# Determination of Pilbara networks rate of return

## Final decision

24 November 2021

Economic Regulation Authority
WESTERN AUSTRALIA

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## Economic Regulation Authority

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# Contents

# 1. Background

1. This final decision details the Economic Regulation Authority's approach to estimate the weighted average cost of capital (WACC) for the Pilbara networks.

2. On 25 June 2021, the *Pilbara Networks Access Code* (PNAC) was gazetted. The PNAC implements a light-handed access regime. The aim of the PNAC is to provide a lower-cost, more efficient alternative to facilitate third-party access to electricity networks than the *Electricity Networks Access Code 2004*:

> Light-handed regulation is designed to avoid the time and costs associated with full regulation by deferring various issues from up-front determination by the regulator to negotiation and, if necessary, arbitration between an access seeker and the network provider.[1]

3. The PNAC covers two Pilbara electricity networks:

   - Alinta Energy's Port Hedland network
   - Horizon Power's coastal network.

4. Under the PNAC, the ERA is required to determine an initial rate of return for the two Pilbara networks, administer the pool of arbitrators and arbitration regime, approve ring-fencing arrangements and publish guidelines for network operators, such as the financial reporting guidelines.

5. The ERA must determine the rate of return to be applied to the capital base for the first pricing period (of up to five years) for the relevant light regulation network.

6. The Pilbara networks service providers are responsible for any subsequent determinations of rates of return and have discretion on how they determine future rates of return for their respective networks. In addition, the Pilbara networks can set their pricing period.

7. The PNAC does not set regulatory revenue. Rather, the PNAC is designed to produce a price list for reference services to be used as a starting point for price negotiations and arbitration for covered services.

8. On 7 September 2021, the ERA released an issues paper for the determination of the Pilbara networks' rate of return. In the issues paper the ERA set out a preliminary approach, consistent with its standard energy network approach for determining a rate of return. The issues paper did not directly account for the PNAC's light-handed framework nor the Pilbara networks' risk, but sought comment on the specific risk factors of the Pilbara networks and how these may affect their rate of return.

9. The ERA received four submissions on the Pilbara networks' rate of return issues paper.

10. The ERA has undertaken a review of the Pilbara networks' rate of return and reviewed available information and submissions.

11. In light of the timeframes set by the PNAC for the ERA to determine Pilbara networks rate of return within six months of the PNAC commencement date, the ERA has considered submissions and decided to publish a final, rather than a draft, decision.

[1] Extract from Hansard, *ASSEMBLY — Wednesday, 27 November 2019]*, p9425c-9427a Mr Bill Johnston.

12. This document presents the ERA's final decision for the Pilbara networks rate of return. To determine the rate of return for the Pilbara networks, the ERA has considered:

- the PNAC's light-handed regulatory framework
- the specific risks of the Pilbara networks.

# 2. The Pilbara regulatory framework

13. Part 8A of the *Electricity Industry Act 2004* provides for the light regulation of access to services of covered Pilbara networks.

14. Section 119(2) of the *Electricity Industry Act 2004* specifies the Pilbara electricity objective:

> 119(2) The objective of this Part (the **Pilbara electricity objective**) is to promote efficient investment in, and efficient operation and use of, services of Pilbara networks for the long-term interests of consumers of electricity in the Pilbara region in relation to—
>
> (a) price, quality, safety, reliability and security of supply of electricity; and
>
> (b) the reliability, safety and security of any interconnected Pilbara system.

15. The PNAC is subsidiary legislation under the *Electricity Industry Act 2004*.

16. The PNAC specifies the building block approach to determine revenues and prices. One of these building blocks is the return on capital, which is a return on the capital base calculated through applying a determined rate of return.

17. Section 57 and section 58 of the PNAC specify that the ERA must determine the rate of return to be applied to the capital bases of each light regulation network for the first pricing period (of up to five years).

18. Section 57 of the PNAC states:

> 57. Rate of return – Horizon Power coastal network and Alinta Port Hedland network
>
> (1) The Authority must, within six months of the code commencement date, determine the rate of return to be applied under section 47(1)(a)(i) to the capital base for the first pricing period for each of the Horizon Power coastal network and the Alinta Port Hedland network.
>
> (2) A determination under section 57(1) must—:
>
> (a) be commensurate with the regulatory and commercial risks involved in providing covered services; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular light regulation network based on its unique circumstances and any matters prescribed under regulation 4 of the regulations; and
>
> (ii) not assume that the circumstances of each light regulation network are the same; and
>
> (c) use a pre-tax version of the cost of capital; and
>
> (d) be undertaken in accordance with the standard consultation process.
>
> (3) Subject to any review by the Electricity Review Board under section 130 of the Act, the determination under section 57(1) is binding on:
>
> (a) the NSP of the relevant light regulation network; and
>
> (b) the arbitrator,
>
> in respect of the first pricing period, and must not be the subject of an access dispute or otherwise be the subject of civil proceedings.

19. Section 58 of the PNAC states:

> 58. Rate of return
>
> (1) Except to the extent section 57 applies, the NSP for a light regulation network must determine, for a pricing period, and include in its services and pricing policy, the rate of return to be applied to the capital base under section 47(1)(a)(i), together with the methodology used to determine that rate of return.
>
> (2) A determination under section 58(1):
>
> (a) must be commensurate with the regulatory and commercial risks involved in providing covered services; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular light regulation network based on its unique circumstances and any matters prescribed under regulation 4 of the regulations; and
>
> (ii) not assume that the circumstances of each light regulation network are the same;
>
> and
>
> (iii) use a pre-tax version of the cost of capital.

20. The PNAC does not prescribe a method for determining the rate of return.

21. Under section 57(2)(d) of the PNAC, the ERA must undertake its determination of the rate of return in accordance with the standard consultation process. The standard consultation process is detailed in Appendix 1 of the PNAC and includes:

- Consultation, including the option of publishing an issues paper and seeking submissions.
- The option to make a draft or final decision, depending on the circumstances.
- The required timing of consultation.
- Provisions for the ERA to extend deadlines.

# 3. The Pilbara networks

22. The following sections detail the two Pilbara electricity networks that are covered under the PNAC.

## 3.1 Alinta Energy Port Hedland network

23. Section 5 of the PNAC defines the Alinta Port Hedland network as comprising:

    a) the network as at the code commencement date used for connecting Alinta's Port Hedland and Boodarie power stations with each other, and with Horizon Power's Wedgefield and Murdoch substations; and

    b) any augmentation of the network which forms part of the network under section 4(1).

24. In Port Hedland, Alinta Energy operates two generation sites as a single power station.

25. Alinta Energy's network consists of three 75MVA 66kV feeders compromising about 25 kilometres of conductors.

26. The Alinta Energy Port Hedland network is detailed in Figure 1:

- A single transmission line connects Alinta Energy's two generation sites.
- The network connects Alinta Energy's generators to the Horizon Power network substations at Wedgefield and Murdoch Drive.

**Figure 1: Alinta Port Hedland network**


*Note: Alinta's network is represented by the red lines*

27. The Alinta Energy network services three large customers under long-term arrangements of firm and non-firm contracted capacity. Alinta's customers are exposed to risks in commodity markets, particularly iron ore. These customers include an Alinta-related company for North West Interconnected System sales.

28. The Alinta Energy network is a relatively small network, which services a few large customers.

## 3.2 Horizon Power coastal network

29. Section 5 of the PNAC defines the Horizon Power coastal network as comprising:

    a) the network which became a covered network as a result of the Minister's "final coverage decision" of 2 February 2018 under the ENAC; and

    b) any other network owned by Regional Power Corporation and interconnected as at the code commencement date with the network in paragraph (a); and

    c) any augmentation as at the code commencement date of a network in paragraph (a) or (b); and

    d) any augmentation of the network which forms part of the network under section 4(1).

