DRAFT DECISION
Powerlink Queensland
Transmission Determination

2022 to 2027

Attachment 4
Regulatory depreciation

September 2021

AUSTRALIAN ENERGY REGULATOR

Inquiries about this publication should be addressed to:

Australian Energy Regulator
GPO Box 520
Melbourne Vic 3001

Tel: 1300 585 165
Email: AERInquiry@aer.gov.au

AER reference: 65444

Note

This attachment forms part of the AER's draft decision on Powerlink Queensland's transmission network revenue determination for the 2022–27 regulatory control period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Maximum allowed revenue

Attachment 2 – Regulatory asset base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

Attachment 8 – Efficiency benefit sharing scheme

Attachment 9 – Capital expenditure sharing scheme

Attachment 10 – Service target performance incentive scheme

Attachment 11 – Pricing methodology

Attachment 12 – Pass through events

Attachment 13 – Demand management innovation allowance mechanism

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4 Regulatory depreciation

Regulatory depreciation is the amount provided so capital investors recover their investment over the economic life of the asset (return of capital). In deciding whether to approve the depreciation schedules submitted by Powerlink, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for Powerlink's 2022–27 regulatory control period.[1] The regulatory depreciation amount is the net total of the straight-line depreciation less the indexation of the RAB.

This attachment sets out our draft decision on Powerlink's regulatory depreciation amount. It also presents our draft decision on the proposed depreciation schedules, including an assessment of the proposed asset lives used for calculating the straight-line depreciation.

4.1 Draft decision

We determine a regulatory depreciation amount of $946.5 million (nominal) for Powerlink for the 2022–27 regulatory control period. Powerlink proposed a regulatory depreciation amount of $943.7 million (nominal).[2] Our draft decision represents an increase of $2.8 million (0.3 per cent) on the proposed amount. This increase is primarily the result of our draft decision on the opening RAB at 1 July 2022 (Attachment 2).

For our draft decision on Powerlink's regulatory depreciation:

- we accept Powerlink's proposed straight-line depreciation method used to calculate the regulatory depreciation amount.
- we accept Powerlink's proposed application of the year-by-year tracking approach to implement straight-line depreciation of its existing assets, and its forecast capex (section 4.4.1).
- we accept Powerlink's proposed asset classes and standard asset lives (section 4.4.3), including the proposed extension of the asset life for the existing value assets in its 'Substations secondary systems' asset class (section 4.4.2)
- we made determinations on other components of Powerlink's proposal which affect the forecast regulatory depreciation amount—for example, the opening RAB at 1 July 2022 (Attachment 2), expected inflation (Attachment 3), and forecast capital expenditure (Attachment 5) including its effect on the projected RAB over the 2022–27 period.[3]

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1 NER, cll. 6A.5.4 and 6A.14.1.

2 Powerlink, *2023–27 Revenue proposal, Post-tax revenue model*, January 2021.

3 Our draft decision on the RAB (Attachment 2) also reflects our updates to the WACC for the 2022–27 regulatory control period.

Table 4.1 sets out our draft decision on the annual regulatory depreciation amount for Powerlink's 2022–27 period.

Table 4.1 AER's draft decision on Powerlink's regulatory depreciation for the 2022–27 regulatory control period ($ million, nominal)

	2022–23	2023–24	2024–25	2025–26	2026–27	Total
Straight-line depreciation	326.9	338.6	348.7	356.4	364.9	1735.5
Less: inflation indexation on opening RAB	157.1	157.7	158.6	158.1	157.4	789.0
Regulatory depreciation	**169.8**	**180.9**	**190.1**	**198.3**	**207.4**	**946.5**

Source: AER analysis.

4.2 Powerlink's proposal

For the 2022–27 regulatory control period, Powerlink proposed a total forecast regulatory depreciation amount of $943.7 million (nominal). To calculate the depreciation amount, Powerlink proposed to use:[4]

- the straight-line depreciation method employed in the Australian Energy Regulator's (AER) post-tax revenue model (PTRM)
- the closing RAB value at 30 June 2022 derived from the AER's roll forward model (RFM)
- the proposed forecast capital expenditure (capex) for the 2022–27 period
- an expected inflation rate of 2.25 per cent per annum for the 2022–27 period
- the AER's year-by-year tracking module in the RFM for depreciation of existing assets for the 2022–27 period
- the same asset classes and standard asset lives for depreciating its forecast capex for the 2022–27 period which are consistent with those approved in the 2017–22 transmission determination. Powerlink proposed to extend the asset life for the existing value of assets in its 'Substations secondary systems' asset class. Powerlink also proposed two new asset classes in the PTRM for 'Buildings – capital works' and 'In house software' that were created for straight-line tax depreciation purposes arising from the AER's 2018 tax review (Attachment 7).

