DRAFT DECISION
ElectraNet transmission determination
2018 to 2023

Attachment 5 – Regulatory depreciation

October 2017

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on ElectraNet's transmission determination for 2018–23. 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 – Value of imputation credits

Attachment 5 – Regulatory depreciation

Attachment 6 – Capital expenditure

Attachment 7 – Operating expenditure

Attachment 8 – Corporate income tax

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Attachment 10 – Capital expenditure sharing scheme

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Attachment 13 – Pass through events

Attachment 14 – Negotiated services

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Shortened forms

Shortened form	Extended form
AARR	aggregate annual revenue requirement
AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
ASRR	annual service revenue requirement
augex	augmentation expenditure
capex	capital expenditure
CCP	Consumer Challenge Panel
CESS	capital expenditure sharing scheme
CPI	consumer price index
DMIA	demand management innovation allowance
DRP	debt risk premium
EBSS	efficiency benefit sharing scheme
ERP	equity risk premium
MAR	maximum allowed revenue
MRP	market risk premium
NEL	national electricity law
NEM	national electricity market
NEO	national electricity objective
NER	national electricity rules
NSP	network service provider
NTSC	negotiated transmission service criteria
opex	operating expenditure
PPI	partial performance indicators
PTRM	post-tax revenue model
RAB	regulatory asset base
RBA	Reserve Bank of Australia
repex	replacement expenditure
RFM	roll forward model
RIN	regulatory information notice

Shortened form	Extended form
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	service target performance incentive scheme
TNSP	transmission network service provider
TUoS	transmission use of system
WACC	weighted average cost of capital

5 Regulatory depreciation

Depreciation is the allowance 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 ElectraNet, we make determinations on the indexation of the regulatory asset base (RAB) and depreciation building blocks for ElectraNet's 2018–23 regulatory control period. The regulatory depreciation allowance is the net total of the straight-line depreciation less the indexation of the RAB.

This attachment sets out our draft decision on ElectraNet's regulatory depreciation allowance. It also presents our draft decision on the proposed depreciation schedules, including an assessment of the proposed asset lives used for forecasting depreciation.

5.1 Draft decision

We do not accept ElectraNet's proposed regulatory depreciation allowance of $378.7 million ($ nominal) for the 2018–23 regulatory control period. Instead, we determine a regulatory depreciation allowance of $314.6 million ($ nominal) for ElectraNet. This represents a decrease of $64.2 million (or 16.9 per cent) on the proposed amount. In coming to this decision:

- We accept ElectraNet's proposed real straight-line method used to calculate the regulatory depreciation allowance.
- We largely accept ElectraNet's proposed asset classes and standard asset lives, with the following exceptions:
    - We do not accept the proposed standard asset life of 27 years for the 'Transmission lines – life extension' asset class. This is because we consider this standard asset life does not reflect the economic life of the assets in this asset class.[1] We determine a standard asset life of 48.1 years, which reflects the weighted average of the technical lives of the assets used for the forecast transmission line life extension works for the 2018–23 regulatory control period.
    - We also have not accepted the proposed standard asset life for the 'Synchronous condensers' asset class at this time. The assets to be allocated to this class relate to contingent projects. ElectraNet's revenues are not affected by this decision as such projects do not earn a return until they are triggered and the revenue determination is amended.

  We consider our decision on ElectraNet's standard asset lives would lead to a depreciation schedule that reflects the nature of the assets over their economic lives (section 5.4.3).[2]

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1 NER, cl. 6A.6.3(b)(1).

2 NER, cl. 6A.6.3(b)(1).

- We accept ElectraNet's proposed year-by-year tracking approach to determining straight-line depreciation (section 5.4.1).
- We accept ElectraNet's proposed accelerated depreciation of certain redundant asset and those due for replacement over the 2018–23 regulatory control period (section 5.4.2).
- We initiated with ElectraNet an agreed approach to depreciating the amount in its 'Working capital' asset class from 1 July 2018. This asset class includes assets that were works in progress at the time the RAB was set and had never been depreciated, despite now being fully commissioned.[3]
- We made determinations on other components of ElectraNet's proposal that also affect the forecast regulatory depreciation allowance—the opening RAB as at 1 July 2018 (attachment 2), expected inflation rate (attachment 3) and forecast capital expenditure (attachment 6). The revised expected inflation rate had a significant impact on the indexation on opening RAB adjustment in Table 5.1.

Table 5.1 sets out our draft decision on the annual regulatory depreciation allowance for ElectraNet's 2018–23 regulatory control period.