    {Note: The Minister's decision defined the network as all of the electrically interconnected network infrastructure facilities (transmission and distribution) owned by Horizon Power and located in the Pilbara region of Western Australia. For the avoidance of doubt, this includes—

        a) all of Horizon Power's network infrastructure in the West Pilbara area, which supplies customers located in and around Karratha, including the connections to the Port of Dampier, Cape Lambert, Point Samson and Roebourne;

        b) all of Horizon Power's network infrastructure in the East Pilbara area, which supplies customers in and around greater Port Hedland, including the connections to the port operations of BHP Billiton and Fortescue Metals Group;

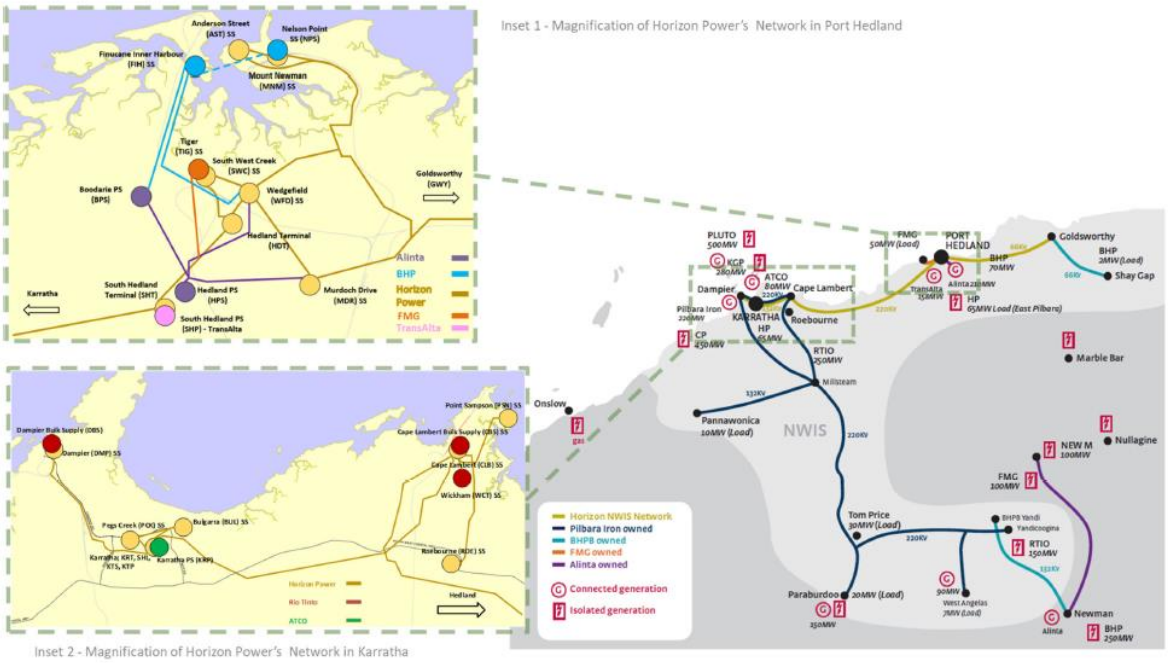
        c) the transmission line that connects Horizon Power's network infrastructure in the West Pilbara and East Pilbara areas; and

        d) the transmission line that runs from Port Hedland to the site of the former mining town of Goldsworthy.

30. The Horizon Power coastal network services customers around Karratha and Port Hedland.

31. The Horizon Power coastal network is detailed in Figure 2.

**Figure 2: Horizon Power coastal network within the North West Interconnected System**




32. The Horizon Power coastal network services small and medium customers in the townships of Karratha, Roebourne, Point Samson, and Port Hedland (including Wedgefield and South Hedland). This customer base is small, relative to other electricity distributors in Australia.

33. The network also services major loads in the port area of Port Hedland. This major customer base is exposed to risks in commodity markets, particularly iron ore.

34. Horizon Power's customer base in the Pilbara region is less diversified than the customer bases of other electricity network service providers. For example:

- The three large resource-based customers represent around 40 per cent of the non-coincident peak demand on the Pilbara network.
- High voltage customers represent 0.2 per cent of the customer base and almost 9 per cent of the non-coincident peak demand on the Pilbara network.
- The majority of customers (99.8 per cent) represent 52 per cent of the non-coincident peak demand on the Pilbara network.

# 4. Regulatory approach for the Pilbara networks rate of return

35. Section 57(2) of the PNAC details what the ERA must have regard to when determining the rate of return for the Pilbara networks:

> 57(2) A determination under section 57(1) must—:
>
> (a) be commensurate with the regulatory and commercial risks involved in providing covered services; and
>
> (b) have regard to regulatory precedent on rates of return in the electricity and other industries, but—
>
> (i) undertake a specific assessment for the particular light regulation network based on its unique circumstances and any matters prescribed under regulation 4 of the regulations; and
>
> (ii) not assume that the circumstances of each light regulation network are the same; and
>
> (c) use a pre-tax version of the cost of capital; and
>
> (d) be undertaken in accordance with the standard consultation process.

36. When determining the rate of return the ERA must have regard to:

- The light-handed regulatory framework applying to the Pilbara networks and the characteristics of the Pilbara networks.
- The regulatory and commercial risks involved in providing covered services for the Pilbara networks and the characteristics of the Pilbara networks.
- Regulatory precedent.

37. In the Pilbara networks rate of return issues paper, the ERA set out a preliminary approach to determining the rate of return, consistent with its standard energy network approach. This preliminary approach included the use of a sample of domestic energy networks to inform decisions on the Pilbara networks.[2]

38. The ERA sought comment on the specific risks of the Pilbara networks and their effect on the rate of return. The ERA sought to understand possible departures from its standard energy network rate of return approach and how this standard approach may have to change for:

- the light-handed regulatory framework detailed in the PNAC
- the specific circumstances of the Pilbara networks.

## 4.1 Public submissions

39. The ERA's Pilbara networks rate of return issues paper sought stakeholders' views on the risks of the Pilbara networks including:

- The use of an energy network sample for the Pilbara networks.

[2] Regulators use a benchmark efficient entity to inform the WACC parameters set for a regulated entity. This is consistent with incentive regulation and ensures that a regulator does not compensate a regulated service provider for its actual costs but compensates it as if it were operating and financed efficiently.

- How this sample could be used or amended to account for differences in the risk profiles of the Pilbara networks.
- How an energy network benchmark could be used or amended to account for differences in the risk profiles of the Pilbara networks.
- The difference between the two Pilbara networks' risk profiles.

40. Alinta Energy, Horizon Power and Dampier Bunbury Pipeline's submissions discussed the Pilbara networks' commercial risks and customer base (predominantly serving mining and resource customers with significant exposure to commodity market risk).

41. Horizon Power submitted that the low rate of return in the issues paper was not commensurate with the regulatory and commercial risks involved in providing the covered services, particularly for its small and commodity-exposed network.[3] While Horizon Power's coastal network does not exclusively service mining and resource customers, the network has a very concentrated base of large customers with significant exposure to commodity market risk.[4]

42. Horizon Power did not agree that the ERA's proposed energy network sample was suitable for the Pilbara networks, as the companies included were not comparable in terms of size and customer diversity.[5] Horizon Power submitted that the operational and risk profiles of the Pilbara networks were higher than other regulated energy networks, such as Western Power.[6] Horizon Power was strongly of the view that adjustments should be made to the sample, and that such adjustments would be consistent with the ERA's rail rate of return approach that makes distinction between the risk profiles of different rail networks.[7]

43. Horizon Power submitted that the risk profiles of the two Pilbara networks were not significantly different.[8] Horizon Power noted that demand by all customers in the Pilbara, not just large customers, was driven by the resource industries in the region, either directly or indirectly.[9]

44. Alinta Energy submitted that there were material differences in the risk profiles of the Pilbara networks. Alinta Energy submitted that its network had a much smaller and less diversified customer base than Horizon Power. Alinta Energy suggested that Horizon Power's diversity provided more certainty of income, whereas Alinta Energy's customers had the power to move away from Alinta Energy, or reduce their usage and payments over time, and could bypass Alinta Energy entirely.[10]

45. Alinta Energy submitted that it would be difficult, if not impossible, to find comparable benchmarks and WACC parameters for similar businesses to the Pilbara networks.[11]

3 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 2.
4 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, pp. 65-66.
5 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 5.
6 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 8.
7 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 5.
8 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 5.
9 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 6.
10 Alinta Energy, *Pilbara networks – rate of return*, October 2021, p. 1.
11 Alinta Energy, *Pilbara networks – rate of return*, October 2021, p. 1.

46. Dampier Bunbury Pipeline suggested that the benchmark efficient entity for the Pilbara networks should be defined as operating within remote regions of Australia and submitted that it seemed highly unlikely that the Pilbara networks' risk exposure would be the same as the regulated energy networks.[12]

47. Dampier Bunbury Pipeline noted that the list of comparator firms for the Pilbara networks may need to be amended and that the ERA used different sets of comparators when determining the appropriate rates of return for rail networks.[13]

## 4.2 Final decision

48. The ERA has reviewed available information and developed a regulatory approach for determining the Pilbara networks' rate of return.

***General rate of return approach***

49. The ERA employs a generally accepted WACC framework across its regulatory determinations.[14, 15, 16]

50. The ERA considers that the rates of return for the Pilbara networks should reflect a WACC: that is, they should include a weighted average of an allowed return on equity and an allowed return on debt. This approach is commonly adopted by regulators and market practitioners.

51. The ERA uses the Sharpe-Lintner Capital Asset Pricing Model (CAPM) to estimate the return on equity across its regulatory determinations.[17, 18, 19]

52. The ERA adopts CAPM to estimate the return on equity for the Pilbara networks. The ERA considers that the CAPM is a model commonly adopted by regulators and market practitioners.

***Approach to determine Pilbara networks rate of return under PNAC***

53. To determine the rate of return for the Pilbara networks, the ERA has considered:

- the PNAC's light-handed regulatory framework
- the specific risks of the Pilbara networks.

12 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, p. 2.

13 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, p. 2.

14 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 11.

15 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 1.