Table 4.2 sets out Powerlink's proposed depreciation amount for the 2022–27 period.

[4] Powerlink, *2023–27 Revenue proposal, Post-tax revenue model*, January 2021; Powerlink, *2023–27 Revenue proposal, Roll forward model*, January 2021.

Table 4.2 Powerlink's proposed regulatory depreciation for the 2022–27 regulatory control period ($ million, nominal)

	2022–23	2023–24	2024–25	2025–26	2026–27	Total
Straight-line depreciation	325.7	337.4	347.6	355.2	363.7	1729.5
Less: inflation indexation on opening RAB	156.5	157.1	158.0	157.5	156.8	785.8
Regulatory depreciation	**169.2**	**180.3**	**189.6**	**197.7**	**206.9**	**943.7**

Source: Powerlink, *2023–27 Revenue proposal, Post-tax revenue model*, January 2021.

4.3 Assessment approach

We determine the regulatory depreciation amount using the PTRM as a part of a transmission network service provider's (TNSP) annual building block revenue requirement.[5] The calculation of depreciation in each year is governed by the value of assets included in the RAB at the beginning of the regulatory year, and by the depreciation schedules.[6]

Our standard approach to calculating depreciation is to employ the straight-line method set out in the PTRM. Regulatory practice has been to assign a standard asset life to each category of assets that represents the economic or technical life of the asset or asset class.[7] We must consider whether the proposed depreciation schedules conform to the following key requirements:

- the schedules depreciate using a profile that reflects the nature of the assets or category of assets over the economic life of that asset or category of assets[8] (apart from in certain specified circumstances)[9]
- the sum of the real value of the depreciation that is attributable to any asset or category of assets must be equivalent to the value at which that asset or category of assets was first included in the RAB for the relevant transmission system.[10]

To the extent that a TNSP's revenue proposal does not comply with the above requirements, we must determine the depreciation schedules for calculating the depreciation for each regulatory year.[11]

5 NER, cll. 6A.5.4(a)(3) and 6A.5.4(b)(3).
6 NER, cl. 6A.6.3(a).
7 This is the standard practice for the AER, as well as other jurisdictional regulators. See for example, IPART, *Cost building block model template, 20 June 2014*, Table 1; ERAWA, *Final Decision on Proposed Revisions to the Access Arrangement for the Western Power Network*, September 2012, Appendix 2: Target Revenue Calculation (Revenue Model).
8 NER, cl. 6A.6.3(b)(1).
9 NER, cll. 6A.6.3(b)(1) and 6A.6.3(c).
10 NER, cl. 6A.6.3(b)(2).
11 NER, cl. 6A.6.3(a)(2)(ii).

The regulatory depreciation allowance is an output of the PTRM. We therefore assess Powerlink's proposed regulatory depreciation amount by analysing the proposed inputs to the PTRM for calculating that amount. The key inputs include:

- the opening RAB at 1 July 2022
- the forecast net capex in the 2022–27 regulatory control period[12]
- the expected inflation rate for the above period
- the standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the above period
- the depreciation of existing assets in the opening RAB as at 1 July 2022—calculated in a separate year-by-year depreciation tracking module.

Our draft decision on Powerlink's regulatory depreciation amount reflects our determinations on the opening RAB as at 1 July 2022, expected inflation and forecast net capex (the first three building block components in the above list).[13] Our determinations on these components of Powerlink's proposal are discussed in Attachments 2, 3 and 5 respectively.

In this attachment, we assess Powerlink's proposed standard asset lives against:

- the approved standard asset lives in the transmission determination for the 2017–22 regulatory control period
- the standard asset lives of comparable asset classes approved in our recent transmission determinations for other service providers
- the appropriate economic lives of the assets.

