

OFFICIAL



Rail

Tarcoola to Darwin rail infrastructure: review of asset value methodologies for periodic revenue reviews

FINAL Report

August 2024

OFFICIAL

Enquiries concerning this report should be addressed to:

Essential Services Commission
GPO Box 2605
Adelaide SA 5001

Telephone: (08) 8463 4444
Freecall: 1800 633 592 (SA and mobiles only)
E-mail: escosa@escosa.sa.gov.au
Web: www.escosa.sa.gov.au

Table of contents

Glossary of terms	ii
1 Executive summary.....	1
1.1 Final observations and findings	1
2 Review of asset valuation methodologies.....	3
2.1 Purpose of review	3
2.2 The Code and Clause 50 reviews of revenues	4
2.2.1 Access regime under the Code	4
2.2.2 Clause 50 periodic reviews of revenues.....	4
2.3 Objectives and the original greenfield nature of the rail infrastructure.....	5
2.4 Legislative framework for asset valuation methodology.....	6
2.5 Ownership and operation of the Tarcoola to Darwin rail infrastructure.....	7
2.6 Submissions to the review	8
2.7 Structure of the final report.....	9
3 Analysis of asset valuation methodologies	10
3.1 Methodologies.....	10
3.2 Stakeholder views	10
3.2.1 Positions put forward in response to the discussion paper.....	10
3.2.2 Positions put forward in response to the draft findings and observations.....	12
3.3 Assessment of proposed asset valuation approaches	14
3.3.1 Depreciated Optimised Replacement Cost (DORC).....	14
3.3.2 Limited Need for Full Revaluation of the Depreciated Optimised Replacement Cost	17
3.3.3 Depreciated Historical Cost (DHC).....	21
3.3.4 Market transaction value.....	22
3.3.5 Economic value.....	24
3.3.6 Optimal deprival value.....	25
4 Conclusion	26
Appendix A: Background on asset valuation methodologies.....	27
A1 Depreciated Optimised Replacement Cost (DORC)	27
A2 Depreciated Historical Cost (DHC)	29
A3 Market transaction value.....	29
A4 Economic Value.....	30
A5 Optimal Deprival Value.....	31

Glossary of terms

AARC	AustralAsia Railway Corporation
Above-rail	Rolling stock such as locomotives, carriages and wagons
ACCC	Australian Competition Consumer Commission
APT	Asia Pacific Transport
ARTC	Australian Rail Track Corporation
Aurizon	Aurizon Bulk Central Network Pty Ltd, the regulated operator that provides below-rail services as well as above-rail services on the Tarcoola to Darwin rail line
Below-rail	Refers to operations involving track management, including the track and associated infrastructure required to operate it
CCA	<i>Competition and Consumer Act 2010 (Cth)</i>
Commission	Essential Services Commission, established under the <i>Essential Services Commission Act 2002</i>
Code	AustralAsia Railway (Third Party Access) Code, which is a Schedule to the <i>AustralAsia Railway (Third Party Access) Act 1999 (SA)</i> and the <i>AustralAsia Railway (Third Party Access) Act 1999 (NT)</i>
CPA	Competition Principles Agreement between the Commonwealth of Australia and the States of New South Wales, Victoria, Queensland, Western Australia, South Australia and Tasmania, and the Australian Capital Territory and the Northern Territory, entered into on 11 April 1995 and as amended 13 April 2007
CPI	Consumer Price Index
DHC	Depreciated Historical Cost – a methodology for the valuation of assets
DORC	Depreciated Optimised Replacement Cost – a methodology for the valuation of assets
IPART	Independent Pricing and Regulatory Tribunal
NCC	National Competition Council
NERA	NERA Economic Consulting
Regulated operator	Operator of below-rail services on the Tarcoola to Darwin rail infrastructure – currently the regulated operator is Aurizon Bulk Central Network Pty Ltd
RCM	Recovered Capital Method

1 Executive summary

The Essential Services Commission (**Commission**) has reviewed and publicly consulted on potential asset valuation methodologies to be adopted in periodic reviews of the relevant revenues earned by the provider of rail infrastructure (**below-rail**) services between Tarcoola and Darwin.

Clause 50(4) of the AustralAsia Railway ('Third Party Access') Code (**Code**) requires the Commission to review, for five-year periods, below-rail freight revenues where no sustainable prices exist. It must determine if those relevant revenues are excessive, having regard to the factors outlined in the Code. A key component in conducting a Clause 50 periodic review of revenues is the value attributed to the below-rail assets. That asset value is used for the purpose of determining an efficient return on, and of, capital for the period.

While there is neither a statutory requirement nor a statutory timeframe for a review of asset valuation methodologies, through this review of asset valuation methodologies the Commission has formed a view as to the valuation approach to be adopted in subsequent Clause 50 periodic reviews of revenues.

This report sets out the Commission's final findings and observations. The report has been informed by submissions from stakeholders to the November 2022 discussion paper and the August 2023 draft report. Submissions to the review have been received from a range of organisations, including the current regulated operator (Aurizon Bulk Central Network Pty Ltd) as well as parties involved in upstream markets (for example, mining companies such as Verdant Minerals) and downstream markets (for example, train operators such as Pacific National).

1.1 Final observations and findings

The Commission's final finding is that a Depreciated Optimised Replacement Cost (**DORC**) asset valuation methodology will be applied for the purposes of subsequent Clause 50 periodic reviews of revenues until there are compelling reasons for the Commission to consider that a DORC methodology is no longer appropriate to determine efficient costs for the purposes of a Clause 50 review. A DORC asset valuation methodology is considered to be efficient (that is, it supports usage and operation of, and investment in, below-rail infrastructure), consistent with arbitration processes in the Code and regulatory practice in Australia, and practicable for the purposes of undertaking the maximum revenue assessment (that is, the original DORC value is available and transparent to stakeholders, and DORC asset valuation methodologies are known among rail industry participants). The original DORC asset value can be updated for capital expenditure and return of capital (depreciation), and values can be adjusted with a measure of inflation.

However, the Commission cannot conclude that a DORC asset valuation methodology should *always* be adopted in subsequent Clause 50 periodic reviews of revenues. A Clause 50 review of revenues must be meaningful in all respects, including of the asset valuation methodology used to determine efficient costs, and, in principle, valuation approaches other than a DORC value may be considered efficient and appropriate in certain circumstances.

At this time, however, there are practical limitations with alternative asset valuation approaches, such as limited available objective data for the Depreciated Historical Cost methodology and the purchase price of below-rail assets (that is, market transaction value methodology). In this respect, a DORC asset valuation methodology has advantages in its own right and, at present, appears to have the fewest methodological limitations relative to those limitations evident for other valuation approaches.

Ultimately, the selection of the appropriate asset valuation methodology for the purposes of a Clause 50 periodic review of revenues is one of balancing trade-offs. The Code was intended to provide a negotiate-arbitrate access framework that promotes access and competition in related markets, while at the same time providing investors in a greenfield infrastructure project certainty in terms of sufficient

return on equity and cash flow. In balancing those objectives, the Commission's view is that the application of a DORC methodology *currently* meets the outcomes sought by the Code.

Through this review, which has been informed by stakeholder submissions to the discussion paper and draft report, the Commission has formed the view that there is a role for greater transparency in Clause 50 periodic reviews of revenues. While there were mixed stakeholder views regarding the presentation of sensitivity analysis in subsequent Clause 50 reviews of revenues, the Commission considers that the advantages of doing so (greater transparency) outweigh any perceived limitations. Therefore, alongside the continued application of a DORC value for subsequent Clause 50 reviews (which as mentioned above will act as the primary source of the Commission's assessment of maximum relevant revenues), the Commission intends to present sensitivity analysis for the benefit of stakeholders (insofar as data, price indices and/or alternative valuations are available and can be estimated).

In addition to greater transparency, and noting that one submission to the draft report highlighted some limitations and complications in cost allocation approaches across segments of rail infrastructure, the Commission has formed the view that during subsequent Clause 50 periodic reviews of revenues there is a role for close assessment of the cost allocation of avoidable and fixed costs between access holders (that is, allocation between freight where no sustainable competitive price exists and all other access holders) and between each main segment as well as the whole-of-line of the Tarcoola to Darwin rail infrastructure. This will include considering any alternative approaches (if appropriate) and considering the approaches that have been applied in previous reviews to see if those cost allocation approaches remain appropriate.

The Commission has reached these final findings and observations having regard to stakeholder submissions to the discussion paper and the draft report, available literature, evidence from regulatory practice in Australia and overseas, the requirements of Clause 50 of the Code, and the outcomes sought by the Code.

Stakeholders noted positions on several matters regarding methodological factors for subsequent Clause 50 reviews of revenues. This included cost allocation principles and methodologies, valuation methodologies for use in sensitivity analysis, measures of depreciation and the inflation applicable to the DORC asset valuation. These methodological factors, among others, can be considered as part of the next Clause 50 review of revenues. The next review is planned to commence in 2024-25. The Commission will assess the relevant revenues earned for the five-year period 1 July 2018 to 30 June 2023.

2 Review of asset valuation methodologies

2.1 Purpose of review

The Essential Services Commission (**Commission**) has reviewed and publicly consulted on potential asset valuation methodologies to be adopted in periodic reviews of the relevant revenues earned by the provider of rail infrastructure (**below-rail**) services between Tarcoola and Darwin. The review was foreshadowed in October 2021, and was initiated on the back of stakeholder interest and some divergent views regarding the topic of asset valuation of the Tarcoola to Darwin rail infrastructure.

While there is neither a statutory requirement nor a statutory timeframe for a review of asset valuation methodologies, Clause 50 of the *AustralAsia Railway (Third Party Access) Code (Code)*¹ requires that the Commission must, for five-year intervals, determine whether below-rail freight revenues earned by the regulated operator where no sustainable competitive prices exist have been excessive, having regard to factors outlined in Clause 50 of the Code.

A key component in making the determination of excessive revenues is the value attributed to below-rail assets. That asset value is used for the purpose of determining an efficient return on, and of, capital for the period. The Depreciated Optimised Replacement Cost (**DORC**) methodology is specified in the Code for the purposes of arbitration, and the Commission has adopted a DORC value in previous Clause 50 periodic reviews of revenues.

In November 2022, the Commission published a discussion paper that sought stakeholder input on valuation approaches that could be applied in subsequent Clause 50 periodic reviews of revenues.² The Commission's discussion paper was accompanied by reports prepared by Mr Richard Dennis AM PSM and NERA Economic Consulting (**NERA**).³

In August 2023, the Commission published its draft findings and observations regarding valuation approaches that could be applied to subsequent Clause 50 periodic reviews of revenues.⁴ The draft finding was that a DORC asset valuation methodology would be applied for the purposes of subsequent Clause 50 periodic reviews of revenues until there are compelling reasons for the Commission to consider that methodology is no longer an appropriate to determine efficient costs for the purposes of a Clause 50 review.

¹ The Code is a schedule to the *AustralAsia Railway (Third Party Access) Act 1999 (SA)* and the *AustralAsia Railway (Third Party Access) Act 1999 (NT)*.

² Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, November 2022, pp. 1-12, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21928/20221107-Rail-TarcoolaDarwinReviewAssetValuationMethodologies-DiscussionPaper.pdf.aspx?Embed=Y>.

³ Dennis R, *AustralAsia Railway (Third Party Access) Act 1999 AustralAsia Railway (Third Party Access) Code - Review of revenues*, April 2021, pp. 1-11, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21928/20221107-Rail-TarcoolaDarwinReviewAssetValuationMethodologies-RichardDennisReport.pdf.aspx?Embed=Y>, and NERA Economic Consulting, *Asset valuation methodologies for the Tarcoola to Darwin Railway – Discussion Paper*, October 2022, pp. 1-38, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21928/20221107-Rail-TarcoolaDarwinReviewAssetValuationMethodologies-NERAReport.pdf.aspx?Embed=Y>.