16 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, p. 8.

17 ERA, *Final Rate of Return Guidelines,* December 2018*,* pp. 27-28.

18 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 11.

19 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, p. 37.

54. To determine the Pilbara networks' rate of return, the ERA has had regard to the PNAC's light-handed regulatory framework. Important factors are that the light-handed framework:

- Does not determine regulatory revenues, but rather a basis for price negotiation purposes.
- Does not fix pricing periods.

55. Recognising the PNAC's light-handed regulatory framework, the ERA's approach is to set a long-term term rate of return.

56. Taking a long-term rate of return approach for the Pilbara networks is consistent with the ERA's other light-handed regulatory approach for rail.[20]

57. In the issues paper, the ERA recognised that there may be a divergence of risk between the Pilbara networks and other energy networks regulated by the ERA. Submissions provided further support for this position:

- The Pilbara networks operate under a light-handed framework that does not determine revenues.
- The Pilbara networks are small in comparison to the energy network sample.
- The Pilbara networks do not have a customer base as diversified as the energy network sample. The Pilbara networks have a focus on servicing the resource industry and resource driven towns.

58. The ERA considers that the Pilbara networks have a higher risk profile compared to other regulated energy networks. This higher risk profile is attributable to the higher cash flow risk and uncertainty present in the Pilbara networks compared to other regulated energy networks.

- The Pilbara networks are significantly exposed to particular customers, geography and industry.
- As the light-handed regulatory framework does not set prices, but provides a starting point for negotiation, there may be a greater range of, and more variable, cashflow outcomes.

59. To determine the rate of return the ERA must assess the Pilbara networks' unique circumstances and must:

> 57(2)(ii) … not assume that the circumstances of each light regulation network are the same;

60. The Pilbara networks rate of return must be commensurate with the risks involved in the provision of the reference services. The ERA has reviewed submissions and has further considered the risk profiles of the two Pilbara networks.

[20] ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital For the Freight and Urban Networks, and the Pilbara Railways*, 22 August 2019, p. 9.

61. The ERA considers that there are sufficient differences in the circumstances of both Pilbara networks to justify differing risk profiles for each Pilbara network.

- Horizon Power is a regional electricity network that has a more diversified customer base than Alinta Energy.
- Alinta Energy is a regional electricity network that has a small number of large commodities-focussed customers and is also subject to a greater level of bypass risk.[21] The ERA considers that the Alinta Energy network is more an extension of an energy generator, whereby the network assets move electricity a short distance from Alinta Energy's generators to a connection point to then be further transported.

62. Under the ERA's other light-handed regulatory approach in rail, the ERA also determines separate rates of return for the three different railways that are regulated. This approach recognises the differences of the reference services and their risk characteristics. The ERA's rail approach accounts for different risk profiles through a combination of:

- Adjusting the reference sample for each railway.
- The use of discretion when determining point estimates from a range for WACC parameters.

63. For the Pilbara networks, the ERA has searched for other regional electricity networks that have similar risk profiles to the Pilbara networks. However, the ERA has not found other regional electricity networks in Australia or overseas that are sufficiently similar. Alinta Energy suggested that it would be difficult, if not impossible, to find comparable benchmarks and WACC parameters for similar businesses to the Pilbara networks.[22]

64. Due to the lack of suitable comparators for the Pilbara networks, the ERA has considered all available information and has applied its regulatory discretion to determine a point estimate for WACC parameters that best reflects the characteristics of Alinta Energy and Horizon Power networks.

65. In using its regulatory discretion and recognising the PNAC's light-handed framework, and given the PNAC's light-handed framework sets prices for price negotiation purposes, the ERA determined estimates for the Pilbara networks' WACC risk parameters around the top of the sample range for energy networks.

66. This approach will best allow the ERA to set each Pilbara network's long-term rate of return commensurate with their commercial and regulatory risks.

67. The risk profile of the two Pilbara networks has a particular bearing on the following WACC parameters:

- gearing
- equity beta
- credit rating.

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21 Bypass risk is the risk that customers may enter into arrangements that mean that they no longer need to use the network, that is, they bypass the network.

22 Alinta Energy, *Pilbara networks – rate of return*, October 2021, p. 1.

68. For the other WACC parameters, the ERA has adopted its standard rate of return approach:

- the market risk premium
- debt issuing costs
- inflation
- gamma.

69. For common WACC elements, the ERA's Pilbara networks rate of return approach aligns with that of the ERA's rail rate of return. This will mean that these metrics are annually updated and publicly available, so can be used by the Pilbara networks in future pricing periods should they choose.

# 5. The rate of return framework

70. A rate of return provides a service provider with a return on the capital it has invested in its business.

71. The WACC is the rate that a company is expected to pay on average to all its security holders to finance its assets and is therefore commonly referred to as the cost of capital. The WACC represents the minimum return that a company must earn on an existing asset base to satisfy its creditors, owners, and other providers of capital.

72. The ERA considers that the rates of return for the Pilbara networks should reflect a WACC, that is, they should include a weighted average of an allowed return on equity and an allowed return on debt.

73. Under sections 57(2)(c) of the PNAC, a rate of return determination must use a pre-tax version of the cost of capital.

74. In nominal terms, the WACC equation is expressed:

$$WACC_{nom} = R^{e}_{pre} * \frac{E}{V} + R^{d}_{pre} * \frac{D}{V} \qquad \text{(equation 1)}$$

where

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

$R^{e}_{pre}$ is the pre-tax rate of return on equity, or the cost of equity

$R^{d}_{pre}$ is the pre-tax rate of return on debt, or the cost of debt

$E/V$ is the proportion of equity in the total financing (comprising equity and debt)

$D/V$ is the proportion of debt in the total financing.

75. The pre-tax rate of return on equity is not readily available. Therefore, a post-tax rate of return on equity is used.

76. To determine a pre-tax return on equity, it is necessary to adjust the post-tax return on equity for taxation effects, including recognition of the value of imputation credits.

77. This provides a framework for calculation of a nominal pre-tax WACC, as follows:[23]

$$WACC_{nom} = R^{e}_{post} * \frac{1}{(1-T*(1-\gamma))} * \frac{E}{V} + R^{d}_{pre} * \frac{D}{V} \qquad \text{(equation 2)}$$

where:

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

$R^{e}_{post}$ is the post-tax rate of return on equity, or cost of equity

[23] Known as the "Officer/Monkhouse framework".

$R_{pre}^{d}$ is the pre-tax rate of return on debt, or the cost of debt

T is the tax rate

γ is the value of imputation credits (gamma)

$E/V$ is the proportion of equity in the total financing (comprising equity and debt)

$D/V$ is the proportion of debt in the total financing.

78. In order to invest, debt and equity investors will require compensation for inflation.

79. Under section 46 of the PNAC, pricing for a light regulation network may be determined on a real or nominal basis:

> 46. Real or nominal pricing
>
> Pricing for a light regulation network may be determined on a real or nominal basis but the methodology chosen by the NSP must be applied consistently.

80. Under a nominal pricing method, a network would use a nominal WACC, which incorporates the real rate of return compounded with a rate that reflects expectations of inflation.

81. Under a real pricing method, a network would use a real WACC. The real WACC is obtained from the nominal WACC by removing expected inflation ($\pi$) from the nominal pre-tax WACC, as follows:

$$WACC_{real} = \frac{(1+ WACC_{nom})}{(1+\pi)} - 1 \qquad \text{(equation 3)}$$

where:

$WACC_{real}$ is the real pre-tax weighted average cost of capital

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

$\pi$ is expected inflation.

82. Under the real pricing method, compensation for inflation is provided through adjusting the capital base for actual inflation, rather than providing it through the WACC.

83. The individual Pilbara network's choice of a nominal or real price for their reference services will determine whether they will use a nominal or real WACC. The ERA will therefore report both nominal and real pre-tax WACCs.

84. The resulting WACCs will represent the rates of return that an entity must earn on its existing asset base to satisfy its creditors, shareholders and other providers of capital.

# 6. Gearing

85. Gearing is the proportion of a business's assets financed by debt and equity. Gearing is defined as the ratio of the value of debt to total capital (that is, including debt and equity) and is generally expressed as follows:

$$Gearing = \frac{Debt}{Debt + Equity} \quad \text{(equation 4)}$$

86. The ERA uses this ratio to weight the costs of debt and equity to determine a regulated WACC.

87. The gearing calculation for an entity requires estimates of the value of the firm's debt and equity, which can be obtained from its financial statements or from market values of traded debt and equity securities.

88. In principle, the values of debt and equity should be obtained from the same information source, that is, obtained from either book or market data. However, liquidity limitations restrict the ability to source market data for debt securities and a proxy may have to be used. The ERA uses a market-based gearing level to reflect efficient financing.

89. The ERA has used a gearing of 55 per cent for its previous energy networks' determinations.[24, 25]

90. The ERA's preliminary view in the issues paper was to use a gearing level of 55 per cent for the Pilbara networks.

## 6.1 Public submissions

91. The Pilbara networks rate of return issues paper sought stakeholders' views on the use of a gearing of 55 per cent for the Pilbara networks.