Our default approach for depreciating a service provider's existing assets in the PTRM uses a single remaining asset life for each asset class at the start of a regulatory control period as determined in the RFM. However, Powerlink has proposed to adopt an alternative approach where (in addition to grouping assets by type via asset classes) it tracks its asset classes' remaining asset lives for straight-line depreciation purposes on a year-by-year basis—known as the year-by-year tracking approach. This approach creates multiple remaining asset lives for each asset class depending on when the assets were acquired, rather than using a single weighted average remaining asset life. This approach was included in the latest version of the electricity transmission RFM (version 4) in a separate depreciation tracking module. Powerlink used this version of the RFM and the separate depreciation tracking module to calculate its straight-line depreciation forecast in developing its proposal.

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[12] Capex enters the RAB net of forecast disposals. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the PTRM. Our draft decision on the RAB (Attachment 2) also reflects our updates to the WACC for the 2022–27 regulatory control period.

[13] Our final decision will update the opening RAB as at 1 July 2022 for revised estimates of actual capex and inflation.

4.3.1 Interrelationships

The regulatory depreciation amount is a building block component of the annual building block revenue requirement.[14] Higher (or quicker) depreciation leads to higher revenues over the regulatory control period. It also causes the RAB to reduce more quickly (excluding the impact of further capex). This reduces the return on capital amount, although this impact is usually smaller than the increased depreciation amount in the short to medium term.[15]

Ultimately, however, a TNSP can only recover the capex that it incurred on assets once. The depreciation amount reflects how quickly the RAB is being recovered, and it is based on the asset lives used in the depreciation calculation. It also depends on the level of the opening RAB and the forecast capex. Any increase in these factors also increases the depreciation amount.

The RAB has to be maintained in real terms, meaning the RAB must be indexed for expected inflation.[16] The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening RAB.[17] As noted in Attachment 1, the total annual building block revenue requirement is calculated by adding up the return on capital, depreciation, operating expenditure (opex), tax, and revenue adjustments building blocks. Because inflation on the RAB is accounted for in both the return on capital—based on a nominal rate—and the depreciation calculations—based on an indexed RAB—an adjustment must be made to the revenue requirement to prevent compensating twice for inflation.

To avoid this double compensation, we make an adjustment by subtracting the annual indexation gain on the RAB from the calculation of total revenue.[18] Our standard approach is to subtract the indexation of the opening RAB—the opening RAB multiplied by the expected inflation for the year—from the RAB depreciation. The net result of this calculation is referred to as regulatory depreciation.[19] Regulatory depreciation is the amount used in the building block calculation of total revenue to ensure that the revenue equation is consistent with the use of a RAB, which is indexed for inflation annually.

This approach produces the same total revenue requirement and RAB as if a real rate of return had been used in combination with an indexed RAB. Under an alternative

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14 The PTRM distinguishes between straight-line depreciation and regulatory depreciation, with regulatory depreciation being straight-line depreciation minus the indexation adjustment.

15 This is generally the case because the reduction in the RAB amount feeds into the higher depreciation building block, whereas the reduced return on capital building block is proportionate to the lower RAB multiplied by a nominal rate of return (WACC).