Table 5.1 AER's draft decision on ElectraNet's regulatory depreciation allowance for the 2018–23 regulatory control period ($million, nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Straight-line depreciation	106.7	128.7	134.5	138.6	140.0	648.6
Less: inflation indexation on opening RAB	64.2	65.7	66.8	68.1	69.2	334.0
Regulatory depreciation	**42.5**	**63.0**	**67.7**	**70.5**	**70.8**	**314.6**

Source: AER analysis.

5.2 ElectraNet's proposal

For the 2018–23 regulatory control period, ElectraNet proposed a forecast regulatory depreciation allowance of $378.7 million ($ nominal). To calculate the depreciation allowance, ElectraNet proposed:[4]

- to use the AER's post-tax revenue model (PTRM) and its own year-by-year tracking depreciation model, which implements the straight-line method to calculate the forecast depreciation for the 2018–23 regulatory control period
- the closing RAB value as at 30 June 2018 derived from our roll forward model (RFM)

[3] A working capital allowance is not required under the AER's regulatory framework. The label for this asset class would be better described now as completed works, but the existing label has been maintained for consistency with past models.

[4] ElectraNet, *Revenue Proposal 2019 -2023, Attachment 5, Regulatory Depreciation*, March 2017, pp. 6-10.

- to use proposed forecast capex for the 2018–23 regulatory control period
- to use the asset classes and standard asset lives for the 2018–23 regulatory control period which are consistent with those approved in the 2014–18 transmission determination. In addition, ElectraNet proposed two new asset classes—'Synchronous condensers' and 'Communication – Other (post 2018)' with standard asset lives of 30 years and 10 years respectively
- accelerated depreciation on certain assets that are no longer used or to be replaced over the 2018–23 regulatory control period.

The proposed regulatory depreciation is also significantly affected by the expected inflation rate.[5] ElectraNet has proposed a change to the way this is estimated. This is discussed in attachment 3.

Table 5.2 sets out ElectraNet's proposed depreciation allowance for the 2018–23 regulatory control period.

Table 5.2 ElectraNet's proposed regulatory depreciation for the 2018–23 regulatory control period ($million, nominal)

	2018-19	2019-20	2020-21	2021-22	2022-23	Total
Straight-line depreciation	105.5	126.8	131.9	135.8	137.6	637.5
Less: inflation indexation on opening RAB	50.3	51.2	51.8	52.5	53.1	258.8
Regulatory depreciation	**55.3**	**75.6**	**80.2**	**83.2**	**84.5**	**378.7**

Source: ElectraNet, *Revenue Proposal 2019 -2023, Attachment 5, Regulatory Depreciation, 28 March 2017,* p. 9.

5.3 Assessment approach

We determine the regulatory depreciation allowance using the post-tax revenue model (PTRM) as a part of a TNSP's annual building block revenue requirement.[6] 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.[7]

Our standard approach to calculating depreciation is to employ the straight-line method as 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.[8] We must consider whether the proposed depreciation schedules conform to the following key requirements:

5 ElectraNet, *Revenue Proposal 2019 -2023, Attachment 5, Regulatory Depreciation*, March 2017, p. 10.

6 NER, cll. 6A.5.4(a)(3) and 6A.5.4(b)(3).

7 NER, cl. 6A.6.3(a).

8 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*

- 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.[9]
- The sum of the real value of the depreciation 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]

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

- the opening RAB as at 1 July 2018
- the expected inflation rate for the 2018–23 regulatory control period
- the forecast net capex in 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 associated with the opening regulatory asset base (RAB) as at 1 July 2018—calculated in a separate year-by-year tracking depreciation model.

Our draft decision on ElectraNet's regulatory depreciation allowance reflects our determinations on the opening RAB as at 1 July 2018, expected inflation and forecast capex (the first three building block components in the above list).[12] Our determinations on these components of ElectraNet's proposal are discussed in attachments 2, 3 and 6 respectively.

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

- the approved standard asset lives in the transmission determination for the 2013–18 regulatory control period
- the standard asset lives of comparable asset classes approved in our recent transmission determinations for other TNSPs.

We usually depreciate a service provider's existing assets in the PTRM by using remaining asset lives at the start of a regulatory control period. Our preferred method to establish a remaining asset life for each asset class is the weighted average

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Access Arrangement for the Western Power Network, September 2012, Appendix 2: Target Revenue Calculation (Revenue Model).