⁴ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews*, Draft report, August 2023, pp. 1-26, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21976/20230823-Rail-ReviewAssetValueMethodologies-DraftReport.pdf.aspx?Embed=Y>.

In addition, the draft report highlighted the Commission's intention for Clause 50 periodic reviews of revenues to:

- ▶ present sensitivity analysis of the maximum revenue assessment had alternative valuation approaches been applied (insofar as data and alternative valuations are available and can be estimated), and
- ▶ closely assess cost allocations across access holders and rail line segments.⁵

Other methodological factors impacting on a Clause 50 periodic review of revenues have not been assessed in this final report. This review has focussed *only* on asset valuation methodologies. As mentioned earlier, the purpose of the review is for the Commission to form a view as to the valuation approach to be adopted in subsequent Clause 50 periodic reviews of revenues, having considered available evidence and stakeholder input on valuation methodologies.

Stakeholders will have the opportunity to submit input on other methodological factors as part of subsequent Clause 50 periodic reviews of revenues. The next Clause 50 review of revenues is planned to commence in 2024-25. The Commission will assess the relevant revenues earned for the five-year period 1 July 2018 to 30 June 2023.

2.2 The Code and Clause 50 reviews of revenues

2.2.1 Access regime under the Code

The Code sets out a framework for commercial negotiation between a provider of access to below-rail services (**regulated operator**) (currently Aurizon Bulk Central Network Pty Ltd, **Aurizon**) and an end-user seeking to access the infrastructure. The Code includes dispute resolution processes and arbitration as a regulatory backstop should commercial negotiations fail. The Code includes a schedule that outlines pricing principles for the purposes of arbitration, which explicitly references the use of a DORC asset value.

In accordance with the Code, the Commission has issued guidelines, including for floor and ceiling pricing purposes for arbitration, for the calculation of arbitrated outcomes, and for the roll-forward of the DORC value for arbitration. When there is not a sustainable competitive price, the DORC value is applied in determining the theoretical ceiling price. The floor price is determined based on the avoidable costs of the service. It is noted that under arbitration the methodology to calculate the floor and ceiling prices involves taking into account contributions to fixed costs by existing users of below-rail services. Once floor and ceiling pricing bounds have been established, an arbitrator may determine prices within this range subject to various factors.⁶

2.2.2 Clause 50 periodic reviews of revenues

A lack of effective competition in the provision of below-rail services can potentially allow the regulated operator to earn revenues above efficient costs for certain below-rail services. Therefore, Clause 50 of the Code requires that the Commission review, for five-year intervals, below-rail freight revenues where no sustainable prices exist (that is, where potential alternative transport services do not provide an effective constraint on below-rail prices on the Tarcoola to Darwin rail line). In particular, the Commission must determine whether the relevant revenues earned by the regulated operator have been excessive having regard to factors outlined in Clause 50(4) to 50(9) of the Code. Those factors in

⁵ Ibid, pp. 1-2, 19.

⁶ Essential Services Commission of South Australia, *Review of rail guidelines for the Tarcoola-Darwin railway - Final decision*, October 2019, pp. 1-21, available at <https://www.escosa.sa.gov.au/ArticleDocuments/1061/20191029-Rail-ReviewRailGuidelines-Tarcoola-Darwin-FinalDecision.pdf.aspx?Embed=Y>.

the Code require that actual revenues must be measured against *efficient costs* and that, in determining those costs, investment in all railway infrastructure must be considered, an appropriate commercial return must be applied (having regard to the risks at the time of construction, development and operation of the rail infrastructure), and avoidable costs and a reasonable contribution to fixed costs must be subtracted.

In practice, the methodology for a Clause 50 review of revenues is a comparison of the revenues earned for below-rail services, where no sustainable competitive prices exist, against an estimated maximum revenue limit for those same below-rail services. The maximum revenue limit is calculated based upon the requirements of Clause 50 of the Code, noting these provide the Commission with some discretion in the approach adopted.

The Commission has previously assessed the maximum revenues earned by the regulated operator for the periods 2013-2014 to 2017-2018 and 2003-2004 to 2012-2013.⁷ In both cases the Clause 50 periodic reviews of revenues found that excessive revenues had not been earned by the regulated operator.

According to Clause 50(8) of the Code, a review of revenues can reveal whether certain regulatory action or oversight may be required. Should below-rail revenues be determined to be excessive, the Commission must notify the regulated operator of the outcome, consider any remedial plans put forward by the regulated operator, and, if necessary, make a determination to regulate prices and/or establish conditions relating to subsequent prices or price-fixing factors.

2.3 Objectives and the original greenfield nature of the rail infrastructure

While the Code does not set out specific objectives or contain an objects clause, it is a certified effective access regime.⁸ At the time of certification, the Code was assessed against principles set out in Clauses 6(2) to 6(4) of the Competition Principles Agreement (CPA). Those principles included whether it would not be economical to duplicate the infrastructure and whether it is necessary to permit effective competition in a downstream or upstream market.^{9,10} Further, the intent of the Code, as expressed in second reading speeches in the South Australian and the Northern Territory Parliaments, was to balance competition policy access requirements and the requirements for debt-servicing and return on equity for an entrepreneurial greenfield infrastructure project with considerable risk attached.¹¹

⁷ Essential Services Commission of South Australia, *5-year review of revenues 2013-14 to 2017-18 – Final report*, pp. 2, 24-25, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21839/20220325-Rail-Tarcoola-DarwinRailwayRevenueReview%20-Final.pdf.aspx?Embed=Y>, and Essential Services Commission of South Australia, *10-year review of revenues – Final report*, August 2015, pp. 5-8, available at <https://www.escosa.sa.gov.au/ArticleDocuments/365/20150828-Rail-Tarcoola-Darwin-TenYearReviewOfRevenues-FinalReport.pdf.aspx?Embed=Y>.

⁸ The Hon. Peter Costello MP, *Certification of Access Regime for Tarcoola-Darwin Railway*, available at <https://ministers.treasury.gov.au/ministers/peter-costello-1996/media-releases/certification-access-regime-tarcoola-darwin-railway>.

⁹ National Competition Council, *Final recommendation – Application for certification under Section 44M(2) of the Trade Practices Act 1974*, February 2000, p. 1, 16-22, available https://ncc.gov.au/applications-past/past_applications.

¹⁰ The CPA was amended in 2007 with the insertion of principles requiring objects clauses, pricing principles and merits review to be included in certified access regimes. However, the Code was exempted from these additional requirements (see Clauses 6(3)(b) and 6(5) of the CPA amended on 13 April 2007) (refer https://ncc.gov.au/images/uploads/cpa_amended_2007.pdf).

¹¹ Hon. Diana Laidlaw, *South Australian Government Gazette*, 25 March 1999, pp. 1063-1064; and Mr Coulter, *AustralAsia Railway (Third party access) Bill 1999 Second Reading Speech*, available at http://classic.austlii.edu.au/au/legis/nt/bill_srs/arpab1999397/srs.html.

In summary, the Commission considers that the Code, when introduced in 1999, was intended to provide a negotiate-arbitrate access framework that promotes commercial negotiation for access and competition in related markets, while at the same time giving investors in a greenfield infrastructure project certainty in terms of sufficient return on equity and cash flow.¹²

The aims of the Code, therefore, can involve trade-offs. For example, low prices for below-rail services may promote increased utilisation and higher demand for above-rail services. On the other hand, low prices may lead to less below-rail investment and return on equity for a greenfield project.

It is in the context of these outcomes being sought by the Code, including any potentially conflicting purposes, and the factors outlined in Clauses 50(4) to 50(9) of the Code, that the Commission must consider and select the asset valuation methodology for application in subsequent Clause 50 periodic reviews of revenues.

2.4 Legislative framework for asset valuation methodology

The Commission's final position on asset valuation methodologies for the purposes of Clause 50 periodic reviews of revenues has been formed having considered the relevant statutory frameworks, relevant factual matters and external advice. Its position is that a Clause 50 review of revenues must be meaningful in all respects, including the asset valuation methodology used to determine efficient costs.

While Aurizon has suggested the power to change asset valuation methodologies for the purposes of Clause 50 periodic reviews of revenues arises only as part of the review of the operation of the Code (for instance, under Clause 50(1)),¹³ this position put forward from Aurizon does not recognise the essential features, and focus, of a Clause 50 periodic review of revenues.

Accordingly, the Commission's final position remains the same as was stated in the Commission's draft report in 2023 and in its discussion paper in 2022.¹⁴ In particular, under the Code, the Commission is not limited to a DORC asset valuation if, on a review, it considers that a DORC method is no longer an appropriate methodology to determine efficient costs.

The essential features and focus of a Clause 50 periodic review of revenues are outlined below.

- ▶ While a DORC methodology applies in arbitration, a Clause 50(4) periodic review of revenues is broader than just assessing how the regime has performed when prices have been determined through arbitration; it is to determine whether prices have been excessive considering all cases where no sustainable competitive prices exist.

¹² For instance, see National Competition Council, p. 1, Hon. Diana Laidlaw, pp. 1063-1064, and Mr Coulter. The construction of the Alice Springs to Darwin rail line was aimed at furthering economic progress in the north of Australia (conceived as a "land bridge" to connect Australia with overseas markets).

¹³ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 3-9, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21949/20230322-Rail-TarcoolaDarwinReviewAssetValuationMethodologiesSubmission-Aurizon.pdf.aspx?Embed=Y>, and Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 1, available at <https://www.escosa.sa.gov.au/ArticleDocuments/22060/20240415-Rail-ReviewAssetValuationMethodologiesPeriodicRevenueReviewsDraftDecisionSubmission-Aurizon.pdf.aspx?Embed=Y>.

¹⁴ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews*, Draft report, pp. 1-26, Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp. 3-4, and Dennis R, pp. 1-11.

- ▶ Unlike the arbitration provisions, there is no clear statement in the Code about the asset valuation methodology to be used when undertaking a review of revenues under Clause 50(4) of the Code. By not prescribing the use of DORC where prices are commercially negotiated, this appears to indicate that the DORC methodology does not necessarily need to be a factor in determining price.
- ▶ It would appear to unduly restrain a Clause 50(4) periodic review of revenues to take the view that the Commission is unable to adopt the, on balance, preferable value of assets because of a methodology that is only referred to for the purpose of arbitration.
- ▶ The revenue review relates to revenues derived from either: (1) awards by arbitrators or (2) access contracts commercially negotiated between parties. It is possible that a Clause 50(4) review of revenues may determine that one or more awards made as a result of arbitration are excessive. This may indicate that the application of the DORC methodology has in fact been a contributing factor to such an outcome.
- ▶ Several matters referred to in Clause 50(5) are similar to, but not identical to, factors and pricing principles that must be applied by an arbitrator under the pricing principles to determine a ceiling price and a floor price. This may contribute to a divergence between the outcome of a Clause 50(4) revenue review and the prices determined as a result of arbitration.
- ▶ Several concepts in Clause 50(5) are not included in the pricing principles. This may further contribute to a divergence between the outcome of a Clause 50(4) revenue review and the prices determined as a result of arbitration.
- ▶ The Clause 50(4) review is intended to be a comprehensive review capturing the effect of all elements of the access regime on the prices and revenues earned by the access provider. Accordingly, if excessive revenues were found to have been earned, including if the DORC methodology were a contributing factor to that outcome, steps must be taken by the Commission under Clauses 50(8) and 50(9) of the Code. In proceeding with those steps, the Commission may determine the best possible approaches and methodologies to avoid excessive revenues and prices in the regulatory period going forward, including in connection with pricing principles and arbitrations, and there is no suggestion in the Code that the Commission is constrained as to the asset valuation methodology that could be adopted in this situation.
- ▶ Clause 50(6) requires that the costs to be applied under Clause 50(5) must be efficient costs. Efficient costs are influenced by the asset value. For the purposes of a Clause 50(4) periodic review of revenues, this must be an objective determination and must use the most appropriate methodology in the circumstances.