16 NER, cll. 6A.5.4(b)(1) and 6A.6.1(e)(3).

17 AER, *Rate of return instrument*, cll. 1, 3(a) and 36(c), December 2018.

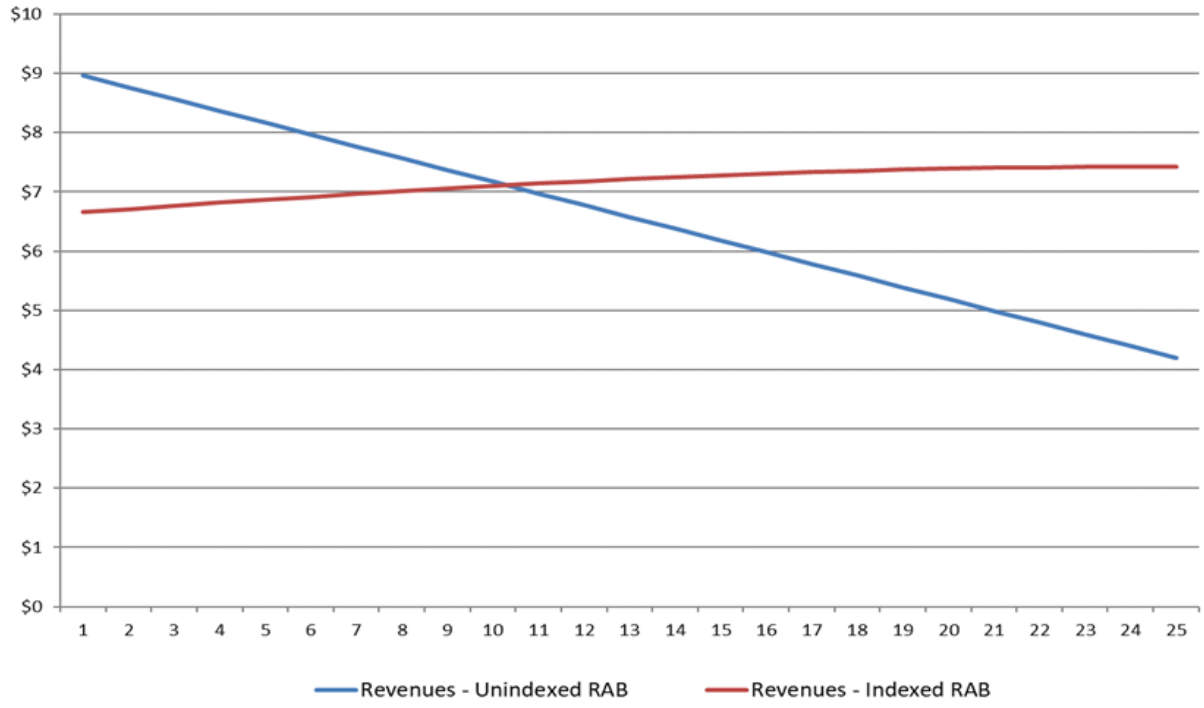
18 NER, cl. 6A.5.4(b)(1)(ii).

19 If the asset lives are extremely long, such that the RAB depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. The indexation adjustment is greater than the straight-line depreciation in such circumstances.

approach where a nominal rate of return was used in combination with an un-indexed (historical cost) RAB, no adjustment to the depreciation calculation of total revenue would be required. This alternative approach produces a different time path of total revenue compared to our standard approach. In particular, overall revenues would be higher early in the asset's life (as a result of more depreciation being returned to the TNSP) and lower in the future—producing a steeper downward sloping profile of total revenue.[20] Under both approaches, the total revenues being recovered are in present value neutral terms—that is, returning the initial cost of the RAB.

Figure 4.1 shows the recovery of revenue under both approaches using a simplified example.[21] Indexation of the RAB and the offsetting adjustment made to depreciation results in smoother revenue recovery profile over the life of an asset than if the RAB was un-indexed.

Figure 4.1 Revenue path example – indexed vs un-indexed RAB ($ nominal)



Source: AER analysis.

[20] A change of approach from an indexed RAB to an un-indexed RAB would result in an initial step change increase in revenues to preserve net present value (NPV) neutrality.

[21] The example is based on the initial cost of an asset of $100, a standard economic life of 25 years, a real WACC of 2.5%, expected inflation of 2.4% and nominal WACC of 4.96%. Other building block components such as opex, tax and capex are ignored for simplicity as they would affect both approaches equally.

Figure 2.1 (in Attachment 2) shows the relative size of the inflation and straight-line depreciation, and their impact on the RAB based on Powerlink's proposal. A 10 per cent increase in the straight-line depreciation causes unsmoothed revenues ($ nominal) to increase by about 5.4 per cent.[22]

4.4 Reasons for draft decision

We accept Powerlink's proposed straight-line depreciation method for calculating the regulatory depreciation amount as set out in the PTRM. However, we increased Powerlink's proposed forecast regulatory depreciation amount for the 2022–27 regulatory control period by $2.8 million (0.3 per cent) to $946.5 million (nominal).

This increase is primarily the result of our draft decision on the opening RAB as at 1 July 2022 (Attachment 2).[23]

4.4.1 Year-by-year tracking approach

Powerlink has proposed a change in approach from the weighted average remaining life (WARL) approach (approved for the 2017–22 regulatory control period to the year-by-year tracking approach going forward. We accept Powerlink's proposed year-by-year tracking approach meets the requirements of the NER.