92. Horizon Power and Dampier Bunbury Pipeline's submissions discussed gearing for the Pilbara networks.

93. Horizon Power supported the use of a gearing level of 55 per cent for the Pilbara networks.[26]

94. Alinta Energy submitted that there were material differences between the risk profiles of the Pilbara networks, with Alinta having a higher risk profile.[27] This suggests utilising a lower gearing for Alinta Energy, compared to that of Horizon Power.

95. Dampier to Bunbury Pipeline submitted that it had no concerns with 55 per cent, however, the determination of the benchmark gearing for the Pilbara networks was dependent upon which firms were used in the comparator set.[28]

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24 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 15.

25 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 91.

26 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 6.

27 Alinta Energy, Pilbara networks – rate of return, October 2021, p. 1.

28 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, p. 3.

## 6.2 Final decision

96. Gearing differs across industries and among different companies within the same industry.

97. Different firms have different risk profiles and, as a consequence, have varying debt capacity.[29] The optimal capital structure is determined by the business risk of firms in an industry and the expected loss if default occurs.[30]

98. The ERA recognises that the Pilbara networks' risk profiles are different compared to other Australian energy networks.

99. Due to the lack of exactly comparable entities to the Pilbara networks, the ERA has considered the sample of Australian energy networks and has applied judgement to determine a point estimate of gearing that best reflects the characteristics of the Alinta Energy and Horizon Power networks.

100. Table 1 details the gearing estimate for benchmark entities based on observable data from Australian energy networks.

**Table 1: ERA market value gearing estimates (%)**

| | APA Group (APA) | AusNet Services (AST) | DUET Group (DUE) | Spark Infrastructure Group (SKI) | Average |
|---|---|---|---|---|---|
| 2016 | 49 | 57 | 51 | 54 | 52 |
| 2017 | 49 | 52 | N/A | 52 | 51 |
| 2018 | 46 | 56 | N/A | 57 | 53 |
| 2019 | 45 | 55 | N/A | 60 | 53 |
| 2020 | 45 | 59 | N/A | 60 | 55 |
| **5-year average** | **47** | **56** | **51** | **57** | **52** |

*Source: Annual reports, Bloomberg, ERA analysis.*

101. The ERA's issues paper estimated that average gearing for the energy network sample was 52 per cent.

102. Removing DUET from the analysis produced an average gearing for the energy network sample of 53 per cent. The ERA also extended its analysis to include the last observable five years for DUET, where DUET's five-year average gearing was 64 per cent. The five-year average of the sample increases to 56 per cent when using DUET's last observable five years.

29 Australian Competition & Consumer Commission, Access Undertaking – Interstate Rail Network, July 2008.

30 Brealey, R., Myers, S. and Allen, F., Corporate Finance, McGraw Hill, 1996, p. 476.

103. The Australian Energy Regulator's (AER) recent analysis has shown that gearing levels based on market values are 52 per cent over a five-year average or 55 per cent over a 10-year average.[31]

104. The ERA considers the Pilbara networks' gearing as follows:

- Horizon Power's coastal network is a small regional energy network with some diversification of customer base, though with an exposure to the Pilbara's resource sector.
  - The risks faced by Horizon Power are towards the high side of those faced by other Australian energy networks.
  - Therefore, Horizon Power should have a gearing level at the lower end of the sample range which is 45 per cent.
- Alinta Energy is a small regional network with exposure to a few large customers and is subject to competition/bypass risk.
  - The risks faced by Alinta are higher than those faced by other Australian energy networks.
  - Therefore, Alinta Energy should have a gearing level lower than the sample range of 40 per cent.

105. For the purposes of the Pilbara networks WACC the ERA recognises the differing risk profiles of the Pilbara networks and will apply the following gearing levels specific to each Pilbara network:

- 45 per cent for Horizon Power
- 40 per cent for Alinta Energy.

[31] Australian Energy Regulator, *Rate of return Annual Update,* December 2020, p. 6.

# 7. Return on equity

106. The return on equity is the return that investors require from a firm to compensate them for the risk they take by investing their capital.

107. There are no readily observable proxies for the expected return on equity. While estimates of the cost of debt can be obtained by observing debt instruments, financial markets do not provide a directly observable proxy for the cost of equity, for either individual firms or for the market.

108. The model most used by Australian regulators to quantify the return on equity is the Sharpe-Lintner CAPM:

$$R_i = R_f + \beta_i(R_m - R_f) \qquad \text{(equation 5)}$$

where,

$R_i$ is the required rate of return on equity for the asset, firm or industry in question

$R_f$ is the risk free rate

$\beta_i$ is the equity beta that describes how the return for a particular asset will follow the market return, which is defined as

$$\beta_i = cov(R_i, R_m)/\sigma_{R_m}^2$$

$(R_m - R_f)$ is the market risk premium.

109. The ERA has used the Sharpe-Lintner CAPM to estimate the return on equity across its regulatory determinations.[32] [33] [34]

110. The ERA considers that the CAPM is a model commonly adopted by regulators and market practitioners.

111. To estimate the return on equity, the ERA has separately estimated:

- the risk free rate
- the market risk premium
- the equity beta.

[32] ERA, *Final Rate of Return Guidelines,* December 2018, pp. 27-28.

[33] ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 11.

[34] ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, p. 37.

## 7.1 Risk free rate – equity

112. The risk free rate is the return an investor would expect when investing in an asset with no risk.

113. The risk free rate is the return an investor receives from holding an asset with a guaranteed payment stream (that is, where there is no risk of default). Since there is no likelihood of default, the return on risk free assets compensates investors for the time value of money.

114. The ERA uses observed yields from Commonwealth Government bonds as the best proxy for risk free assets in Australia to estimate the risk free rate of return.

115. To calculate the risk free rate, the ERA uses indicative mid-rates published by the Reserve Bank of Australia. Where there are no Commonwealth Government bonds with a maturity of exactly the desired maturity, the ERA interpolates the risk free rate on a straight line basis.[35]

116. The ERA's standard approach in the Pilbara networks rate of return issues paper was to use a five-year term for the risk free rate.

### *7.1.1 Public submissions*

117. The ERA's Pilbara networks rate of return issues paper sought stakeholders' views on whether they supported the use of a five-year term for the WACC for the Pilbara networks.

118. Submissions indicated that stakeholders generally supported the adoption of a long-term framework for the Pilbara networks.

119. ATCO submitted that Commonwealth Government bonds were no longer an appropriate proxy for the risk free rate, given the Reserve Bank of Australia's policy to maintain the target of 10 basis points for the April 2024 Australian Government bond.[36]

### *7.1.2 Final decision*

120. The ERA continues to support the use of observed yields from Commonwealth Government bonds as the best proxy for risk free assets in Australia. Commonwealth Government bonds are commonly used by other Australian regulators and market practitioners to determine the risk free rate.

121. As discussed in section 4, the ERA has given further consideration to the Pilbara networks light-handed regulatory framework. Under the PNAC's light-handed regulatory framework:

- Revenues are not determined, but rather reference prices are used as a starting point for price negotiations for covered services.

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35 It is not common to observe a Commonwealth Government Security bond with an expiry date that exactly matches that of the regulatory period end. To overcome this, two bonds are selected that fall on either side of the end day of the pricing period. The dates on these bonds are referred to as the 'straddle' dates. Linear interpolation estimates the yields on the regulatory or pricing period end date by assuming a linear increase in yields between the straddle dates on the two bonds observed.

36 ATCO, *Re: Determination of Pilbara networks rate of return – Issues paper*, October 2021, p. 2.

- The pricing period is unknown in advance and can change over time.

122. For the Pilbara networks rate of return, the ERA considers that a long-term rate of return based on a 10-year term should be used. Therefore, for the Pilbara networks, the ERA considers a 10-year risk free rate should be used.

123. Under the light-handed rail framework, the ERA also uses a 10-year risk free rate.

124. For the Pilbara networks rate of return the ERA has used the yield of a 10-year Commonwealth Government bond to estimate the risk free rate.

125. For the Pilbara networks rate of return the ERA estimates a risk free rate of 1.60 per cent for the 40-day averaging period to 30 June 2021.

## 7.2 Market risk premium

126. The market risk premium is the expected rate of return over and above the risk free rate that investors require to invest in a fully-diversified portfolio. *Ex ante*, investors always require a rate of return above the risk free rate to invest and so the expected market risk premium is always positive. To establish the cost of capital, the *ex-ante* market premium is relevant.

127. The market risk premium is a market parameter and does not reflect the specific characteristics of the Pilbara networks.

128. The market risk premium compensates an investor for the systematic risk of investing in a fully diversified portfolio. Systematic risk is risk that cannot be eliminated by investing in a diversified portfolio of assets, because such risk affects all assets in the market.[37] Therefore, the market risk premium represents an investor's required return, over and above the risk free rate of return, on a fully diversified portfolio of assets. This is a forward-looking concept.