2.5 Ownership and operation of the Tarcoola to Darwin rail infrastructure

As mentioned earlier, Aurizon is the current regulated operator. It leases the right to operate the Tarcoola to Darwin rail infrastructure under the 50-year AustralAsia Railway Project Concession Deed. Parties to the deed are Aurizon, the AustralAsia Railway Corporation (**AARC**) and the Governments of both South Australia and the Northern Territory. The deed specifies the rights, responsibilities and obligations of the parties involved.¹⁵ Ownership of the Tarcoola to Darwin rail infrastructure lies with the

¹⁵ The AARC is a statutory body set up to represent the interests of the South Australian and Northern Territory Governments during the construction and operations of the AustralAsia Railway. The AARC manages matters impacting the railway corridor. This includes being responsible for promoting and monitoring that rail infrastructure be maintained in a fit for purpose condition and providing advice to the Northern Territory and South Australian Governments. The AARC undertakes annual inspections and regular maintenance reviews to promote compliance in this regard. For more information, see <https://www.aarail.com.au/>. For example, see background details in AustralAsia Railway Corporation, *AustralAsia Railway Corporation – annual report 2021-2022*, 5 December 2022, p. 10, available at <https://www.aarail.com.au/>. Also, see general information on the AARC website.

Australian Rail Track Corporation (**ARTC**). The rail infrastructure asset is to be returned to the ARTC upon the expiry, or early termination, of the concession period.

The Tarcoola to Darwin rail infrastructure comprises approximately 824 kilometres of rail infrastructure (including track and signalling systems) from Tarcoola to Alice Springs, and approximately 1,415 kilometres of infrastructure (including track and signalling systems) from Alice Springs to Darwin.

Aurizon purchased the below-rail infrastructure from One Rail Australia as part of a deal involving both below-rail and above-rail assets. It purchased the assets for \$2.35 billion and completed the acquisition on 29 July 2022.¹⁶ The purchase included the coal haulage business in New South Wales and Queensland, known as East Coast Rail, which was divested by Aurizon for \$425 million on 16 December 2022 under the terms of an undertaking given to the ACCC.¹⁷

Bulk freight (for example, mining output) and intermodal freight (for example, container freight) as well as passengers are transported on the Tarcoola to Darwin rail infrastructure. To provide context, below-rail services transporting bulk accounted for 63 percent of gross ton-kilometres supplied in 2020-21; intermodal freight accounted for 36 percent of gross ton-kilometres supplied in 2020-21, while passenger transport was responsible for 1 percent of all gross ton-kilometres.¹⁸

2.6 Submissions to the review

In November 2022, the Commission published a discussion paper¹⁹ and sought submissions on the review of asset valuation methodologies.²⁰ The Commission's discussion paper was accompanied by reports prepared by Mr Richard Dennis AM PSM and NERA.²¹

Submissions to the discussion paper were received from:

- ▶ Aurizon, the vertically integrated regulated operator who provides below-rail and above-rail services on the Tarcoola to Darwin rail line²²
- ▶ Pacific National, a transport company that provides above-rail services in the freight and passenger services national market. It has 'hook and pull' operations on the Tarcoola to Darwin rail line on behalf of passenger services provider, Journey Beyond Rail Expeditions²³

¹⁶ Aurizon, *Aurizon completes acquisition of One Rail Australia*, ASX market announcement, 29 July 2022, available at <https://www.aurizon.com.au/investors/asx-announcements>.

¹⁷ Aurizon, *Aurizon announces sale agreement for East Coast Rail*, ASX market announcement, 16 December 2022, available at <https://www.aurizon.com.au/investors/asx-announcements>.

¹⁸ By way of background, gross ton-kilometres is a commonly reported metric of wear and tear in the rail industry, which is used for invoicing users of rail infrastructure services. The metric is calculated as the total gross train weight that was transported multiplied by the distance it was transported over.

¹⁹ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp. 1-12.

²⁰ The downstream users of the rail infrastructure are well placed to comment on the potential methodologies, as these parties will likely bear part of the cost of below-rail freight services. Those users include the regulated operator, which operates a vertically integrated operation, and rail transport companies (which must be accredited by the National Rail Safety Regulator). Upstream users of the rail infrastructure, such as mining companies, are also likely to have an interest, as service levels and the cost of transport can influence mining investment decisions and demand for below-rail services.

²¹ Dennis, pp. 1-11, and NERA Economic Consulting, pp. 1-38.

²² Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 1-24.

²³ Pacific National, *Re: Discussion Paper: Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies periodic revenue reviews*, pp. 1-9, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21949/20230322-Rail-TarcoolaDarwinReviewAssetValuationMethodologiesSubmission-PacificNational.pdf.aspx?Embed=Y>.

- ▶ the ARTC, the regulated operator of below-rail services on the interstate rail network,²⁴ and
- ▶ Verdant Minerals, a junior miner (a resource company in the development and exploration phase).²⁵

Following publication of the draft report in August 2023, the Commission received submissions from:

- ▶ Aurizon²⁶ and
- ▶ Pacific National.²⁷

The issues raised in the submissions to the review were considered by the Commission in making the final findings and observations. Where relevant, certain arguments and submissions have been mentioned in this final report, either by direct quotation or by reference to themes or arguments, to assist stakeholders to understand the proposed positions that have been reached. The exclusion of a reference to an argument or submission does not mean that it has not been considered by the Commission in arriving at its final findings and observations.

2.7 Structure of the final report

The final report is structured as follows.

- ▶ Chapter three summarises stakeholder views on asset valuation methodologies (received in response to both the discussion paper and the draft report) and assesses the valuation approaches that have been canvassed for application in Clause 50 periodic reviews of revenues. It outlines the Commission's positions in relation to methodologies.
- ▶ Chapter four concludes by outlining the Commission's final findings and observations.
- ▶ Appendix A provides an overview of certain asset valuation methodologies. It draws on materials from the Commission's discussion paper and the report prepared for the Commission by NERA.

²⁴ Australian Rail Track Corporation, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-3, available at

<https://www.escosa.sa.gov.au/ArticleDocuments/21949/20230322-Rail-TarcoolaDarwinReviewAssetValuationMethodologiesSubmission-ARTC.pdf.aspx?Embed=Y>.

²⁵ Verdant Minerals, *Re: Tarcoola to Darwin (TDR) rail infrastructure: Review of asset valuation methodologies for periodic revenue review*, pp. 1-4, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21949/20230322-Rail-TarcoolaDarwinReviewAssetValuationMethodologiesSubmission-VerdantMinerals.pdf.aspx?Embed=Y>.

Verdant Minerals is a 'junior' miner who is looking to develop a fertiliser project, known as the Ammaroo Phosphate Project, located 270km northeast of Alice Springs, approximately 95 km from the Adelaide to Darwin rail infrastructure. The company aims to mine phosphate and build a fertiliser plant on site. It intends to build infrastructure to connect to the Tarcoola to Darwin rail infrastructure. It intends to import inputs, and export fertiliser, using the Tarcoola to Darwin rail infrastructure. Refer: <https://www.verdantminerals.com.au/>.

²⁶ Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 1-8.

²⁷ Pacific National, *Response to Draft Report – Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews August 2023*, p. 1, available at

<https://www.escosa.sa.gov.au/ArticleDocuments/22060/20240415-Rail-ReviewAssetValuationMethodologiesPeriodicRevenueReviewsDraftDecisionSubmission-PacificNational.pdf.aspx?Embed=Y>.

3 Analysis of asset valuation methodologies

This chapter summarises stakeholder views on asset valuation methodologies and assesses the valuation approaches that have been considered for application in subsequent Clause 50 periodic reviews of revenues.

3.1 Methodologies

The chapter discusses five potential asset valuation approaches.

- ▶ **DORC**: The replacement cost of a modern equivalent version of the regulated asset is the idea behind a DORC asset valuation methodology. The idea behind the DORC methodology is to find the current cost to build an identical asset with the same quality, service capacity and expected remaining useful life as the currently existing asset.
- ▶ **Depreciated Historical Cost (DHC)**: The DHC methodology involves using the actual construction costs at the time the asset was built and depreciating them over time, usually assuming a straight-line depreciation. Any further additions to the asset are incorporated at the cost of construction and at the time they were built.
- ▶ **Market transaction value**: The purchase price of an asset or, equivalently, a market transaction value is a possible asset valuation methodology.
- ▶ **Economic value**: Economic value or, equivalently, a discounted cash flow valuation methodology involves forecasting expected future cash flows, earnings and dividends, which are discounted back to present values using appropriately defined risk-adjusted discount rates.
- ▶ **Optimal deprival value**. The optimal deprival value is typically defined as being the lesser value of DORC and the economic value of the asset.

3.2 Stakeholder views

3.2.1 Positions put forward in response to the discussion paper

As outlined earlier, the Commission initiated this review of asset valuation methodologies to obtain input from stakeholders to allow the Commission to form a view as to the valuation approach to be applied in subsequent Clause 50 periodic reviews of revenues. The Commission received four submissions to the discussion paper (Table 1).

Table 1. Submissions and proposed methodology

Stakeholders	Role	Methodology supported
Aurizon	Below-rail operator of Tarcoola to Darwin rail infrastructure	DORC (with revaluations, where necessary)
ARTC	Below-rail operator of interstate line	DORC
Pacific National	Train operator	DORC (no revaluation)
Verdant Minerals	Potential access seeker	Lower of DORC or market transaction value

Stakeholders that supported the adoption of a DORC asset valuation methodology were Aurizon,²⁸ the ARTC²⁹ and Pacific National.³⁰ In contrast, Verdant Minerals supported the adoption of an asset valuation methodology that is the lower of the DORC value or the market transaction value of below-rail assets.³¹

Below is a summary of stakeholders' views in response to the discussion paper.

- ▶ Aurizon expressed the view that a DORC asset valuation methodology should be applied on the basis that it is consistent with the following factors: the methodology specified in the event of arbitration under the Code, the Commission's previous revenue reviews under the Code, the establishment of ceiling prices, the economic concept of forward-looking efficient costs, the recovery of initial private sector investment in the below-rail infrastructure, the assessment of whether monopoly rents have been earned (which in Aurizon's view is the purpose of Clause 50 periodic revenue review), and Aurizon's understanding of the Code when it purchased the Tarcoola to Darwin rail infrastructure (which in Aurizon's view supports continued investment in the infrastructure).³² It expressed the view that alternative asset valuation methodologies, such as the use of market transaction values and DHC, had limitations,³³ and that any change in methodology (away from a DORC valuation) may not yield efficiency gains but could discourage investment.³⁴
- ▶ Pacific National supported the use of a DORC asset valuation methodology. In its view, application of a DORC methodology would be consistent with regulatory precedent and the concept of forward-looking efficient costs and would have formed part of Aurizon's understanding of the Code at the time of purchase. It expressed the view that continued application of a DORC asset valuation methodology would provide certainty for stakeholders and rail users and would balance the interests of access seekers and the regulated operator.³⁵ It considered that alternative valuation approaches, such as market transaction value, had limitations that would not make it suitable.³⁶
- ▶ The ARTC made a submission that supported the use of a DORC asset valuation methodology on the basis that, in its view, the methodology allows users to theoretically pay no more than it would

²⁸ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

²⁹ Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-3.

³⁰ Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-9.

³¹ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4.

³² Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 1-4, 23-24.