Applying the year-by-year tracking approach for Powerlink's 2022–27 period has the effect of increasing forecast straight-line depreciation by around $87 million (nominal) over the period in comparison to the WARL approach applied in the previous determination.[24] Our draft decision is to accept this approach as we consider that it results in depreciation schedules that meet the requirements of the NER by:[25]

- reflecting the nature of the assets and their economic life
- ensuring that total depreciation (in real terms) equals the initial value of the assets
- allowing the economic lives of existing assets to be consistent with those determined on a prospective basis in our 2017–2022 transmission determination.

Powerlink used the AER's depreciation module in the RFM to implement year-by-year tracking. We have reviewed Powerlink's application of this module and corrected some

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22 We have analysed the sensitivity of straight-line depreciation relative to total revenue based on input data provided in Powerlink's proposal PTRM.

23 Our draft decision also reflects our draft decision updates to expected inflation and the rate of return and its effect on the projected RAB over the 2022–27 regulatory control period.

24 This relates to the profile of the return of capital over the life of the assets. It does not provide more returns overall in present value terms. This increase to depreciation in the 2022–27 regulatory control period will result in lower depreciation in future regulatory control periods,

25 NER, cl. 6A.6.3(b).

minor input errors and updates, consistent with those made to the RAB as discussed in Attachment 2.[26]

4.4.2 Asset life extension

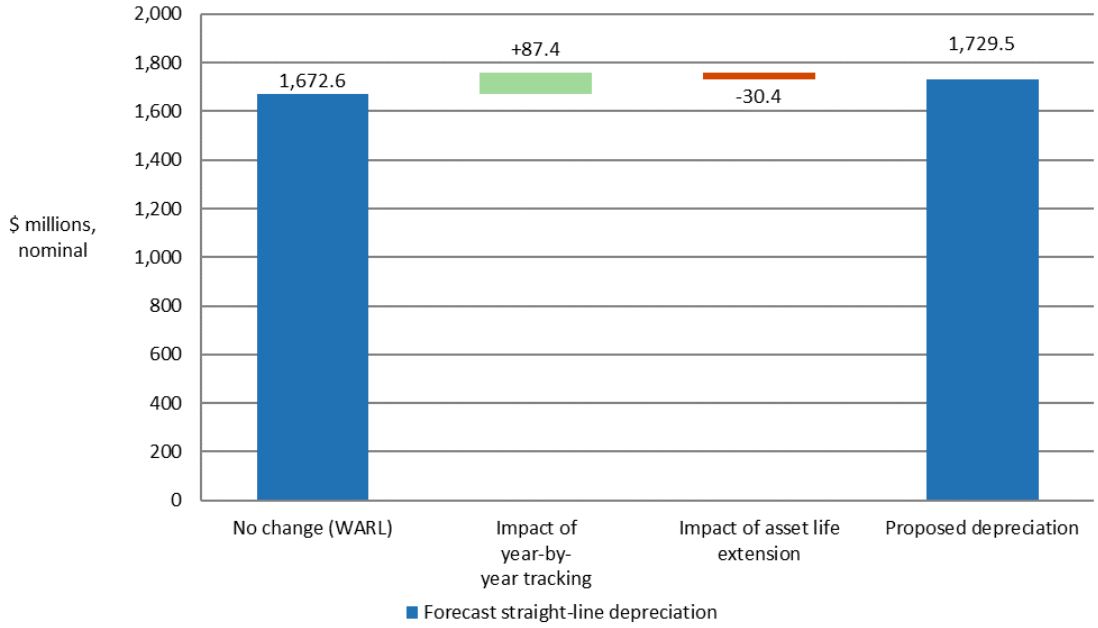
Powerlink proposed to extend the remaining life for its existing 'Substations secondary systems' asset class. These assets were calculated to have a remaining asset value of $263.3 million (nominal) at 1 July 2022 and an average remaining asset life of 4.8 years. Powerlink proposed to extend the remaining life of these assets to 6 years. Our draft decision is to accept the extended remaining life for these assets. We are satisfied that Powerlink's proposal is reasonable and results in a depreciation schedule that better reflects the expected economic life of the existing 'Substations secondary systems' asset class.