129. For energy networks, the ERA applies a forward-looking market risk premium estimated over a five-year period, consistent with the term of the regulatory period. The ERA's approach to estimating the market risk premium is detailed in the gas rate of return instrument.[38] The ERA has used a market risk premium of 6.0 per cent for its recent energy networks' determinations.[39] [40]

130. The ERA's preliminary view in the Pilbara networks rate of return issues paper was to use a market risk premium of 6.0 per cent.

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37 The foundation of the Sharpe-Lintner CAPM is the proposition that adding an asset to a portfolio reduces risk via the diversification effect but not beyond the risks that the assets in a portfolio share in common, that is, their systematic risk. At the limit, when one has invested in all available assets in the market portfolio, there is only systematic risk left. An important assumption of the CAPM is that assets are priced as though it is only their systematic risk that is relevant to investors.

38 ERA, *Final Rate of Return Guidelines,* December 2018*,* pp. 30-32.

39 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 32.

40 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 65.

### 7.2.1 Public submissions

131. ATCO, Dampier Bunbury Pipeline and Horizon Power's submissions discussed the market risk premium.

132. In its submission, ATCO:

- Endorsed a view from an economic consultant (CEPA) that "there is no conclusive theoretical basis for an assumption of independence or dependence" of a relationship between market risk premium and the risk free rate.[41]
- Submitted that, when estimating the market risk premium, consideration should be given to the historical market premium method and the total market return method.[42]
- Submitted that the market risk premium should provide more weight to forward-looking measures such as the dividend growth model, and noted that international regulators have used this model as part of their regulatory process.[43]

133. In its submission, Dampier Bunbury Pipeline:[44]

- Questioned whether there was a relationship between market risk premium and the risk free rate, particularly in a low rate of return environment.
- Submitted that the use of geometric means was not appropriate.
- Supported the use of a dividend growth model.
- Disagreed with the ERA's approach to using conditioning variables to help choose a point estimate for the market risk premium.

134. In its submission, Horizon Power:

- Submitted that no weight should be placed on geometric means when calculating the historic market risk premium.[45]
- Submitted that it was inconsistent to use a prevailing risk free rate with a long-term average market risk premium.[46]
- Submitted that there was a negative relationship between the market risk premium and the risk free rate.
- Submitted that the evidence indicated that the market risk premium had increased to at least partially offset the decline in bond yields.
- Supported the use of the dividend growth model, and other approaches to allow for a negative (though not necessarily one-for-one inverse) relationship between the risk free rate and the market risk premium.[47]

41 ATCO, *Re: Determination of Pilbara networks rate of return – Issues paper*, October 2021, p. 3.
42 ATCO, *Re: Determination of Pilbara networks rate of return – Issues paper*, October 2021, p. 3.
43 ATCO, *Re: Determination of Pilbara networks rate of return – Issues paper*, October 2021, pp. 3-4.
44 Dampier Bunbury Pipeline, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 4.
45 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 2.
46 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, pp. 2-3.
47 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 34.

### 7.2.2 Final decision

135. The market risk premium is a parameter that is identical across light-handed and heavy-handed frameworks as it is the expected price of risk for the economy.

136. The matters raised in submissions are complex questions on how best to estimate the market risk premium. Any departure from the established market risk premium approach that affects both light and heavy-handed regulatory regimes can only be justified if supported by thorough examination of theory, evidence and broad consultation with stakeholders. Given the PNAC's requirement to release a rate of return by the end of 2021, for the Pilbara network rate of return the ERA will not change its market risk premium approach.

137. While the two Pilbara networks have different sensitivity to risk due to the differences in their characteristics and operations, this difference is accounted for through other WACC parameters.

138. The term of the Pilbara networks' rate of return will influence the market risk premium and the risk free rate deducted from market returns.

139. For the Pilbara networks rate of return, the ERA considers that a long-term rate of return based on a 10-year term should be used. Therefore, for the Pilbara networks, the ERA will apply a 10-year risk free rate.

140. The ERA uses a (long-term) 10-year risk free rate for rail and has adopted a market risk premium of 5.9 per cent for its rail rate of return determinations.[48]

141. For the Pilbara networks, the ERA has applied its current market risk premium using a 10-year risk free rate in accordance with the the rail rate of return determination.

142. For the Pilbara networks rate of return the ERA applies a market risk premium of 5.9 per cent.

## 7.3 Equity beta

143. The risk of an asset is typically thought of as the variance in asset returns. Total risk consists of systematic and non-systematic risk. Systematic risk is that part of total risk in a firm's returns that stems from the economy and markets more broadly. Systematic risk cannot be eliminated through diversification. Non-systematic risk is the risk stemming from unique attributes of the firm, which may be eliminated by an investor through diversification. For this reason, only systematic risk is compensated by the return on equity.

144. The equity beta is a parameter that measures the systematic risk of a security or a portfolio in comparison to the market as a whole.

145. Equity beta is the "slope" parameter $\beta_i$ in the Sharpe-Lintner CAPM. The slope parameter $\beta_i$ correlates a specific asset's return in excess of the risk free rate of return, to the return on the market portfolio.

[48] ERA, *Final Determination 2018 and 2019 Weight Average Cost of Capital - For the Freight and Urban Networks, and the Pilbara Railways*, August 2019, p. 53.

146. Two risk factors are generally considered to affect the value of equity beta for a particular firm:

- The type of business, and associated capital assets, that the firm operates, measured by asset or "un-levered" beta.
- The amount of financial leverage (gearing) employed by the firm, which levers or "amplifies" the asset beta to arrive at the equity beta.

147. The ERA has used an equity beta of 0.7 for its last energy networks' revenue determinations.[49] [50]

148. In the Pilbara networks rate of return issues paper, the ERA estimated equity beta using current data and the approach detailed in the gas rate of return instrument.[51] The ERA estimated an equity beta of 0.6.

### *7.3.1 Public submissions*

149. The ERA's Pilbara networks rate of return issues paper sought stakeholders' views on the use of an equity beta of 0.6 for the Pilbara networks.

150. Horizon Power, Alinta Energy, ATCO and Dampier Bunbury Pipeline's submissions discussed equity beta.

151. In its submission, Horizon Power:

- Did not support the use of a 0.6 equity beta for the Pilbara networks.[52]
- Submitted that the ERA should be cautious in reducing the beta estimate due to market volatility. Horizon Power identified the COVID-19 pandemic as an event that was responsible for the empirically observed reductions in equity beta and stated that it was implausible that the true systematic risk of regulated energy networks in Australia fell in response to the global pandemic.[53] Horizon Power submitted that the true systematic risk of these firms was likely to be much more stable than implied by current estimates.[54]
- Submitted that the timing of recent takeover announcements for Australian energy networks influenced the beta estimate for the sample firms. However, the time of the takeover announcement has no relevance to the true systematic risk of an entity.[55]
- Horizon Power submitted that the small number of domestic comparators was prone to statistical noise and estimation error.[56] Horizon Power submitted that the ERA should give material weight to international comparators and noted that the ERA used international comparators for rail.[57]

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49 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 34.

50 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 24.

51 ERA, *Final Rate of Return Guidelines Explanatory Statement,* December 2018*,* pp. 230-231.

52 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 6.

53 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 6.

54 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 58.

55 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, pp. 56-57.

56 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 6.

57 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 7.

- Horizon Power submitted that the Pilbara networks should receive a higher equity beta allowance than other regulated energy networks. Horizon Power submitted that the higher risk characteristics of the Pilbara networks were due to their highly concentrated customer bases of large customers with significant commodity exposure.[58]

152. Alinta Energy's submission did not indicate whether it supported an equity beta of 0.6 for the Pilbara networks. However, Alinta Energy submitted that there were material differences between the risk profiles of the Pilbara networks, with Alinta having a higher risk.[59]

153. Alinta Energy submitted that it would be difficult, if not impossible, to find comparable benchmarks and WACC parameters (including beta) for similar businesses to the Pilbara networks.[60]

154. ATCO submitted that the ERA's estimate of beta may be conservative because:[61]

- equity beta estimates included COVID-19's effects on financial markets
- equity beta estimates included DUET, now delisted, in the sample
- equity beta would increase if the sample of comparator firms were expanded
- equity beta would increase if any weight were given to the low beta bias problem.

155. In its submission, Dampier Bunbury Pipeline:[62]

- Submitted that the determination of an appropriate equity beta was highly dependent upon which firms were used in the comparator set.
- Noted that the ERA used different comparator sets when determining the rates of return for rail networks.
- Raised the effect of COVID-19 on beta estimates and pointed to suggestions from Energy Networks Australia regarding the use of longer estimation windows and using methods less susceptible to outliers.

### *7.3.2 Final decision*

156. The ERA recognises that the risk profiles of the Pilbara networks are different compared to other Australian energy networks.

157. The ERA considers that equity beta should ideally be determined using a benchmark sample that reflects the commercial and regulatory risks of the Pilbara networks.