9 NER, cl. 6A.6.3(b)(1).

10 NER, cl. 6A.6.3(b)(2).

11 NER, cl. 6A.6.3(a)(2)(ii).

12 Our final decision will update the opening RAB as at 1 July 2018 for revised estimates of actual capex and inflation.

remaining life approach.[13] The weighted average method rolls forward the remaining asset life for an asset class from the beginning of the previous regulatory control period. This method reflects the mix of assets within that asset class. It also reflects when the assets were acquired over that period and the remaining asset lives of existing assets at the end of that period. The remaining values of all assets are used as weights at the end of the period. However, ElectraNet has adopted an alternative approach—year-by-year tracking—to implement straight-line depreciation. We have assessed whether this change of approach would meet the depreciation provisions of the NER, as discussed in section 5.4.1**Error! Reference source not found.**.

5.3.1 Interrelationships

The regulatory depreciation allowance 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 allowance, although this impact is usually smaller than the increased depreciation allowance in the short to medium term.[15]

Ultimately, however, a TNSP can only recover the capex it has incurred on assets once. The depreciation allowance reflects how quickly the RAB is being recovered and is based on the remaining and standard 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 allowance.

The RAB has to be maintained in real terms, which means 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, 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.

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13 We consider this depreciation method to be a generally superior approach. The reasons are outlined in our decision on the roll forward model for electricity transmission network service providers. See AER, *Explanatory statement, Proposed amendment, Electricity transmission network service providers, Roll forward model*, August 2010, pp. 5–6.

14 The PTRM distinguishes between straight-line depreciation and regulatory depreciation, the difference being that regulatory depreciation is the 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 the WACC.

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

17 NER, cll. 6A.6.2(a) and 6A.6.2(d)(2).

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 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 5.1 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.

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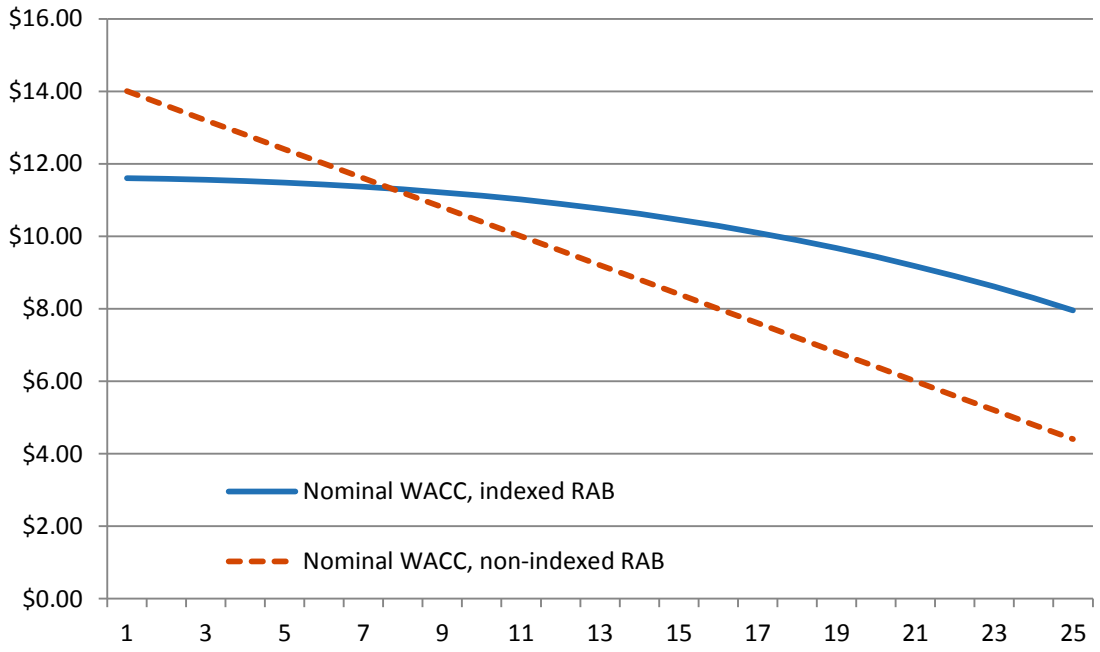
18 NER, cl. 6A.5.4(b)(1)(ii).

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 RAB depreciation in such circumstances

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 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 7.32%, expected inflation of 2.5% and nominal WACC of 10%. Other building block components such as opex, tax and capex are ignored for simplicity as they would affect both approaches equally.

Figure 5.1 Revenue path example – indexed vs un-indexed RAB ($ nominal)



Source: AER analysis.

Figure 2.1 in attachment 2 shows the relative size of the inflation and RAB depreciation and their impact on the RAB based on ElectraNet's proposal. A ten per cent increase in the RAB (straight-line) depreciation causes revenues to increase by about 3.7 per cent.