In Powerlink's consultation with consumers while developing its revenue proposal, consumers raised concerns about the short-term revenue impact of Powerlink's proposed move from the WARL approach to the year-by-year tracking approach to depreciation. As noted above, we estimate the impact of applying year-by-year tracking to be around $87 million (nominal) over the 2022–27 regulatory control period. Following consultation with consumers, Powerlink reviewed the remaining lives of its current assets and noted that the assets in its 'Substations secondary systems' class were likely to have an economic life longer than the assumed remaining life calculated in the regulatory models.

Extending the remaining life of its 'Substations secondary systems' asset class reduces forecast straight-line depreciation by around $30 million (nominal) over the 2022–27 period. Therefore, the impact of moving to year-by-year tracking ($87 million) is reduced to around $57 million (nominal) over the period. Figure 4.2 shows the impact of applying the year-by-year tracking approach and the offsetting asset life extension of Powerlink's 'Substations secondary systems' asset class.

[26] AER, *Draft decision, Powerlink transmission determination 2022–27, Attachment 2 – Regulatory asset base*, September 2021, p. 14. Amendments include updates for actual 2020–21 CPI and 2021–22 return on debt that became available subsequent to Powerlink's proposal and corrections to some rate of return and equity raising cost inputs for rounding errors.

Figure 4.2 Impact to straight-line depreciation of year-by-year tracking and asset life extension ($ million, nominal)



Source: AER analysis.

4.4.3 Standard asset lives

We accept Powerlink's proposed standard asset lives as we consider they are consistent with those approved for the 2017–22 regulatory control period and are largely comparable with the standard asset lives approved in our recent determinations for other TNSPs.[27] We also accept the introduction of two new asset classes arising from the 2018 tax review (Attachment 7).

In order to implement the changes arising from the 2018 tax review, Powerlink allocated some of its forecast capex related to buildings and IT assets for the 2022–27 period into two new asset classes for 'Buildings - capital works' and 'In-house software'.

Discussed further in Attachment 7, the tax review acknowledged different methods of calculation of tax depreciation for different asset classes, which resulted in the addition of these asset classes to the PTRM and a reallocation of forecast capex to these asset classes. For each asset class a standard asset life has been proposed that is consistent with the standard asset lives determined for these asset classes in recent AER decisions. Therefore, for the 'Buildings - capital works' asset class we accept assigning a standard asset life of 40 years, while for the 'In-house software' asset class we accept assigning a standard asset life of 5 years. These standard asset lives are

[27] No benchmark equity raising costs were forecast. Accordingly, no standard asset life has been determined.

also consistent with the lives approved in the 2017–22 transmission determination for Powerlink's existing 'Commercial buildings' and 'Computer equipment' asset classes respectively.

Table 4.3 sets out our draft decision on Powerlink's standard asset lives for the 2022−27 period. We are satisfied that:[28]

- the standard asset lives and depreciation approach more broadly would lead to a depreciation schedule that reflects the nature of the assets over the economic lives of the asset classes, and
- the sum of the real value of the depreciation attributable to the assets is equivalent to the value at which the assets were first included in the RAB for Powerlink.

[28] NER, cll. 6A.6.3(b)(1)–(2).

Table 4.1 AER's draft decision on Powerlink's standard asset lives at 1 July 2022 (years)

Asset class	Standard asset life
Transmission lines - overhead	50.0
Transmission lines - underground	45.0
Transmission lines - refit	30.0
Substations primary plant	40.0
Substations secondary systems	15.0
Communications other assets	15.0
Comms - civil works	40.0
Network switching centres	12.0
Land	n/a
Easements	n/a
Commercial buildings	40.0
Computer equipment	5.0
Office furniture & miscellaneous	7.0
Office machines	7.0
Vehicles	7.0
Moveable plant	7.0
Insurance spares	n/a
Buildings - capital works	40.0
In-house software	5.0

Source: AER analysis.

n/a: not applicable. We have not assigned a standard asset life to the 'Land', 'Easement' and 'Insurance spares' asset classes because these assets are not subject to depreciation.

A. Shortened forms

Shortened form	Extended form
AER	Australian Energy Regulator
Capex	Capital expenditure
NER	National Electricity Rules
NPV	Net present value
Opex	Operating expenditure
PTRM	Post-tax revenue model
RAB	Regulatory asset base
RFM	Roll forward model
TNSP	Transmission network service provider
WACC	Weighted average cost of capital
WARL	Weighted average remaining lives