158. However, the ERA has not found other regional electricity networks in Australia or overseas that are sufficiently similar to the Pilbara networks. Alinta Energy suggested that it would be difficult, if not impossible, to find comparable benchmarks and WACC parameters for similar businesses to the Pilbara networks.[63]

58 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 7.
59 Alinta Energy, Pilbara networks – rate of return, October 2021, p. 1.
60 Alinta Energy, *Pilbara networks – rate of return*, October 2021, p. 1.
61 ATCO, *Re: Determination of Pilbara networks rate of return – Issues paper*, October 2021, p. 4.
62 Dampier Bunbury Pipeline, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 3.
63 Alinta Energy, *Pilbara networks – rate of return*, October 2021, p. 1.

159. Due to the lack of suitable comparators for the Pilbara networks, the ERA has considered domestic comparators that own or operate energy networks and has used its regulatory discretion to determine a point estimate of the equity beta that best reflects the characteristics of the Alinta Energy and Horizon Power networks.

160. For its equity beta approach for rail, the ERA had to use international rail comparators because domestic rail comparators were not available. For the ERA's energy network rate of return, domestic comparators are available.

161. The ERA has examined domestic comparators that own or operate energy networks. The estimation method from the 2018 gas explanatory statement has been used to estimate beta.

162. As beta is a forward-looking concept, the ERA has adopted a five-year estimation window to incorporate current information rather than a 10-year estimation window that includes older information.

163. From this domestic sample, the ERA has exercised its regulatory discretion to choose a point estimate of beta commensurate with the level of commercial and regulatory risk for each Pilbara network.

164. Again, given PNAC's light-handed framework sets parameters for price negotiation purposes, the ERA considers the Pilbara networks' equity betas should be near the top of the energy network sample range.

165. The ERA considers the Pilbara networks' equity betas as follows:

- The risks faced by Horizon Power are towards the high side of those faced by other Australian energy networks.
- With a target gearing of 45 per cent, the ERA estimates Horizon Power's equity beta at 0.8.
- The risks faced by Alinta Energy are higher than those faced by other Australian energy networks and Horizon Power.
- With a target gearing of 40 per cent, the ERA estimates Alinta Energy's equity beta at 0.9.

166. For the Pilbara networks rate of return the ERA recognises the differing risk profiles of the Pilbara networks and has applied the following equity betas specific to each Pilbara network:

- 0.8 for Horizon Power
- 0.9 for Alinta Energy.

# 8. Return on debt

167. The return on debt is the return that debtholders require from a firm to compensate them for the risk they take in providing debt financing to the company.

168. The ERA's approach to estimating the return on debt is based on a risk premium over and above the risk free rate, combined with an additional margin for administrative and hedging costs.

169. The return on debt can be estimated as:

$$\text{Return on debt} = \text{risk free rate} + \text{debt risk premium} + \text{debt raising costs} + \text{hedging costs} \quad \text{(equation 6)}$$

170. The risk free rate is the rate of return of a hypothetical investment with no risk of financial loss, over a given period of time.

171. The debt risk premium is the margin above the risk free rate of return, required to compensate holders of debt securities for the risk of providing debt finance. The debt risk premium is compensation for investors who tolerate the extra risk, compared to that of a risk free asset.

172. Debt raising and hedging costs are the administrative costs and other charges incurred by businesses in raising and hedging finance.

## 8.1 Credit rating

173. The credit rating is defined as the forward-looking opinion provided by a ratings agency of an entity's credit risk. Credit ratings provide a broad classification of the probability of a firm defaulting on its debt obligations. As a consequence, credit ratings represent the risk present in holding a debt instrument.

174. The benchmark credit rating determines the sample of 10-year bonds used to calculate the cost of debt.

175. For recent energy network determinations, the ERA has used a benchmark credit rating of BBB+.[64, 65]

### *8.1.1 Public submissions*

176. The ERA's issues paper sought stakeholder views on whether they supported the use of a benchmark credit rating of BBB+ for the Pilbara networks.

177. Alinta Energy, Horizon Power and Dampier Bunbury Pipeline's submissions discussed the Pilbara networks' credit ratings.

64 ERA, *Final Rate of Return Guidelines (2018),* December 2018, p. 22.

65 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 72.

178. Horizon Power submitted that it did not support the use of a benchmark credit rating of BBB+ for the Pilbara networks.[66] Horizon Power considered:[67]

- The benchmark credit rating should be based on comparable companies to Horizon Power, rather than a sample of companies that were large and more diversified than Horizon Power.
- Horizon Power expected that the credit rating for the Pilbara networks should not be the same as Western Power's (BBB+).
- The ERA applied separate credit ratings for each of the rail entities it regulates to reflect the operational and risk profiles of the individual rail business.
- Horizon Power expected the credit rating for the Pilbara networks to be the same or similar to that of the Pilbara railways (BBB- or BBB).

179. Alinta Energy's submission did not indicate whether it supported the use of a benchmark credit rating of BBB+ for the Pilbara networks. However, Alinta Energy submitted that there were material differences between the risk profiles of the Pilbara networks, with Alinta Energy having a higher risk.[68]

180. Dampier Bunbury Pipeline submitted that the determination of an appropriate benchmark credit rating was highly dependent upon which firms were used in the comparator set.[69]

### *8.1.2 Final decision*

181. Credit ratings may differ across industries and among different companies within the same industry. Different firms have different business risk profiles and, as a consequence, have varying credit ratings.

182. Given that a service provider's expected risk is likely to differ from that of the comparable sample, the credit rating of the entity is likely to differ as well.

183. The ERA recognises that the Pilbara networks' risk profiles are different compared to those of the ERA's other energy networks and therefore has further considered the credit ratings of the Pilbara networks.

184. When considering the sample of energy networks, the ERA has used its discretion to determine the credit ratings that best reflects the characteristics of the Alinta Energy and Horizon Power networks.

185. The ERA's review of the credit ratings of the Australian energy network sample found that credit ratings varied between BBB and A-.

186. The ERA considers the Pilbara networks' credit ratings as follows:

- For the benchmark credit rating for Horizon Power, the ERA applies a credit rating at the low end of the range equal to BBB.

66 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 8.

67 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 8.

68 Alinta Energy, Pilbara networks – rate of return, October 2021, p. 1.

69 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, pp. 3-4.

- The risks faced by Alinta Energy are likely higher than those faced by the Australian energy networks due to exposure to particular customers and bypass risk.
- Given that a benchmark entity for Alinta Energy is assumed to minimise its cost of capital, the entity would organise its capital structure to ensure an investment grade credit rating. Allowing a credit rating below investment grade would expose the business to greater financing costs than would be efficient.
- For the benchmark credit rating for Alinta Energy network, the ERA applies BBB-, the lowest possible investment grade rating.

187. For the Pilbara networks rate of return the ERA recognises the differing risk profiles of the Pilbara networks and applies the following credit ratings specific to each Pilbara network:

- BBB for Horizon Power
- BBB- for Alinta Energy.

## 8.2 Debt approach

188. The Pilbara networks rate of return issues paper estimated the return on debt based on a hybrid trailing average approach. This method:

- adopted a five-year bank bill swap rate, set on-the-day
- used a 10-year trailing average for the debt risk premium.

189. The ERA has used a similar return on debt approach across its other energy network determinations.[70. 71]

190. With a regulatory resetting price control arrangement, the ERA considered that the hybrid trailing average approach best approximates the net present value equals zero (NPV=0) principle while also recognising interest rate risk, refinancing risk and the staggered nature of debt portfolios.

### *8.2.1 Public submissions*

191. The ERA's issues paper sought stakeholder views on the debt approach.

192. Horizon Power and Dampier Bunbury Pipeline's submissions discussed the debt approach for the Pilbara networks rate of return.

193. In its submission, Horizon Power:

- Supported, in principle, the use of a 10-year term of debt for the Pilbara networks.[72]

70 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 16.

71 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 66.

72 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 7.

- Did not support the hybrid trailing average approach adopted by the ERA for the following reasons:[73]
  - The hybrid trailing average approach did not reflect a financing strategy that businesses would consider adopting, other than to replicate the allowance provided to it by the regulator.
  - If it was prudent and efficient to issue 10-year fixed-rate debt on a staggered maturity basis, the regulatory allowance should reflect the cost of that strategy. The NPV=0 principle is met.
  - Other Australian regulators used the 10-year trailing average approach and considered it met the NPV=0 principle.
- Supported the use of a 10-year trailing average approach to estimate the allowed return on debt.[74]

194. In its submission, Dampier Bunbury Pipeline

- Submitted that market data showed that ten years was the efficient tenor of newly-issued debt for regulated energy firms. However, it noted that the tenor for debt was relative to the comparator set used.[75]
- Submitted that the ERA's revised bond yield approach was broadly fit for purpose.[76]

### *8.2.2 Final decision*

195. The ERA's preliminary view in the issues paper was to adopt a hybrid trailing average approach to estimate the return on debt for the Pilbara networks. This method:

- adopts a five-year bank bill swap rate, set on the day.
- uses a 10-year trailing average for the debt risk premium.