5.4 Reasons for draft decision

We accept ElectraNet's proposed straight-line depreciation method for calculating the regulatory depreciation allowance as set out in the PTRM and its depreciation model. We also accept the majority of ElectraNet's proposed asset classes and standard asset lives, except for the 'Transmission lines – life extension' and 'Synchronous condensers' asset classes. Overall, we reduced ElectraNet's proposed forecast regulatory depreciation allowance for the 2017–22 regulatory control period by $64.2 million (or 16.9 per cent) to $314.6 million. This reduction reflects our amendment to the standard asset life for the 'Transmission lines – life extension' asset class. Our determinations regarding other components of ElectraNet's revenue proposal also affect the forecast regulatory depreciation allowance—the opening RAB as at 1 July 2018 (attachment 2), expected inflation rate (attachment 3) and forecast capital expenditure (attachment 6).

In our assessment of ElectraNet's proposal, we focussed on the following aspects:

- year-by-year tracking of depreciation
- accelerated depreciation of certain assets that are no longer used or to be replaced over the 2018–23 regulatory control

- changes to some standard asset lives
- depreciation of the 'Working capital' asset class.

Each of these is discussed in turn in the following subsections.

5.4.1 Year by year tracking

ElectraNet proposed the year-by-year tracking approach to implement straight-line depreciation. This represents a change from the current depreciation approach to determining remaining asset lives at the end of each regulatory control period. We accept that the year-by-year tracking approach meets the requirements of the NER in that it:

- produces depreciation schedules that reflect the nature of the assets and their economic life[22]
- ensures that total depreciation (in real terms) equals the initial value of the assets[23]
- allows the economic lives of existing assets to be consistent with those determined in previous decisions.[24]

Although we have accepted the year-by-year tracking approach for ElectraNet, we maintain our preference for the weighted average remaining life method, which is our standard approach used in other decisions. We prefer the weighted average remaining life method because it:

- meets the requirements of the NER, in that it produces depreciation schedules that align with the economic life of the assets
- avoids the complexity inherent in the year-by-year tracking approach, which also brings with it additional administration costs and an increased risk of error
- reduces the variability in depreciation schedules that may arise under year-by-year tracking.

We have corrected small errors in the depreciation tracking model, such as disposals not being picked up in the net capex amounts added to the tracking model from the roll forward model.[25] We also separated the two opening RAB adjustments for accelerated depreciation and for the true-up adjustment for 2012–13 actual capex. This was done to better reflect the remaining asset lives of the relevant asset classes.

5.4.2 Accelerated depreciation

ElectraNet proposed the accelerated depreciation of redundant assets associated with the closure of the Alinta Northern Power Station in May 2016. We accept the

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22 NER, cl. 6A.6.3(b)(1).
23 NER, cl. 6A.6.3(b)(2).
24 NER, cl. 6A.6.3(b)(3).
25 The CPI figures were also updated.

accelerated depreciation of these assets as they have reached the end of their economic life.

ElectraNet also proposed accelerated depreciation over five years on certain assets to be replaced through its replacement program over the 2018–23 regulatory control period. We accept this proposal. We have reviewed the information and consider that the amount proposed for accelerated depreciation reflects the expected capex replacement over the 2018–23 regulatory control period—this is discussed further in attachment 6. We are therefore satisfied that the replaced assets would reach the end of their economic life in the 2018–23 regulatory control period.

The CCP stated that, given the relatively small size of the accelerated depreciation of assets submitted by ElectraNet, it was not against this aspect of the proposal. However, it noted a large sum recovered over a short period could inefficiently distort prices. It also raised the prospect of intergenerational equity issues if accelerated depreciation was used more widely.[26]

5.4.3 Standard asset lives

We accept the majority of ElectraNet's proposed standard asset lives for its asset classes in respect of forecast capex to be commissioned in the 2018–23 regulatory control period. We note that ElectraNet's proposed standard asset lives are consistent with those approved in the 2013–18 determination and largely comparable with those used by other TNSPs for similar asset classes.[27]

We also accept ElectraNet's proposal to reduce the standard asset life of telecommunication equipment to 10 years from 15 years, as reflected in the new asset class of 'Communication – Other (post 2018)'. This proposed standard asset life is comparable to that used by other TNSPs for telecommunication assets.[28] This asset class should not be used for large communication assets associated with civil works at substations, or radio repeater sites and optical fibre ground wire on transmission lines. These large communications assets have longer asset lives than electronic communications devices intended to be allocated to the 'Communication – Other (post 2018)' asset class. We expect ElectraNet to allocate expenditure associated with large communication assets to other existing asset classes that have longer standard asset lives such as one of the substation related asset classes or one of the transmission lines related asset classes.