³³ This includes that it would be difficult to disentangle the value of below-rail assets from a market transaction including above-rail assets, and application of DHC would rely on depreciation assumptions that Aurizon considers are inconsistent with growing freight demand. See Aurizon submission to discussion paper, pp. 4, 17-20, 23-24.

³⁴ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 4.

³⁵ Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-9.

³⁶ This includes limitations from valuation circularity and overbidding. Pacific National expressed the view that a market valuation may not be indicative of a prudent cost due to extraneous political and economic factors. Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 6-8.

cost them to build the asset, and that the methodology has reportedly been supported by other regulators of rail infrastructure such as the Independent Pricing and Regulatory Tribunal (IPART).³⁷

- ▶ Verdant Minerals expressed the view that the lesser of the DORC or market transaction value should be applied for the purposes of a Clause 50 periodic review of revenues. In its view, a DORC value is incongruous to the owners' contributed capital, and therefore by adopting a more market reflective value of the asset, this would constrain the risk of high prices being set for new access seekers, therefore promoting greater usage of rail infrastructure.³⁸
- ▶ Submissions to the review generally agreed that if a methodological change were to be made for the purpose of a Clause 50 periodic review of revenues (that is, if the Commission were to choose an alternative to the DORC asset valuation methodology), the methodological change should be implemented on a prospective basis (that is, it should apply to the period following any decision by the Commission).³⁹
- ▶ In terms of the potential for a full revaluation of a DORC value (that is, a full DORC revaluation would involve a whole new assessment of a DORC value including considerations of technology, optimisation and construction costs), stakeholders had mixed views. Pacific National considered that a full DORC revaluation would be 'unnecessary and costly', and as such, it did not support a revaluation until the ACCC had finalised its position on the appropriateness of DORC with respect to the interstate rail network.⁴⁰ On the other hand, in its submission to the discussion paper, while not appearing to specifically advocate for a full DORC revaluation, Aurizon expressed the view that replacement costs had risen faster than general consumer price index (CPI) inflation, implying the potential need for a revaluation or (at the least) updated indexation of the asset value for subsequent Clause 50 periodic reviews of revenues.⁴¹

3.2.2 Positions put forward in response to the draft findings and observations

Following publication of the draft report, the Commission received two submissions (Table 2). Both submissions supported the adoption of a DORC asset valuation methodology.

Table 2. Submissions and proposed methodology

Stakeholders	Role	Methodology supported
Aurizon	Below-rail operator of Tarcoola to Darwin rail infrastructure	DORC (with revaluations, where necessary) Recovered Capital Method (RCM)
Pacific National	Train operator	DORC (no revaluation)

³⁷ Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-3.

³⁸ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4.

³⁹ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 1-4, Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 8-9, and Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 3-4.

⁴⁰ Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 5.

⁴¹ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 23.

Below is a summary of stakeholders' views on the draft report.

► **Aurizon**

Aurizon supported the application of a DORC asset valuation methodology for Clause 50 periodic reviews of revenues. It noted the methodology is consistent with provisions in the Code (the methodology is specified for adoption in the event of arbitration). It expressed the view that, for regulatory consistency, the DORC asset valuation methodology should be applied for the full period of certification to promote investment. Aurizon also reiterated its view that the power to change the asset valuation methodology for a Clause 50 periodic review of revenues arises only as part of a review of the operation of the Code (under Clause 50(1)) and not outside of this.⁴²

Aurizon did not support the Commission's draft position to include sensitivity analysis in Clause 50 periodic reviews of revenues. It expressed the view that sensitivity analysis in relation to asset valuation methodologies may lead to contention between stakeholders and would not promote regulatory certainty.⁴³ In its view, sensitivity analysis would, in effect, subject Aurizon to an ongoing cycle of review and increase regulatory burden.⁴⁴

On the matter of conducting a full revaluation of the DORC asset value, Aurizon suggested that updating the DORC asset value would not necessarily be as costly and lengthy a process as suggested by the Commission in the draft report because the installation date of assets is reportedly available and may allow for a desktop assessment.⁴⁵ Nonetheless, Aurizon considered a full DORC revaluation was not required at this point in time or at the next review. Aurizon expressed the view that a revaluation may, however, be required in future, if there was a material divergence between changes in replacement costs and general inflation, or between physical and financial depreciation.⁴⁶

On the matter of asset values, in the context of greenfield projects with growing demand, Aurizon suggested that a Recovered Capital Method (**RCM**) should be considered a valid asset valuation methodology. By way of background, RCM reveals the residual value of an asset, through showing the total value that has been recovered from users since the asset was initially constructed. Aurizon suggested that RCM could be included in sensitivity analysis in relation to asset valuation methodologies in Clause 50 periodic reviews of revenues (if sensitivity analysis proceeded).⁴⁷

On the matter of cost allocation, while Aurizon maintained support for a whole-of-line approach to cost allocations in periodic Clause 50 revenue reviews and noted perceived limitations with

⁴² As outlined by Aurizon (p. 3) in its submission to the draft report: '*...Aurizon maintains that the power to change the asset methodology for Clause 50 periodic reviews arises as part of the review of the operation of the Code, not at this time. Aurizon also maintains that, even if it is incorrect on this point, the DORC methodology needs to be preserved for consistency of the provisions within the Code and regulatory consistency for the full period of certification to promote investment in the infrastructure.*' Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁴³ Ibid, pp. 3-4.

⁴⁴ As stated by Aurizon (p. 4) in its submission to the draft report: '*...[b]y deciding to continue to use the DORC methodology, but also presenting a sensitivity analysis using asset valuation methodologies that ESCOSA decided would not be applied at this time, ESCOSA effectively undermines the certainty benefits that could have been obtained from this review... Further, the decision places an undue regulatory burden on Aurizon by, in effect, subjecting Aurizon to multiple valuation methodologies and creating an ongoing cycle of review...*'. Ibid, p. 4.

⁴⁵ In Aurizon's view, installation dates of assets are reportedly a known input, which lowers cost and complexity with estimating asset lives and depreciation. Consequently, Aurizon suggested that it would largely be a desktop assessment and therefore the Commission's concerns on cost and complexity may be overestimated. Ibid, p. 5.

⁴⁶ Ibid, p. 3, 5.

⁴⁷ Ibid, 6-7.

alternative cost allocation approaches applied in previous reviews, it also noted that it would provide further comment on the matter at the next Clause 50 periodic review of revenues.⁴⁸

► **Pacific National**

Pacific National supported the application of a DORC asset valuation methodology.⁴⁹ In its view, in the circumstance when there is limited competition from road transport, a DORC asset valuation methodology balances the interests of train operators and below-rail operators and was preferred on the basis it is considered reflective of efficient costs, supports price stability and regulatory harmonisation, is consistent with the Code and regulatory practice in Australia, is practical to employ, and promotes usage and operation of and investment in below-rail infrastructure.⁵⁰

Regarding the Commission's draft position to include sensitivity analysis in Clause 50 periodic reviews of revenues, Pacific National supported both the focus on transparency and the position to include sensitivity analysis in relation to asset valuation methodologies.⁵¹

3.3 Assessment of proposed asset valuation approaches

The advantages and disadvantages of asset valuation methodologies have been covered extensively in a number of ways including through the discussion paper, draft report, submissions, NERA's discussion paper published in November 2022, and Appendix A of this final report. Therefore, this section focuses on the Commission's final assessment of valuation approaches for application in subsequent Clause 50 periodic reviews of revenues. The final assessment provides reasons and brief discussion on each of the methodologies.

3.3.1 Depreciated Optimised Replacement Cost (DORC)

Final finding and observation

The Commission's final finding is that a DORC asset valuation methodology will be applied for the purposes of the Clause 50 periodic review of revenues until there are compelling reasons to consider that methodology is no longer an appropriate to determine efficient costs for the purposes of a Clause 50 review of revenues.

The Commission has formed the view that during subsequent Clause 50 periodic reviews of revenues there is a role for close assessment of the cost allocation of avoidable and fixed costs (of the DORC value) between access holders and between each main segment of the Tarcoola to Darwin rail infrastructure. This will include considering any alternative cost allocation approaches (if appropriate) and considering approaches that have been applied in previous reviews to assess if those cost allocations remain appropriate. Stakeholders will have the opportunity to submit on cost allocation methodologies during Clause periodic reviews of revenues.

The DORC asset valuation methodology provides consistency with arbitration processes in the Code and is a methodology that is utilised by other regulators in Australia. It is a methodology that is well

⁴⁸ Ibid, pp. 3, 6-8. Aurizon noted in its submission to the draft report that, in its view, the Commission should again consider the perceived limitations of cost allocation methodologies when undertaking its Clause 50 periodic review of revenues. In regard to the application of cost allocation methodologies in future reviews, Aurizon (p. 8) suggested the Commission '*...take a principled approach that is consistent with economic efficiency principles, such as the approach outlined in section 50(5)(d) of the Code*'.

⁴⁹ Pacific National, *Response to Draft Report – Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews August 2023*, p.1.

⁵⁰ Ibid, p. 1.

⁵¹ Ibid, p. 1.

understood and supported by a range of stakeholders including those in the rail industry.⁵² Taken together, the methodology has key advantages and has practical application for the purposes of subsequent Clause 50 periodic reviews of revenues.

Further, while the DORC valuation approach has limitations, including the use of subjective assumptions and that it may allow a return on an asset value that is in excess of the amount of the regulated operator's actual contributed capital,⁵³ for now (at least), the methodology appears to have the fewest methodological limitations relative to the other valuation approaches being considered.

The DORC asset valuation methodology meets the outcomes sought by the Code: it promotes access and competition in related markets, while providing investors with a return on, and of, the below-rail infrastructure. In particular, a DORC asset valuation methodology allows the regulated operator to recover the costs of delivering below-rail services. Furthermore, to the extent that a DORC valuation methodology avoids inefficient bypass costs (that is, duplication of the infrastructure), it is considered an efficient cost, so long as it does not imply monopoly-like access prices and does not affect competition in related markets.

A limitation of applying a DORC asset value is that some alternative asset values may be lower than this.⁵⁴ If a lower asset value were to be adopted this may promote increased utilisation and higher demand for above-rail services. However, this does not necessarily imply justifying the application of an alternative asset valuation approach. For instance, this may simply be a distributional issue: how much profits are distributed between an access seeker (e.g., mining companies) and the regulated operator. Moreover, any assessment depends on, among other factors, the commercial return on assets being earned by the regulated operator and any impact on competition and economic activities in related markets including upstream or downstream markets.

Overall, the Commission's final finding is that a DORC asset valuation methodology should be applied for the purposes of subsequent Clause 50 periodic reviews of revenues until there are compelling reasons to consider that a DORC method is no longer an appropriate methodology to determine efficient costs for the purposes of a Clause 50 review of revenues. Those reasons might include, but are not limited to, a future purchase of the below-rail infrastructure, a change in regulatory practice and understanding of replacement cost asset valuation methodologies and/or observations of economic distortions and impacts in related markets resulting directly from the application of a DORC value (after accounting for risk premiums as set out in Clause 50(5) of the Code).

Given the limitations of the DORC valuation approach, and consistent with the draft report, the Commission's final position is that it has formed the view that during subsequent Clause 50 periodic reviews of revenues there is a role for close assessment of the cost allocation of avoidable and fixed costs between access holders (that is, allocation between freight where no sustainable competitive price exists and all other access holders) and between each main segment of the Tarcoola to Darwin rail infrastructure. This will include considering approaches that have been applied in previous reviews to see if those cost allocations remain appropriate.

⁵² Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 4, Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-3, Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-3, Pacific National, *Response to Draft Report – Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews August 2023*, p.1, and Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁵³ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4.

⁵⁴ *Ibid*, pp. 1-4.