196. The ERA has used the hybrid trailing average for its other energy networks under more heavy-handed regulatory frameworks.

197. After reviewing the submissions to the issues paper the ERA has given further consideration to the debt approach under the Pilbara networks' light-handed framework.

198. Under the hybrid trailing average approach:

- The benchmark entity is presumed to adopt a benchmark efficient debt strategy. The strategy reflects debt costs consistent with long-lived assets, which are assumed to be a portfolio of 10-year fixed-rate debt with 10 per cent maturing each year.
- The benchmark entity then uses derivative arrangements to adjust rates from the efficient debt portfolio to lock in five-year bank bill swap rates, set on the day. This reflects that under the heavy-handed regime regulatory revenues are reset at the commencement of each regulatory period.

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73 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, pp. 7-8.

74 Horizon Power, *Submission on rate of return for covered Pilbara networks*, October 2021, p. 7.

75 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, p. 3.

76 Dampier Bunbury Pipeline, *Submission on rate of return for Pilbara networks*, October 2021, p. 4.

- The hybrid approach also provides for annual changes in revenues to accommodate annual changes in the credit risk of new debt issuances.
- These arrangements allow underlying debt costs to match allowed regulatory revenues.

199. However, under the Pilbara networks light-handed regulatory framework revenues are not regulated, are less certain and regular adjustment mechanisms are not available.

- Regulated revenues are not determined under the PNAC's light-handed regulatory framework. Instead, reference prices are used as a starting point for price negotiations for covered services.
- The pricing periods for the Pilbara networks are unknown in advance and can change over time. In addition, the pricing periods may not reflect the contracting periods for network services.

200. Therefore, under the Pilbara networks' light-handed regulatory framework the Pilbara networks' revenues will not reflect the costs implied by a hybrid trailing average debt approach.

201. For the Pilbara networks' light-handed regulatory framework the ERA has estimated the cost of debt based on an efficient benchmark debt strategy. As the Pilbara networks are existing assets, an efficient entity would have entered into historic debt contracts. The efficient benchmark debt strategy would be based on a full 10-year trailing average cost of debt where the benchmark efficient entity has a portfolio of 10-year fixed-rate debt. Each year, 10 per cent of the total debt portfolio is refinanced. Therefore, for the Pilbara networks rate of return the ERA will use a 10-year trailing average debt approach to estimate the return on debt.

202. As the 10-year trailing average debt approach measures the total cost of debt, there is no need to separately estimate the risk free rate and debt risk premium.

203. In addition, as there is no need to enter into hedging arrangements under the 10-year trailing average debt approach there is no need to include debt hedging costs.

204. The ERA uses the revised yield bond approach to estimate the cost of debt.[77] The method determines the cost of debt by:

- Determining the benchmark sample, which requires identifying a sample of relevant corporate bonds that reflect the credit rating of the benchmark efficient entity.
- Converting the bond yields from the benchmark sample into Australian dollar equivalent yields.
- Calculating an average Australian dollar equivalent bond yield for each bond across the averaging period.
- Estimating yield curves on the bond data by applying various techniques including Gaussian Kernel, Nelson-Siegel and Nelson-Siegel-Svensson techniques.[78]

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77 Technical detail and tools to run the ERA's revised bond yield approach can be found on the ERA's website.

78 The Gaussian Kernel method recognises that the observed spreads on bonds with residual maturities close to the target tenor contain more relevant information for estimation. The Nelson-Siegel model captures many of the typical observed shapes that the yield curve assumes over time. As an extension of the

- Estimating the 10-year cost of debt by averaging the three yield curves of 10-year cost of debt based on the techniques used in the previous step.

205. This method accommodates the differing credit ratings of the two Pilbara networks.

206. The ERA's estimate of Horizon Power network's BBB 10-year trailing average cost of debt is provided in Table 2.

**Table 2: ERA's estimated trailing average cost of debt for Horizon Power coastal network 2012 to 2021**

| Year | Cost of debt (%) |
|---|---|
| 2012 | 6.469 |
| 2013 | 5.470 |
| 2014 | 5.486 |
| 2015 | 5.330 |
| 2016 | 4.927 |
| 2017 | 4.685 |
| 2018 | 4.792 |
| 2019 | 4.005 |
| 2020 | 3.689 |
| 2021 | 3.465 |
| **Trailing average cost of debt** | **4.832** |

*Cost of debt estimate for the 40-day averaging period to 30 June.*
*Source: ERA analysis*; *public information from the past rail WACC final determinations.*

207. The ERA's annual rail rate of return determinations provide BBB- debt costs. These can be used to update future pricing determinations for Alinta Energy.

208. The ERA's estimate of Alinta Energy Port Hedland network's BBB- 10-year trailing average cost of debt is provided in Table 3.

Nelson-Siegel model, the Nelson-Siegel-Svensson method incorporates additional flexibility to capture the curve movement of a more volatile market more precisely.

**Table 3: ERA's estimated trailing average cost of debt for Alinta Energy Port Hedland network 2012 to 2021**

| Year | Cost of debt (%) |
|---|---|
| 2012 | 6.474 |
| 2013 | 5.750 |
| 2014 | 5.833 |
| 2015 | 6.204 |
| 2016 | 5.798 |
| 2017 | 5.005 |
| 2018 | 5.004 |
| 2019 | 4.700 |
| 2020 | 4.500 |
| 2021 | 3.790 |
| **Trailing average cost of debt** | **5.306** |

*Cost of debt estimate for the 40-day averaging period to 30 June.*
*Source: ERA analysis*; *public information from the past rail WACC final determinations.*

209. For the Pilbara networks rate of return the ERA applies a:

- 10-year trailing average cost of debt of 4.832 per cent to Horizon Power's coastal network.
- 10-year trailing average cost of debt of 5.306 per cent to Alinta Energy's network.

## 8.3 Debt raising costs

210. Debt raising costs are administrative costs incurred by businesses when obtaining debt financing.

211. Regulators across Australia have typically included an allowance to account for direct debt-raising costs in their regulatory decisions. A company pays debt-raising costs over and above the interest costs.

212. Australian regulators use benchmark estimates to determine debt-raising costs. To do so, regulators attempt to derive an estimate of debt-raising costs that reflects the costs that would be incurred by a well-managed efficient benchmark business operating in a competitive market.

213. The ERA has used a debt-raising cost allowance of 0.10 per cent per annum in past determinations.[79, 80, 81]

214. For the Pilbara networks rate of return issues paper the ERA's preliminary view was to include an annual allowance of 0.10 per cent for debt-raising costs.

#### *8.3.1.1 Debt hedging costs*

215. Interest rate swaps are derivative contracts which typically exchange – or swap – fixed-rate interest payments for floating-rate interest payments. They provide a means to hedge and manage risk, but also have an associated cost.

216. Given a regulated business's portfolio of long-term debt and its resetting regulatory cashflows, it is reasonable to assume that such a business would enter into arrangements to manage risk.

217. For the Pilbara networks rate of return issues paper the ERA's preliminary view was to include an annual allowance of 0.114 per cent for debt-hedging costs.

### *8.3.2 Public submissions*

218. No public submissions addressed debt raising costs.

### *8.3.3 Final decision*

219. The ERA maintains its position on debt raising costs from the issues paper.

220. The ERA considers that the debt-raising costs included in the rate of return should only include the direct cost components recommended by the Allen Consulting Group in its 2004 report to the Australian Competition and Consumer Commission.[82] The approach set out in this report has been adopted by many Australian regulators over the last 10 years. The ERA considers that this approach is robust, still relevant and fit-for-purpose.

221. Direct debt raising costs will be recompensed in proportion to the average annual issuance, and will cover:

- gross underwriting fees
- legal and roadshow fees
- company credit rating fees
- issue credit rating fees
- registry fees
- paying fees.

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79 ERA, *Final Determination 2018 and 2019 Weighted Average Cost of Capital for the Freight and Urban Networks and Pilbara Railways*, August 2019, pp. 32-34.

80 ERA, *Final Rate of Return Guidelines (2018),* December 2018*,* p. 35.

81 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, pp. 81-84.

82 The Allen Consulting Group, *Debt and Equity Raising Transaction Costs: Final Report*, December 2004.

222. Indirect costs should not be included in the estimate of debt-raising costs and will not be compensated.

223. For the Pilbara networks the ERA applies an annual allowance of 0.10 per cent for debt-raising costs.

#### *8.3.3.1 Debt hedging costs*

224. As a 10-year trailing average cost of debt is to be used for the Pilbara networks there is no need for an efficient benchmark to enter into hedging arrangements.

225. Accordingly, the ERA does not include an allowance for hedging costs.

# 9. Inflation

226. Inflation is the rate of change in the general level of prices of goods and services.

227. Debt and equity investors will require compensation for inflation.

228. Under section 46 of the PNAC, pricing for a light regulation network may be determined by the network on a real or nominal basis:

> 46. Real or nominal pricing
>
> Pricing for a light regulation network may be determined on a real or nominal basis but the methodology chosen by the NSP must be applied consistently.

