mt Arthur OC	BHP	BHP, <i>Annual report 2018</i> , p 268.	BHP, <i>Mt Arthur Coal Annual Environmental Management Review FY18</i> , p 13.
Moolarben OC	Moolarben Coal	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.	Yancoal, <i>Global offering Volume 1</i> , November 2018, p 8.
Wambo UG and OC	Peabody Energy	Peabody, <i>Wambo Coal Mining Operations Plan 2018 - 2020</i> , December 2017, p 5.	Peabody, <i>Wambo Coal Pty Limited 2017 Annual Review</i> , March 2018, p 11.
Boggabri	Idemitsu	Castalia Strategic Advisors, <i>Mine Life Analysis Data and Methodology</i> , August 2016, p 7.	Idemitsu, <i>Boggabri Coal Mine 2017 Annual Review</i> , March 2018, p 19.

Mine name	Majority shareholder	Reserve source	Production source
Ulan UG	Glencore	Glencore, <i>Resources and Reserves as at 31 December 2018</i> , p 48.	Glencore, <i>Ulan Complex Annual Review 2017</i> , June 2018, p 19.
Wilpinjong OC	Peabody Energy	Peabody, <i>Wilpinjong Coal Project Open Cut Operations Mining Operations Plan 2017 – 2019</i> , June 2017, p 21.	Peabody, <i>2017 Annual Review Wilpinjong Coal Mine</i> , December 2017, p 10.
Mt Owen	Glencore	Glencore, <i>Resources and Reserves as at 31 December 2018</i> , p 48.	Glencore, <i>Mt Owen Complex Annual Review 2018</i> , March 2019, p 28.
Mandalong	Centennial	Centennial Coal, <i>Statement of Resources and Reserves as at 31 December 2015</i> , p 1.	Centennial Coal, <i>Mandalong Mine Annual Review</i> , March 2018, p 18.
Mangoola	Glencore	Glencore, <i>Resources and Reserves as at 31 December 2018</i> , p 48.	Glencore, <i>Mangoola Open Cut Annual Review</i> , March 2019, p 12.
Newstan	Centennial	Centennial Coal, <i>Statement of Resources and Reserves as at 31 December 2015</i> , p 1.	Centennial Coal, <i>Newstan Colliery Annual Review</i> , March 2018, p 9.
Clarence	Centennial	Centennial Coal, <i>Statement of Resources and Reserves as at 31 December 2015</i> , p 1.	Centennial Coal, <i>Clarence Colliery Annual Review</i> , March 2018, p 22.
Airly	Centennial	Centennial Coal, <i>Statement of Resources and Reserves as at 31 December 2015</i> , p 1.	Centennial Coal, <i>Airly Colliery Annual Review 2017</i> , May 2018, p 19.
Springvale	Centennial	Centennial Coal, <i>Statement of Resources and Reserves as at 31 December 2015</i> , p 1.	Centennial Coal, <i>Springvale Colliery Annual Review 2017</i> , March 2018, p 25.
Wallarah 2	Kores	n/a	http://www.wallarah.com.au/project-description
Watermark	Shenhua Watermark	n/a	http://www.shenhua-watermark.com/shaus/1382705825865/The_Project.shtml

C Copyright for this report

© Independent Pricing and Regulatory Tribunal (2019)

With the exception of any:

- (a) coat of arms, logo, trade mark or other branding;
- (b) third party intellectual property; and
- (c) personal information such as photos of people,

this publication is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia Licence.



The licence terms are available at the Creative Commons website:

<https://creativecommons.org/licenses/by-nc-nd/3.0/au/legalcode>

IPART requires that it be attributed as creator of the licensed material in the following manner: © Independent Pricing and Regulatory Tribunal (2019).

The use of any material from this publication in a way not permitted by the above licence or otherwise allowed under the *Copyright Act 1968* (Cth) may be an infringement of copyright. Where you wish to use the material in a way that is not permitted, you must lodge a request for further authorisation with IPART.

Disclaimer

IPART does not guarantee or warrant, and accepts no legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this publication.

Information in this publication is provided as general information only and is not intended as a substitute for advice from a qualified professional. IPART recommends that users exercise care and use their own skill and judgment in using information from this publication and that users carefully evaluate the accuracy, currency, completeness and relevance

of such information. Users should take steps to independently verify the information in this publication and, where appropriate, seek professional advice.

Nothing in this publication should be taken to indicate IPART's or the NSW Government's commitment to a particular course of action.

ISBN 978-1-76049-335-6