In response to both the Commission's discussion paper and draft report, Aurizon expressed the view that the power to depart from the application of DORC under the review process in Clause 50(4) only arises under a review of the operation of the Code.⁵⁵ The implication of Aurizon's position is that the Code did not intend to allow for a review of asset valuation approaches as part of a Clause 50(4) review of revenues.

However, while the Clause 50(4) review is not intended to be a review in the form to be taken by the Ministerial review as set out in Clause 50(1) of the Code, which captures the whole operation of the Code, the periodic review of revenues is intended to be comprehensive in its approach to addressing the issue of excessive revenues, having regard to the factors outlined in the Code. For instance, the review includes all revenues derived from awards by arbitrators and access contracts commercially negotiated between parties, and if excessive revenues were found to have been earned, including if the DORC methodology were a contributing factor to that outcome, remedial steps must be taken by the Commission, including the possibility to determine the asset valuation methodology for arbitration.⁵⁶

In its submission to the Commission's draft report, Aurizon said that *'even if it is incorrect on this point [the power to change the asset valuation methodology under the Code], the DORC methodology needs to be preserved for consistency of the provisions within the Code and regulatory consistency for the full period of certification to promote investment in the infrastructure.'*⁵⁷ Likewise, Aurizon made this same point in its submission to the discussion paper; it expressed the view that the purpose of the 30-year period of certification was to provide certainty on *'...how prices and revenues would be assessed over the period of certification.'*⁵⁸ In its discussion paper Aurizon stated that its purchase of the assets in 2022 from One Rail Australia was made *'...on the regulatory stability intended to be afforded under a 30-year certification'*⁵⁹.

The implication of Aurizon's positions to the discussion paper and draft report regarding certification periods is that, in its view, the valuation methodology for the purposes of a Clause 50 periodic review of revenues should remain a DORC methodology during the period of certification.⁶⁰ A similar position was also expressed by the previous regulated operator in 2021.⁶¹

However, the Commission's final position is the same as the draft position: it notes that Aurizon's interpretation does not align with the purpose of certification and the long duration period adopted. Certification promotes regulatory certainty by removing the possibility of access under the national access regime. The extended duration provided for that certainty on the basis that the access regime covered a greenfield project with considerable risk. Furthermore, a change in asset valuation methodology for the purposes of a Clause 50 periodic review of revenue would not, in the Commission's view, necessarily constitute a variation of a certified access regime, and Aurizon's submissions did not provide evidence that this is likely to be the case.

The Commission's view, as expressed in the discussion paper, draft report and section 2.4 of the final report (and as also expressed in the advice prepared by Mr Richard Dennis AM PSM) is that, under the Code, the Commission may adopt an asset valuation methodology other than DORC, if, after

⁵⁵ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 7 and Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁵⁶ See section 2.4 in this report on the legislative framework for the asset valuation methodology.

⁵⁷ Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁵⁸ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁵⁹ *Ibid*, p. 5.

⁶⁰ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 23, and Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3.

⁶¹ One Rail Australia, *ESCOSA's Tarcoola to Darwin Railway – 5-year review of revenues 2013-14 to 2017-18*, November 2021, pp. 12-13, available at <https://www.escosa.sa.gov.au/ArticleDocuments/21806/20211015-Rail-Tarcoola-Darwin-RailwayRevenueReview-DraftReport-Submission-OneRailAustralia.pdf.aspx?Embed=Y>.

undertaking a comprehensive review, it considered that a DORC methodology was no longer an appropriate methodology to determine efficient costs.⁶²

It is also important to note that, for a State or Territory access regime to be certified, it only has to take a reasonable approach to incorporating the principles of the CPA and there may be a range of regulatory approaches that are capable of delivering efficient outcomes.⁶³

3.3.2 Limited Need for Full Revaluation of the Depreciated Optimised Replacement Cost

Final finding

The Commission's final finding is that there are no sufficient reasons to justify undertaking a full DORC revaluation at this time (that is, a full DORC revaluation would involve a whole new assessment of a DORC value including considerations of technology, optimisation and construction costs). Consistent with this, stakeholder submissions did not propose a full valuation at this point in time. Accordingly, the Commission will apply the original DORC value for subsequent Clause 50 periodic reviews of revenues (rolled forward with new assets added based on actual costs and the value of assets depreciated, and values adjusted with a measure of inflation, consistent with previous Clause 50 periodic reviews of revenues).

Stakeholder submissions expressed mixed views on the potential for undertaking a full DORC revaluation (that is, a full DORC revaluation would involve a whole new review and estimation of a DORC value including considerations of technology, optimisation and construction costs). For instance, a revaluation can be a resource-intensive, costly and lengthy process to undertake (as noted by the ARTC),⁶⁴ and it can lead to disagreements among stakeholders (as the DORC methodology must make various subjective assumptions).⁶⁵ Any updated revaluation would be impacted by commodity prices, assumptions about expected demand and rail infrastructure building technology. Moreover, the original DORC value (see Box A1 in Appendix A) is available and transparent to stakeholders, and can be adjusted for capital expenditure and depreciation, and values can be adjusted with a measure of inflation.

In its submission to the draft report, Aurizon noted that, while a full revaluation of the DORC asset value would not be as costly and complex a process as suggested by the Commission in the draft report⁶⁶, it considered a revaluation was not required at this point in time or at the next review.⁶⁷

⁶² Dennis R, pp. 1-11.

⁶³ For example, as noted by the National Competition Council in a recent review in the context of the South Australian ports access regime, '*...the Commonwealth Parliament, and the parties to the CPA, intended that states and territories would be granted latitude in designing access regimes that are effective within the meaning of Part IIIA of the CCA*'. National Competition Council, *South Australian Ports Access Regime – Final recommendation*, Application for certification of the South Australian Ports Access Regime, September 2021, p. 6, available at <https://ncc.gov.au/application/application-for-certification-of-the-south-australian-ports-access-regime>.

⁶⁴ The ARTC cites an example of the lengthy nature by way of its undertaking with the ACCC; see Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 1.

⁶⁵ For example, the DORC valuation of the Tarcoola to Darwin rail infrastructure performed in 2004 found that several segments of rail had aged significantly, yet were of serviceable quality, and further assumptions were made with respect to the expected economic life of sleepers and a schedule of their replacement.

⁶⁶ In Aurizon's view, installation dates of assets are reportedly a known input, which lowers the cost and complexity of estimating asset lives and depreciation. Consequently, Aurizon suggested that it would largely be a desktop assessment, therefore the Commission's concerns on cost and complexity may be overestimated. Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 3-5.

⁶⁷ *Ibid*, pp. 3-5.

Aurizon noted, however, that a full revaluation may still be required at some point in the future, if there was a material divergence between changes in replacement costs and general inflation, or between physical and financial depreciation.⁶⁸ The Commission notes Aurizon's position and intends to consider price indices and be mindful of divergences from general inflation as measured by CPI. The use of alternative price indices, if applied to the original DORC, could be a potential form of sensitivity analysis.

Simple comparisons can be made against DORC values of a similar or adjacent rail segment in Australia in order to provide an indication of value changes over time. As shown in the Commission's draft report, Table 3 (below) summarises per kilometre costs from a 2021 report prepared for the Australian Competition Consumer Commission (ACCC).⁶⁹ Those per kilometre costs are applied to the length of the Tarcoola to Darwin rail infrastructure to derive simple estimates. The wide range of estimates illustrates how sensitive the results of a full DORC revaluation can be to the assumptions used. In this simple example the DORC values range from approximately \$2 billion to more than \$3 billion.⁷⁰ If the original DORC value for the Tarcoola to Darwin rail infrastructure is adjusted for capital expenditure, depreciation and inflation, it is estimated to be slightly below the lower end of the range presented in Table 3.

Overall, the Commission's final finding is that there are no sufficient reasons to justify undertaking a full DORC revaluation of the Tarcoola to Darwin rail infrastructure at this time. Consistent with this, stakeholder submissions did not propose a full revaluation at this point in time.

Table 3. Illustrative estimates of DORC rail values from similar or adjacent rail segments applied to the Tarcoola to Darwin rail infrastructure

ARTC rail line segment	DORC value per km (ACCC report)	Implicit DORC values for the Tarcoola to Darwin rail infrastructure
Dry Creek to Parkeston	\$0.9 million	\$2.1 billion
Tarcoola to Asia-Pacific Interface	\$1.3 million	\$3.0 billion
Weighted-average ARTC network	\$1.4 million	\$3.2 billion

Final observation

While submissions expressed views regarding both the method for calculating depreciation and the price indices to be applied for adjusting the original DORC value, the Commission's review is focussed only on asset valuation methodologies. Stakeholders are welcome to submit on these matters as part of subsequent Clause 50 periodic reviews of revenues.

⁶⁸ Ibid, pp. 3-5.

⁶⁹ GHD Advisory, *Developing a Regulatory Asset Base value for the Australian Rail Track Corporation Interstate Network using the Depreciated Optimised Replacement Cost method*, Concluding Public Report, Prepared for the ACCC, 7 October 2021, p. 103, available at <https://www.accc.gov.au/system/files/GHD%20Advisory%20-%20Concluding%20Public%20Report%20-%20ARTC%20Interstate%20Network%20DORC%20Valuation.pdf>.

⁷⁰ These calculations have limitations. The DORC value per kilometre of rail varies considerably by regulatory segment, state, and location. The lowest DORC value was \$0.9 million per kilometre rail for the Dry Creek to Parkeston segment in South Australia, which may partly reflect economies of scale as the length of this rail segment is approximately 1,245 kilometres and comprises 22 percent of the ARTC rail network. In contrast, the highest DORC value was \$4 million per kilometre rail for the Southern Sydney Freight Line (which has a higher amount of freight and passenger freight traffic as it passes through metropolitan areas in New South Wales). The latter was not included in Table 3.

In its submission to the discussion paper, Aurizon proposed adjusting the original DORC value with an alternative price index rather than using CPI inflation.⁷¹ In its submission to the draft report, Aurizon noted that the Commission could monitor price indices that might be relevant in future reviews and continue its analysis of the ARTC's valuations costs across different sections of track.⁷²

As outlined in the Commission's draft report, whether the DORC value should be adjusted by either CPI inflation, or an industry-specific rate is an issue for subsequent Clause 50 periodic reviews of revenues. The Commission notes that Aurizon is welcome to make a submission in this regard as part of subsequent Clause 50 periodic reviews of revenues. As mentioned above, the use of alternative price indices, if applied to the original DORC, could be a potential form of sensitivity analysis. Nevertheless, as noted by the Commission in the draft report, the selection of an alternative price index to adjust the DORC value may involve as much subjectivity and risk of error as simply continuing to utilise a transparent measure such as CPI inflation.

In submissions to both the discussion paper and the draft report, Aurizon expressed the view that the below-rail infrastructure is currently a greenfield project with potential for high demand growth and, accordingly, it proposed the RCM for subsequent Clause 50 periodic reviews of revenues.⁷³

In its submission to the draft report, Aurizon sought to clarify its view that RCM is a method of asset valuation. It considered RCM a valid alternative asset valuation methodology including for use in sensitivity analysis or otherwise.⁷⁴ Further, in response to the Commission's draft report, which noted that the Code permits pricing flexibility and risk premiums estimated at the time of construction recognise the greenfield nature of the asset, Aurizon expressed the view that:

- ▶ demand-based pricing was about optimal pricing over time (over the life of the access regime rather than between customers)
- ▶ it was unclear whether the current risk premium on the rate of return has a connection to the decision to apply straight-line depreciation, and
- ▶ where depreciation has been set at an inadequate rate then RCM may be relevant for Clause 50 reviews of revenues.⁷⁵

However, as outlined earlier, this review is focussed *only* on asset valuation methodologies. Overall, the Commission has found that the DORC asset valuation methodology will be applied for the purposes of subsequent Clause 50 periodic reviews of revenues until there are compelling reasons for the Commission to consider that this methodology is no longer appropriate to determine efficient costs for the purposes of a Clause 50 review.