229. Under a nominal pricing method, a network would use a nominal WACC, which incorporates the real rate of return compounded with a rate that reflects expectations of inflation. This approach requires no adjustment for inflation and an inflation forecast is not needed.

230. Under a real pricing method, a network would use a real WACC. The real WACC is obtained from the nominal WACC by removing expected inflation ($\pi$) from the nominal pre-tax WACC, as follows:

$$WACC_{real} = \frac{(1+ WACC_{nom})}{(1+\pi)} - 1 \qquad \text{(equation 6)}$$

where:

$WACC_{real}$ is the real pre-tax weighted average cost of capital

$WACC_{nom}$ is the nominal pre-tax weighted average cost of capital

$\pi$ is expected inflation.

231. Under the real pricing method:

- Expected inflation is removed from the nominal WACC and a real WACC is applied to the capital base.
- Compensation for inflation is provided through adjusting the capital base for actual inflation, rather than providing it through the WACC.

232. The use of the real pricing method requires an inflation forecast that matches the term of the WACC.

233. The ERA uses the Treasury bond implied inflation approach for the purpose of estimating inflation.

## 9.1 Public submissions

234. No public submissions addressed inflation.

## 9.2 Final decision

235. The ERA will continue to use the Fisher equation and the observed yields of the following bonds to calculate forecast inflation:

- 10-year Commonwealth Government Securities, which reflect a market-based estimate of the nominal risk free rate.
- 10-year Indexed Treasury bonds, which reflect a market-based estimate of a real risk free rate.

236. The Fisher equation can be expressed in the equation below:

$$\pi = \frac{(1+ R_f)}{(1+ R_{Rf})} - 1 \qquad \text{(equation 7)}$$

where:

$\pi$ is the expected inflation rate

$R_f$ is the ten-year nominal risk free rate of return estimated on Treasury bonds

$R_{Rf}$ is the ten-year real risk free rate of return estimated on Treasury indexed bonds.

237. The ERA estimates the expected inflation rate by adopting an averaging period of 40 trading days. The approach uses linear interpolation to derive the daily point estimates of both the nominal 10-year risk free rate and the real 10-year risk free rate, for use in the Fisher equation.[83]

238. The ERA supports the Treasury bond implied inflation approach as:

- It uses both nominal and real risk free rates directly observed in the market, which includes information on the market's view of the expected inflation rate. The rationale for using market-based approaches is that market prices reflect the aggregation of diverse market participant expectations.
- It is a dynamic market measure that is updated daily.
- It is not driven by static policy targets.
- It is consistent with market forecasts built into other WACC parameters.

239. The ERA estimates the expected inflation rate consistent with the estimate of the risk free rate and adopts an averaging period of 40 business days to 30 June 2021.

240. For the Pilbara networks rate of return decision, the ERA estimates a forecast inflation rate of 2.16 per cent for the 40-day averaging period to 30 June 2021.

[83] It is not common to observe a Commonwealth Government Security bond with an expiry date that exactly matches that of the regulatory period end. To overcome this, two bonds are selected that fall on either side of the end day of the pricing period. The dates on these bonds are referred to as the 'straddle' dates. Linear interpolation estimates the yields on the regulatory or pricing period end date by assuming a linear increase in yields between the straddle dates on the two bonds observed.

# 10. Value of imputation credits (gamma)

241. The imputation tax system prevents corporate profits from being taxed twice. Under the Australian imputation tax system, franking credits are distributed to investors at the time that dividends are paid and provide an offset to those investors' taxation liabilities.

242. The gamma parameter accounts for the reduction in the effective corporate taxation that arises from the distribution of franking credits to investors. Generally, investors able to use franking credits will accept a lower required rate of return, before personal tax, on an investment that has franking credits, compared with an investment that has similar risk and no franking credits.

243. Gamma is commonly estimated through the Monkhouse formula as the product of the distribution rate and the utilisation rate, as follows:[84]

gamma = distribution rate x utilisation rate (equation 8)

244. The distribution rate represents the proportion of imputation credits created that is expected to be distributed to investors. The distribution of franking credits differs among companies, primarily as a result of differences in shares of profit that are liable for taxation and the proportion of profits paid as dividends.

245. The utilisation rate is the weighted average of the utilisation rates of individual investors, with investors able to fully use the credits having a rate of one and those unable to use them having a rate of zero.

246. The ERA has used a gamma of 0.5 for its recent energy networks' revenue determinations.[85] [86]

247. The ERA's preliminary view in the Pilbara networks issues paper was to use a gamma of 0.5, being the product of the distribution rate of 0.9 and a utilisation rate of 0.6.

## 10.1 Public submissions

248. No public submissions addressed the subject of gamma.

## 10.2 Final decision

249. The ERA maintains its position on gamma from the issues paper.

250. For the rate of return for the Pilbara networks the ERA will determine gamma through the following approach:

- Gamma will be determined through the Monkhouse formula as the product of the distribution rate and utilisation rate. The distribution rate and utilisation rate are separately estimated.

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84 Officer, B., *The cost of capital of a company under an imputation tax system*, Accounting and Finance, May 1994.

85 ERA, *Final Rate of Return Guidelines,* December 2018*,* p. 40.

86 ERA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network – Appendix 5 Return on Regulated Capital Base,* September 2018, p. 104.

- The distribution rate represents the proportion of imputation credits generated by a benchmark efficient entity that is expected to be distributed to investors. The ERA considers that the distribution rate is a firm-specific rather than a market-wide parameter.
- To estimate the distribution rate, the ERA relies on 0.9 for the distribution rate from financial reports of the 50-largest listed firms on the Australian Securities Exchange.
- The ERA considers that the distribution rate should be at least 0.9. Dr Lally found that the distribution rate may be slightly higher with the removal of foreign operations.[87,88]
- The utilisation rate is the weighted average over the utilisation rates of individual investors, with investors able to fully use the credits having a rate of one and those unable to use them having a rate of zero. The ERA considers that the utilisation rate is a market-wide rather than a firm-specific parameter.
- To estimate the utilisation rate, the ERA relies on the equity ownership approach to determine the percentage of domestic investors in the Australian equity market. The utilisation rate is estimated for all Australian equity from the national accounts of the ABS.[89, 90] The ERA estimates the utilisation rate to be 0.6, based on a five-year average to March 2021 and rounded to the first decimal point. The ERA considers that a utilisation rate of 0.6 is appropriate.

251. For the Pilbara networks rate of return the ERA will use a gamma of 0.5, being the product of the distribution rate of 0.9 and a utilisation rate of 0.6.

87 Lally, M., *The Estimation of Gamma: Review of Recent Evidence,* December 2018.

88 Lally, M., *Estimating the distribution rate for imputation credits for the top 50 ASX companies,* December 2019.

89 Australian Bureau of Statistics, *Australian National Accounts: Finance and Wealth, Catalogue 5232.0, Tables 48 and 49*.

90 Australian Energy Regulator, *Rate of return Annual Update,* December 2020, p. 26.

# 11. Final decision rate of return

252. Taking into account the information provided through public submissions, the ERA has determined its Pilbara networks WACC approach, as set out in the preceding chapters.

253. Based upon the assessment of each rate of return parameter, the rates of return applied to the Pilbara networks are detailed in Table 4.

254. For the Pilbara networks the ERA has determined:

- Alinta Energy's nominal pre-tax WACC is 7.04 per cent.
- Horizon Power's nominal pre-tax WACC is 6.31 per cent.

**Table 4: Final decision Pilbara network rate of return for period to 30 June 2021**

| Parameter | Alinta Port Hedland network | Horizon Power coastal network |
|---|---|---|
| **Cost of equity parameters** | | |
| Nominal risk free rate (%) | 1.60 | 1.60 |
| Equity beta | 0.90 | 0.80 |
| Market risk premium (%) | 5.90 | 5.90 |
| **Nominal after tax return on equity (%)** | **6.91** | **6.32** |
| **Cost of debt parameters** | | |
| Benchmark credit rating | BBB- | BBB |
| Cost of debt (%) | 5.306 | 4.832 |
| Debt issuing costs (%) | 0.10 | 0.10 |
| **Nominal cost of debt (%)** | **5.406** | **4.932** |
| **Other parameters** | | |
| Debt proportion (gearing) (%) | 40 | 45 |
| Forecast inflation rate (%) | 2.16 | 2.16 |
| Franking credits (gamma) (%) | 50 | 50 |
| Corporate tax rate (%) | 30 | 30 |
| **Weighted Average Cost of Capital** | | |
| Nominal after-tax WACC (%) | 6.31 | 5.70 |
| Real after-tax (WACC) (%) | 4.06 | 3.46 |
| **Nominal pre-tax WACC (%)** | **7.04** | **6.31** |
| **Real pre-tax (WACC) (%)** | **4.78** | **4.06** |

*Source: ERA analysis*