When undertaking the subsequent Clause 50 review, the Commission will take submissions on the methodology for determining other methodological factors for use in the revenue review (insofar as the Commission has regulatory discretion regarding choices). Such factors include, but are not limited to,

⁷¹ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 21.

⁷² As stated by Aurizon, '...ESCOSA could (and likely is) consider other measures to preserve and maintain the veracity of the model for the immediate future, such as monitoring other indexes that might be relevant to cost updating and which may be an indicator that a DORC revaluation is appropriate. ESCOSA may also consider continuing its analysis of the Australian Rail Track Corporation's (ARTC's) valuation and the important differences between the costs of different track sections and the drivers of differences in costs between sections to see what may apply here.' Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 5.

⁷³ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 15-17.

⁷⁴ Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 3, 6-7.

⁷⁵ *Ibid*, p. 3, 6-7.

the rolling forward of the RAB and the calculation of depreciation. As part of the process of the review, the Commission will also consult on valuation methods to be adopted and included in sensitivity analysis (insofar as data, price indices and/or alternative valuations are available and can be estimated).

Notwithstanding this, Aurizon's positions regarding RCM (as expressed in its submission to the discussion paper and draft report) have, in the Commission's assessment, some open questions, limitations and/or matters that require further investigation before that method could be considered suitable for use in a Clause 50 review of revenues including for use in sensitivity analysis or otherwise.

These issues include but are not limited to:

- ▶ There are not any legislative requirements in the Code that specify the use of RCM. Aurizon's submission did not provide compelling evidence for how, for instance, the application of RCM would meet the outcomes sought by the Code.
- ▶ An asset value derived under RCM is highly sensitive to the inputs and assumptions chosen.^{76,77}
 - An asset value derived under RCM is influenced by the return on assets calculation including the risk premium adopted in the rate of return.
 - The risk premiums and the treatment of government-contributed assets and other government financial assistance in the DORC asset value for the Tarcoola to Darwin rail infrastructure already provide for risk and return, having regard to the risk premium associated with the construction, development and operation of the railway infrastructure facilities, including based on the expected risks prevailing as at the date of commencement of construction of the railway.⁷⁸ Aurizon's submission to the draft report did not provide compelling evidence to suggest that the risk premiums and treatment of contributed assets do not already sufficiently account for risk.
 - The RCM method can involve loss capitalisation over time and across different operators of the rail infrastructure. It was unclear from Aurizon's submission why, under a negotiate-arbitrate regime (where access is commercially negotiated or awarded under arbitration) and for the purposes of an *ex-post* maximum revenue test, that losses from prior periods and/or from prior owners of the asset, should be carried forward and be utilised in the calculation of a maximum revenue test in future periods. Consistent with this, some stakeholders have previously

⁷⁶ For instance, certain inputs or assumptions could produce an asset value that has limitations. To the extent that the recovered capital value exceeds replacement costs, the methodology may not be consistent with efficient bypass costs and promoting increased utilisation and operation of infrastructure.

⁷⁷ The Australian Energy Regulator has noted in a review of a sample of recovered capital values implemented by regulated entities in the gas industry that various errors, assumptions and approaches had the effect of understating revenues or overstating expenses and the rate of return. This had the practical effect of reporting a depreciation amount that was likely lower than was actually being recovered. Australian Energy Regulator, *pipeline information disclosure guidelines and Price reporting guidelines for Part 18A facilities*, Explanatory note, October 2023, pp. 17-18, and Australian Energy Regulator, *Gas inquiry July 2019 interim report*, August 2019, pp. 147-148. Also, some authors have noted limitations of RCM; see Morton E and Rodgers M, *Asset valuation confusion under Australia's National Gas Rules*, 26 March 2020, Article prepared by Synergies Economic Consulting, available at <https://www.synergies.com.au/case-studies/asset-valuation-confusion-under-australias-national-gas-rules/>.

⁷⁸ Clause 50(5) of the Code specifies that the commercial return to be applied should have regard to the risk premium at the time of construction, development and operation of the rail infrastructure.

expressed concern regarding Aurizon obtaining a return on an asset value that is in excess of its actual contributed capital.⁷⁹

- ▶ While Aurizon expressed the view in its submission to the draft report that pricing flexibility (and its ability to use demand-based pricing) was more about optimal pricing over time rather than between customers,⁸⁰ demand-based pricing is known to take into account the nature of the individual customer's access requests (that is, location, expected duration, physical characteristics of the services etc.) and the access seeker's willingness to pay for the service.⁸¹ Consequently, the Commission notes that Aurizon has some pricing flexibility permitted under the Code.
- ▶ Alternative asset valuation methodologies, such as market transaction value, may have incorporated expectations of growing demand.⁸²

As discussed below, the Commission intends to present sensitivity analysis for the benefit of stakeholders (insofar as data, price indices and/or alternative valuations are available and can be estimated). As part of the Clause 50 periodic review, the Commission will consult on methods to be adopted and included in the sensitivity analysis.

3.3.3 Depreciated Historical Cost (DHC)

Final finding and observation

The Commission's final finding is that a DHC asset valuation methodology will not be applied for subsequent Clause 50 periodic reviews of revenues.

The application of a DHC asset valuation methodology for subsequent Clause 50 periodic reviews of revenues received limited support from stakeholder submissions to the discussion paper and the draft report.

Nevertheless, the Commission considers that a DHC methodology could, in principle, meet the outcomes sought by legislation. It could allow the regulated operator to recover the costs of delivering the service and, to the extent that a DHC valuation does not exceed a DORC value, it would be consistent with an efficient cost as it avoids inefficient bypass costs (that is, duplication of the infrastructure). If a DHC asset value was less than a DORC value, the DHC valuation approach could support more utilisation while promoting access and competition in related markets.

While the key advantages of a DHC asset valuation methodology is that of its administrative simplicity and transparency, historic records for cost data for the original below-rail infrastructure built in 1980 between Tarcoola and Alice Springs may be difficult to obtain, collate and verify.⁸³ Limited data availability and stakeholder support have led to the Commission's final finding that a DHC methodology

⁷⁹ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4, and Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, p. 1.

⁸⁰ Aurizon's submission to the draft report described this as pricing over the life of the access regime, rather than between customers; however, the submission did not provide details of, or elaborate on, what was meant by 'life of the access regime'. Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 6-7.

⁸¹ This has been expressed by the previous owner One Rail Australia North Ltd (formerly Genesee & Wyoming Australia). Genesee & Wyoming Australia, *Review of Regulatory Guidelines*, May 2019, pp. 1-25. Also, the Commission has previously noted demand-based pricing under the Code; see Essential Services Commission of South Australia, *Review of rail guidelines for the Tarcoola-Darwin railway - Final decision*, October 2019, pp. 11.

⁸² NERA Economic Consulting, in its 2022 discussion paper, discussed demand expectations and risk in the context of a market transaction value. NERA Economic Consulting, 20-21.

⁸³ Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 2.

will not be applied for the purposes of subsequent Clause 50 reviews. However, if, in future, there are compelling reasons to consider that a DORC method is no longer an appropriate methodology to determine efficient costs, and to the extent that new historic data becomes available, the Commission may re-consider the appropriateness of the DHC methodology for the purposes of a Clause 50 review of revenues.

3.3.4 Market transaction value

Final finding

The Commission's final finding is that a market transaction value asset valuation methodology will not be applied for subsequent Clause 50 periodic reviews of revenues.

The adoption of a methodology that utilises a market purchase price of below-rail assets (that is, a market transaction value) was supported by Verdant Minerals, in its submission in response to the discussion paper, so long as the market transaction value was less than a DORC value.⁸⁴ Other submissions to the discussion paper did not support the market transaction value methodology.⁸⁵ Further, there were no submissions to the draft report supporting the adoption of the market transaction value methodology.

As a methodology, a market transaction value has several key advantages, particularly in terms of its objectivity and its measurement of the contributed capital of the current operator.⁸⁶ It may also incorporate expectations for the outlook for demand.⁸⁷ However, this methodology also has disadvantages, including in terms of the risk of circularity, the presence of a control premium (that is, a premium paid to gain a controlling interest), and overbidding.⁸⁸

On balance, whether a market transaction value methodology would meet the outcomes sought by legislation depends on the circumstances and the particular purchase price. For example, assuming that the purchase price for below-rail assets could be observed, if the purchase price was significantly below a replacement cost value, there is a risk that it might not allow the regulated operator to recover the efficient costs of delivering below-rail services.⁸⁹ This may not be consistent with the aims of efficient operation and investment in below-rail infrastructure. On the other hand, to the extent that the purchase price allows the regulated operator to recover the costs of delivering the service, but still remains below a DORC value, then the market transaction value methodology avoids inefficient bypass costs and could support increased utilisation while promoting access and competition in related markets.

⁸⁴ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4.

⁸⁵ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 23, Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 1, Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 6-8.

⁸⁶ Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 1-4.

⁸⁷ NERA Economic Consulting, 20-21.

⁸⁸ Aurizon, *Response to ESCOSA Discussion Paper on Asset Valuation Methodologies for Periodic Revenue Reviews*, p. 23, Australian Rail Track Corporation, *ARTC submission – Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 1, Pacific National, *Pacific National submission to Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, pp. 6-8, and Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, p. 8, Davis K, *Asset Pricing and Asset Valuation*, Agenda, Volume 9, No. 3, 2002, pp. 228-229, and Gray S, *Why do regulated assets sell for more than the RAB*, presentation at IPART 25th Anniversary Conference, October 2017.

⁸⁹ NERA Economic Consulting, 19-23.

The absence of a clear, market-based observed purchase price for the Tarcoola to Darwin rail infrastructure, as opposed to an available purchase price for both above- and below-rail assets, is one of the limitations in applying this methodology in subsequent Clause 50 periodic reviews of revenues. Estimates require an allocation method that involves judgement; for instance, as shown in Table 4 below, depending on the method used to disentangle above- and below-rail assets, simple illustrative estimates could range anywhere from approximately \$0.4 billion to \$1.4 billion.⁹⁰

Table 4. Illustrative estimates of market transaction values⁹¹

Allocation based on:	Percentage allocated of adjusted purchase price to below-rail assets (percent)	Purchase price of below-rail assets (based on simple apportionment)
Revenue (Aurizon presentation, 21 Oct 2021)	30	\$0.4 billion
Revenue (Previous regulatory accounts, calendar years 2020 and 2021)	48	\$0.7 billion
Assets (Previous regulatory accounts, calendar year 2021)	75	\$1.1 billion
EBITDA (Previous regulatory accounts, calendar year 2021)	97	\$1.4 billion

The use of an estimate of a purchase price can involve subjectivity, judgement and the risk of error, and this can outweigh the potential benefits of the methodology. This, combined with the risk of circularity and overbidding, has meant that, for now (at least), the Commission's final finding is that a market transaction value asset valuation methodology will not be applied for subsequent Clause 50 periodic reviews of revenues. However, if, in future, there are compelling reasons to consider that a DORC method is no longer an appropriate methodology to determine efficient costs, the Commission may reconsider the appropriateness of the market transaction value methodology for the purposes of a Clause 50 review of revenues.

Through this review of asset valuation methodologies and submissions made by stakeholders to the discussion paper and the draft report, the Commission formed the view that there is a role for greater transparency in Clause 50 periodic reviews of revenues. In the draft report it foreshadowed the use of sensitivity analysis in relation to asset valuation methodologies in subsequent Clause 50 reviews of revenues.

In response, there were mixed stakeholder views. On the one hand, Pacific National supported greater transparency and the use of sensitivity analysis.⁹² On the other hand, Aurizon did not support the draft

⁹⁰ Aurizon purchased One Rail Australia assets for \$2.35 billion. This received regulatory approval from the ACCC provided that Aurizon divested coal haulage assets in NSW and QLD, collectively referred to as East Coast Rail. Aurizon divested ECR for \$438 million with the new owner, Magnetic Rail Group Pty Ltd, assuming responsibility for ECR's existing debt in the amount of \$474 million leading to a total market value of ECR's assets equal to \$912 million (1HY2024 Aurizon Holdings Limited Interim Financial Report available at <https://www.aurizon.com.au/investors/documents-and-webcasts>). The two transactions indicate that the market value of the Tarcoola to Darwin rail assets (above- and below-rail) could approximately (and simply) be viewed as the difference between \$2.35 billion and \$0.912 billion, which equals \$1.438 billion. If this is apportioned between above and below rail assets, according to either revenue shares, assets or EBITDA, then simple market value estimates can be derived. Verdant Minerals provides an estimate in its submission; see Verdant Minerals, *Submission from Verdant Minerals on Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies for periodic revenue reviews*, p. 2.

⁹¹ Nominal values in 2022-23 prices when the market transactions were completed.

⁹² As stated by Pacific National: '*Pacific National welcomes the additional focus on transparency highlighted in the Draft Report. Pacific National agrees there is a need for greater transparency in the periodic reviews of revenues and*

position and it expressed the view that sensitivity analysis in relation to asset valuation methodologies may lead to contention between stakeholders and would not promote regulatory certainty.⁹³ In its view, sensitivity analysis would, in effect, subject Aurizon to an ongoing cycle of review and increase regulatory burden.⁹⁴ If the use of sensitivity analysis in relation to asset valuation methodologies does proceed, Aurizon expressed the view that the RCM methodology should be included in the analysis.⁹⁵

Ultimately, the access regime is based on a negotiate-arbitrate framework and the Commission considers that greater transparency can provide benefits to stakeholders.⁹⁶ Previous Clause 50 reviews have used sensitivity analysis and the presentation of ranges for certain factors and variables.⁹⁷ Furthermore, much of the information to be included in sensitivity analysis for asset valuations is intended to be guided by information available in the public domain.

Accordingly, the Commission does not consider that increased transparency as a result of sensitivity analysis would lower regulatory certainty or add regulatory burden. Therefore, alongside the continued application of a DORC value for subsequent Clause 50 reviews (which as mentioned above will act as the primary source of the Commission's assessment of maximum relevant revenues), the Commission intends to present sensitivity analysis for the benefit of stakeholders (insofar as data, price indices and/or alternative valuations are available and can be estimated). As part of the Clause 50 periodic review, the Commission will consult on methods to be adopted and included in sensitivity analysis.

Final observation

The Commission has formed the view that there is a role for greater transparency in Clause 50 periodic reviews of revenues. While there were mixed stakeholder views regarding the presentation of sensitivity analysis in subsequent Clause 50 reviews of revenues, the Commission intends to present sensitivity analysis for the benefit of stakeholders (insofar as data and alternative valuations are available and can be estimated). As part of the Clause 50 periodic review, the Commission will consult on methods to be adopted and included in sensitivity analysis.

3.3.5 Economic value

Final finding

The Commission's final finding is that an economic value asset valuation methodology will not be applied for subsequent Clause 50 periodic reviews of revenues.

appreciates ESCOSA's decision to provide sensitivity analysis that outlines the results of the maximum revenue assessment had alternative valuation approaches been applied instead of DORC'. Pacific National, Response to Draft Report – Tarcoola to Darwin rail infrastructure: review of asset valuation methodologies for periodic revenue reviews August 2023, p.1.

⁹³ Aurizon, *Response to ESCOSA Draft Findings on Asset Valuation Methodologies for Periodic Revenue Reviews*, pp. 3-4.

⁹⁴ *Ibid*, 4.

⁹⁵ As stated by Aurizon (p. 4, 7) in its submission to the draft report: '*...Aurizon recommends that any consideration of alternative asset valuation methods – whether for use in a sensitivity analysis or otherwise – should also consider the RCM valuation method.*' *Ibid*, p. 4, 7.

⁹⁶ For example, the Commission recently introduced a price and financial performance monitoring regime for the ports access regime in South Australia as a way to improve transparency. Essential Services Commission of South Australia, *2022 Ports Access Regime and Price Determination Review: Stage one, final report*, August 2022, pp. 38-45, available at <https://www.escosa.sa.gov.au/projects-and-publications/projects/ports/pricing-and-access-review-2022>.

⁹⁷ Essential Services Commission of South Australia, *5-year review of revenues 2013-14 to 2017-18 – Final report*, pp. 1,17-30, and Essential Services Commission of South Australia, *10-year review of revenues – Final report*, pp. 28-41.

There were no submissions to the discussion paper or the draft report that proposed application of an economic value asset valuation methodology for the purposes of a Clause 50 periodic review of revenues.

While the methodology might have merit in certain circumstances, its application in the circumstance of the Tarcoola to Darwin rail infrastructure would require a range of assumptions and judgment in order to estimate expected future revenue streams. Moreover, the risk of valuation circularity is a major limitation.⁹⁸ Taken together, the Commission's final finding is that there is limited potential benefits, but clear potential limitations, from applying an economic value methodology for subsequent Clause 50 reviews of revenues.

However, if, in future, there are compelling reasons to consider that a DORC method is no longer an appropriate methodology to determine efficient costs, the Commission may re-consider the appropriateness of the economic value methodology for the purposes of a Clause 50 review of revenues.

3.3.6 Optimal deprival value

Final finding

The Commission's final finding is that an optimal deprival value asset valuation methodology will not be applied for subsequent Clause 50 periodic reviews of revenues.

There were no submissions to the discussion paper or the draft report that proposed application of an optimal deprival value methodology for the purposes of a subsequent Clause 50 review of revenues. Given the limitations of the economic value methodology mentioned above, including the limited stakeholder support, and recognising that the optimal deprival value methodology is the lower of either a DORC or economic value, there is limited justification in its application for the purpose of subsequent Clause 50 periodic reviews of revenues.

Therefore, the Commission's final finding is that the optimal deprival value methodology will not be applied for subsequent Clause 50 reviews of revenues. However, if, in future, there are compelling reasons to consider that a DORC method is no longer an appropriate methodology to determine efficient costs, the Commission may re-consider the appropriateness of the optimal deprival value methodology for the purpose of a subsequent Clause 50 review of revenues.

⁹⁸ NERA Economic Consulting, pp. 22-27.

4 Conclusion

Final findings and observations

Having had regard and consideration to stakeholders' submissions, the Commission's final finding is that a DORC asset valuation methodology will be applied for the purposes of subsequent Clause 50 periodic reviews of revenues until there are compelling reasons for the Commission to consider that a DORC methodology is no longer an appropriate methodology to determine efficient costs for the purposes of a Clause 50 review. A DORC asset valuation methodology is determined to be efficient, consistent with arbitration processes in the Code and regulatory practice in Australia, and practicable for the purposes of undertaking the maximum relevant revenue assessment. The original DORC asset value can be updated for capital expenditure and depreciation, and values can be adjusted with a measure of inflation.

However, the Commission cannot conclude that a DORC asset valuation methodology should *always* be adopted in subsequent Clause 50 periodic reviews of revenues. A Clause 50 review of revenues must be meaningful in all respects, including of the asset valuation methodology used to determine efficient costs, and, in principle, valuation approaches other than DORC may be considered efficient and appropriate in certain circumstances. At this time, however, there are practical limitations with alternative asset valuation approaches.

Ultimately, the selection of the appropriate asset valuation methodology for the purposes of a Clause 50 periodic review of revenues is one of balancing trade-offs. The Code was intended to provide a negotiate-arbitrate access framework that promotes access and competition in related markets, while at the same time providing investors in a greenfield infrastructure project certainty in terms of sufficient return on equity and cash flow. In balancing those objectives, the Commission's view is that the application of a DORC methodology *currently* meets the outcomes sought by the Code.

Looking forward, alongside the application of a DORC asset value as the primary assessment tool for subsequent Clause 50 periodic review of revenues, the Commission intends to present sensitivity analysis of the maximum revenue assessment had alternative valuation approaches been applied (insofar as data, price indices and/or alternative valuations are available and can be estimated). Further, the Commission will continue to closely assess cost allocations across access holders and rail line segments.

The next Clause 50 review of revenues is planned to commence in 2024-25. The Commission will assess the relevant revenues earned for the five-year period 1 July 2018 to 30 June 2023.

Appendix A: Background on asset valuation methodologies

An overview of asset valuation methodologies is set out below. The summary is not intended to be exhaustive. For more information, please see the summary prepared by NERA, which was published on the Commission's website in November 2022.⁹⁹

Appendix A summarises overviews of the following asset valuation methodologies:

- ▶ DORC
- ▶ DHC
- ▶ market transaction value
- ▶ economic value, and
- ▶ optimal deprivation value.

A1 Depreciated Optimised Replacement Cost (DORC)

The replacement cost of a modern equivalent version of the regulated asset is the idea behind the DORC asset valuation methodology. A replacement cost methodology, such as DORC, provides a value-of-service measure of the assets, rather than a measure of the contributed financial capital of the asset's owner.¹⁰⁰

The idea behind the DORC methodology is to find the current cost to build an identical asset with the same quality, service capacity and expected remaining useful life as the currently existing asset. In this respect, the DORC methodology can be interpreted as providing an estimate of the highest price that would be charged by an efficient new entrant as well as the price that would prevail if the asset owner were operating in a workably competitive market.¹⁰¹

The key advantage of the DORC asset valuation methodology is that it can indicate efficient costs, which is a common statutory requirement for economic regulation, including in Clause 50(6) of the Code. Furthermore, while DORC asset valuation methodologies have not been universally applied in Australia across regulated industries, it is a methodology that has generally been accepted by regulators, including in the rail sector.¹⁰² In this respect, it is a methodology well understood by stakeholders and rail industry participants.¹⁰³

However, the DORC asset valuation methodology can have limitations. As noted in the Commission's discussion paper, a DORC value involves subjective assumptions in regard to technological change,

⁹⁹ NERA Economic Consulting, pp. 1-38.

¹⁰⁰ See Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp. 5-6, 12. Also see concepts discussed in Bonbright J, 'Principles of Public Utility Rates', *Columbia University Press*, 1961, pp. 161-162.

¹⁰¹ NERA Economic Consulting, pp. 3-4, 12-13. See also Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp. 5-6, 12.

¹⁰² NERA Economic Consulting, pp. 31-37. A recent example is IPART's draft report on the review of the NSW rail access undertaking; Independent Pricing and Regulatory Tribunal, *Draft report – Review of the NSW Rail Access Undertaking*, 18 October 2022, 90-93, available at https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Draft-report-Review-of-the-NSW-Rail-Access-Undertaking-18-October-2022.PDF.

¹⁰³ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, p. 6.

depreciation and expected demand, costs and prices.¹⁰⁴ An example of a limitation is that a new entrant would generally have to buy new assets (rather than depreciated assets). This means that the access provider could potentially price up to optimised replacement cost (rather than DORC) without attracting entry.¹⁰⁵ Further, it is noted that there have been several cases in which asset values less than DORC have been applied by Australian regulators.¹⁰⁶

While using a DORC valuation is most advantageous when its value is up to date with market conditions, they are often only infrequently updated (that is, revalued). The downside of having access to frequently updated DORC values is the cost of commissioning full revaluations and the lengthy process involved, with the risk of stakeholder disagreement on revaluation elements or outcomes.¹⁰⁷ As a result, regulators only infrequently revalue DORC and instead generally adjust existing asset values for capital expenditures, depreciation and apply price indices like CPI inflation, among others. Less frequent revisions of the asset value will reportedly result in a lower cost of capital and support regulatory certainty.¹⁰⁸ Box A1 provides a summary of the original DORC asset value estimated in 2005 for the Tarcoola to Darwin rail infrastructure.

Box A1. The original DORC value for the Tarcoola to Darwin rail infrastructure

The original DORC valuation for the Tarcoola to Darwin rail infrastructure was completed in 2005 by BOOZ Allen Hamilton on behalf of Asia Pacific Transport (APT). By way of background, APT was the holder of the initial 50-year AustralAsia Railway Project Concession Deed. The Tarcoola to Darwin rail infrastructure was valued on a DORC basis at approximately \$2.3 billion including government-contributed assets for financial year 2003-04 (or approximately \$1 billion excluding government-contributed assets). The asset value in real terms was, for the purposes of the 2013-2014 to 2017-2018 revenue review, approximately \$1.7 billion in 2017-18 including government contributed assets (or approximately \$0.8 billion excluding government contributed assets).¹⁰⁹

¹⁰⁴ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, p. 6. For instance, the efficient value of an existing asset under the DORC asset valuation methodology is the cost of the most efficient alternative method of satisfying the required demand. Furthermore, when demand is elastic, then optimal regulatory asset values may not even exist. See, for example, Greenwald B, *Rate Base Selection and the Structure of Regulation*, RAND Journal of Economics, 1984, Vol. 15, No. 1, pp. 85-95, and Greenwald B, *Admissible Rate Bases, Fair Rates and the Structure of Regulation*, Journal of Finance, 1980, Vol. 35, No. 2, pp.359-368.

¹⁰⁵ For example, see Menezes F, *A preliminary view: Regulatory economics assessment of the proposed Western System asset valuation approaches*, p. 17, available at https://www.qca.org.au/wp-content/uploads/2019/05/27756_A-preliminary-view-Regulatory-economics-assessment-of-the-proposed-Western-System-asset-valuation-approaches-1.pdf, and Johnstone D, 'Replacement Cost Asset Valuation and Regulation of Energy Infrastructure Tariffs.' *Abacus*, Vol. 39(1), 2003, pp. 1-41. A similar point was made by the Australian Competition Tribunal; see Application by Telstra Corporation Limited [2010] ACompT 1 at para 232.

¹⁰⁶ This includes Victorian transmission and distribution systems (in which the value of the pipeline was 3 percent lower than the DORC value, and the value of two of the distribution systems was 4 to 8 percent below the DORC value); the Mid-West and South-West gas distribution systems was 25 percent below the DORC value; and the value of the New South Wales natural gas distribution system was 25 percent below DORC. PricewaterhouseCoopers and NERA Economic Consulting, *Initial Value of Regulatory Assets – the Australian Experience – Report for Orion and Powerco*, 6 December 2009, pp. 16-17.

¹⁰⁷ For example, to give a sense of the possible timeframe, the ACCC engaged a consultant to undertake a DORC valuation of the interstate rail network in April 2020 and the final report, including taking into account stakeholder submissions, was published in October 2021.

¹⁰⁸ Stern J, 'The Role of the Regulatory Asset Base as an Instrument of Regulatory Commitment', *CCRP Working Paper*, 2013, Paper No 22, pp. 2-25.

¹⁰⁹ The monetary amounts in Box A1 are in December 2014 dollars and are as reported in Essential Services Commission of South Australia, *5-year review of revenues 2013-14 to 2017-18 – Final report*, pp. 51-52.

A2 Depreciated Historical Cost (DHC)

The DHC methodology involves using the actual construction costs at the time the asset was built and depreciating them over time, usually assuming a straight-line depreciation. Any further additions to the asset are incorporated at the cost of construction and at the time they were built.¹¹⁰ It has been accepted as an asset valuation methodology in the context of regulated industries.¹¹¹

The starting point of the DHC asset valuation methodology is the ability to determine the historical cost of construction of the asset. For assets that are built in recent times this information can be readily and easily obtained. In principle, the methodology can therefore rely on objective data that can be audited by independent parties, and so is seen as robust to manipulation and having low informational requirements once the original data is gathered. The DHC methodology has tended to be most applicable for infrastructure assets that have been established under an existing regulatory regime (several examples exist in telecommunications).¹¹²

For assets that were built a considerable time ago, however, obtaining the construction cost data can be difficult. Furthermore, the older the age of the life, the more an argument can be made that the historical cost of building the asset will be of less relevance to current efficient costs; for instance, the original cost of construction does not measure forward-looking efficient costs (if construction costs have changed or if an asset was over-designed).¹¹³ By way of illustration, historic investments can bear limited relevance to prices set in competitive markets.¹¹⁴

A3 Market transaction value

The purchase price of an asset or, equivalently, a market transaction value is a possible asset valuation methodology. In principle, the use of a market valuation eschews subjective judgement and instead can reflect market conditions including expectations of future demand, prices and costs. It allows a return to the owner's contributed capital and can promote efficient, forward-looking costs of access.¹¹⁵

A valuation based on the price recently paid for assets is an option that has been acknowledged for potential consideration (in at least one case) for regulatory purposes in Australia. In those

¹¹⁰ NERA Economic Consulting, pp. 2-3, 11.

¹¹¹ Menezes F, p. 15, NERA Economic Consulting, pp. 31-38, and King S, 'Asset valuation and access to essential infrastructure facilities under Part IIIA of the Trade Practices Act 1974', pp. 94-116 in *Deregulation of public utilities: current issues and perspectives*, ed. Megan Richardson, Centre for corporate law and securities regulation, The University of Melbourne, Melbourne, 1996.

¹¹² NERA Economic Consulting, pp. 2-3, 11, 31-38.

¹¹³ NERA Economic Consulting, pp. 2-3, 11, 31-38, and Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp.6-7, 12.

¹¹⁴ Essential Services Commission of South Australia, *Tarcoola to Darwin rail infrastructure: Review of asset valuation methodologies*, Discussion paper, pp.6-7, 12, and Kerin P, *What would an efficient regulatory contract look like?*, Network, Issue 55, June 2015, pp. 2, 5-6, available at <https://www.accc.gov.au/system/files/Network%20Issue%2055%20-%20June%202015.pdf>. Consistent with this, in competitive markets, asset values are known to vary in response to market conditions – see Garnaut R, *Australia After Paris: Will our potential to be an energy superpower of the low-carbon world?*, Public lecture hosted by the Young Energy Professionals, Perth, 21 January 2016, p. 8.

¹¹⁵ Market transaction value can differ from replacement cost values if the allowed rate of return is not equal to the investors' cost of capital. In theory, if the allowed rate of return is equal to the cost of capital, market transaction value should equal replacement cost. See Davis K, pp. 228-229. Some have expressed the view that market value is most useful when the value of the asset relative to the market value is equal to one (see Newberry D, *Determining the Regulatory Asset Base for Utility Regulation*, Utilities Policy 1997, Vol. 6, No. 1, pp. 1-8). However, it is often the case that the value of assets for publicly-listed regulated utilities exceeds one and the divergence from one varies considerably over time.

circumstances, a focus was on the nature of the arm's-length transaction and whether the price paid was on a sound commercial basis.¹¹⁶

However, a known disadvantage of adopting a market transaction value in a regulatory context is the valuation circularity problems which could arise. For example, a circularity problem could arise when a buyer values an asset based on the expected cash flows of the regulated asset base, which, in turn, are derived from the price paid for the asset.¹¹⁷

There can also be reasons for overbidding on the market value. A market value may be increased due to the presence of a control premium (that is a premium paid to gain a controlling interest), the 'winner's curse' (that is when a successful bidder pays too much in a first-price auction) and/or expectations of operational and cost synergies.^{118,119} In contrast, in a competitive market, investors who over or underestimate the market value of an asset bear the associated risks.

In summary, the use of a market transaction value can allow for an objective assessment of returns against the owner's contributed capital and eschews subjective judgments about current and forward-looking market conditions. However, the approach could lead to potential problems of valuation circularity and overbidding.

A4 Economic Value

Economic value or, equivalently, a discounted cash flow valuation is a well-understood model in financial economics and business practice. Valuation using the model involves forecasting expected future cash flows, earnings and dividends, which are discounted back to present values using appropriately defined risk-adjusted discount rates.¹²⁰

A key difficulty in applying the valuation methodology is the need to forecast rates of return on capital, reinvestment rates and operational performance, all of which are crucial determinants of future expected cash flows, earnings and dividends.¹²¹ Another difficulty is that the method, like the market valuation methodology, can involve a degree of asset valuation circularity.¹²² Other economic regulators have noted this concern in recent findings.¹²³ In cases where the economic value methodology has been applied it has tended to effectively lock-in existing prices under a line-in-the-sand approach.¹²⁴

¹¹⁶ Re: Dr Ken Michael [2002] WASCA 231 para 179.

¹¹⁷ See Commerce Commission, 'Review of Asset Valuation Methodologies: Electricity Lines Businesses' System Fixed Assets', *Discussion paper*, October 2002, pp. 44-46, and Armstrong M, Cowan S and J Vickers, 'Regulatory Reform: Economic Analysis and British Experience', *MIT Press*, 1994, p. 189. Similar to a market transaction value, a discounted cash flow methodology values a company on the basis of expected net cash flows, and this type of valuation approach raises circularity issues (the value can include monopoly rents). Other economic regulators have recently noted this concern in recent findings. See Independent Pricing and Regulatory Tribunal, pp. 90-92.

¹¹⁸ Davis K, pp. 228-229, and Gray S. Also, fluctuations in the credit cycle (that is low or high borrowing costs) and share market valuations are also known to impact market valuations.

¹¹⁹ There are cases in which the market value has exceeded replacement cost (e.g., the privatisation of a gas transmission company in Victoria in 1999 and several transactions of electricity line business assets in New Zealand in the late 1990s/2000s) (See Davis K, pp. 228-229 and Commerce Commission, pp. 44). And some have expressed the view that regulated businesses tend to sell for more than regulated asset values (see S Gray). On the other hand, there are cases in which the market value has been below replacement cost (that is various utilities in the United Kingdom at the time of privatisation in the 1990s) (see Menezes F, pp. 18-22 and Armstrong M, Cowan S and J Vickers, pp. 324-354).

¹²⁰ NERA Economic Consulting, p. 4, 23, and PricewaterhouseCoopers and NERA Economic Consulting, pp. 4-5.

¹²¹ NERA Economic Consulting, pp. 4, 12-13.

¹²² *Ibid*, pp. 4, 12-13.

¹²³ IPART, pp. 90-92.

¹²⁴ PricewaterhouseCoopers and NERA Economic Consulting, pp. 4-5.

In summary, while the economic value methodology could potentially be adopted, there are various limitations that would need to be overcome, including the need to undertake major subjective forecasting exercises and the risk of asset valuation circularity. In practice, the economic value approach has rarely been used in the regulatory context in Australia given its known limitations.¹²⁵

A5 Optimal Deprival Value

The optimal deprival value asset valuation methodology represents the opportunity cost incurred if an entity were to be deprived of the service potential, or the future economic benefit of the assets. The optimal deprival value is typically defined as being the lesser of:

- ▶ DORC, and
- ▶ the economic value of the asset.

While the Commission's discussion paper did not discuss this methodology, it is included in the draft report for completeness. The advantages and disadvantages of the DORC and economic value valuation approaches have been outlined above.

¹²⁵ NERA Economic Consulting, p. 4, 23, and PricewaterhouseCoopers and NERA Economic Consulting, pp. 4-5.



The Essential Services Commission
Level 1, 151 Pirie Street Adelaide SA 5000
GPO Box 2605 Adelaide SA 5001
T 08 8463 4444

E escosa@escosa.sa.gov.au | W www.escosa.sa.gov.au