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[26] CCP9, *Submission to the AER, Response to proposals from ElectraNet for a revenue reset for the 2018-23 regulatory period,* 12 July 2017, pp. 40–41.

[27] AER, *Draft decision: TransGrid transmission determination 2018–19 to 2022–23, Attachment 5 – Regulatory depreciation*, September 2017, pp. 18–19; AER, *Final decision: Powerlink transmission determination 2017–22*, *Overview*, April 2017, p. 24; AER, *Final decision: AusNet Services transmission determination 2017–22, Attachment 5 – Regulatory depreciation*, April 2017, p. 14; AER, *Draft decision: TasNetworks transmission determination 2015–19*, *Attachment 5: Regulatory depreciation*, November 2014, p. 14.

[28] ElectraNet implemented this change by creating a new asset class for telecommunication equipment post 1 July 2018.

We do not accept ElectraNet's proposed standard asset life of 27 years for the 'Transmission line – life extension' asset class. We also do not accept the proposed standard asset life of 30 years for the new asset class for 'Synchronous condensers'. We discuss our reasons on these decisions in detail below.

5.4.3.1 New asset class for transmission lines life extension

We do not accept ElectraNet's proposed standard asset life of 27 years for the 'Transmission lines – life extension' asset class. We consider that the proposed asset life does not result in a depreciation profile that reflects the nature of the assets over the economic life of the assets within this asset class. As such, we do not accept ElectraNet's proposed standard asset life for this asset class. For this draft decision, we consider that a standard asset life of 48.1 years would instead reflect the economic life of the assets in this asset class.

The proposed asset class replaces a specific asset class used by ElectraNet in the 2013–18 regulatory control period for insulator refits, which had a standard asset life of 27 years. The 27 years was based on the expected mix of insulator assets that would make up this asset class, with standard asset lives between 20 to 40 years for different types of insulators.[29] The proposed asset class will be allocated assets with significantly longer standard asset lives—for example, conductors have a standard asset life of 55 years.

ElectraNet proposed to retain the asset class of 'Transmission lines – life extension' with a standard asset life of 27 years for the 2018–23 regulatory control period.[30] ElectraNet submitted that a greater proportion of forecast capex would be allocated to this asset class, rather than other replacement asset classes, which typically have longer expected asset lives. ElectraNet stated that this is part of an overall strategy to move away from replacing sections of the network and conduct more ad hoc extensions of asset lives for transmission lines. It also noted the standard asset life for this asset class was comparable with similar transmission lines refit asset classes for Powerlink (30 years) and TransGrid (25 years).[31]

ElectraNet stated that its proposal for a standard asset life of 27 years is not based on the physical or technical life of the asset components that make up the 'Transmission lines – life extension' asset class. ElectraNet submitted that instead, the standard asset

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[29] At the last reset ElectraNet proposed a standard asset life of 15 years for this refit asset class. The AER rejected this asset life and calculated the standard asset life of 27 years based on the weighted average of the assets forming the asset class. See; AER, *Draft decision, ElectraNet Transmission determination, 2013–14 to 2017–18*, November 2012, pp.186–188, and; AER, *Final decision, ElectraNet Transmission determination,2013–14 to 2017–18*, April 2013, pp.146–147.

[30] This involves relabelling the asset class of 'Transmission lines refit – insulators replacement 2013–18' approved for the 2013–18 determination.

[31] ElectraNet, *Revenue Proposal 2019 -2023, Attachment 5, Regulatory Depreciation*, March 2017, pp. 7–8.

life reflects the extended economic life of the parent asset—being the underlying transmission line.[32]

ElectraNet goes on to submit that in the past the AER has assumed that transmission lines would continue to be renewed in perpetuity in determining the asset life for transmission line capital refurbishment works— so in other words, the technical life and expected economic life of the component assets were seen to be the same. ElectraNet, however, submitted that this approach is no longer appropriate because the pace of technological change and range of plausible futures makes it unreasonable to assume that transmission lines will automatically be renewed in perpetuity through successive replacement of end of life asset components.[33] ElectraNet stated that its transmission line conductors, and attachment hardware and earthwires (where in place) have a technical life of 55 years, but a remaining life of 15 to 30 years. And that extending the life of these assets beyond 15-30 years may or may not be economic at a future time.

We acknowledge that there are circumstances where it is appropriate to consider technical and economic lives of an asset separately, for example when a commercial customer shuts down and no other use can be found for the otherwise technically sound assets. This will result in the asset having no economic life despite being technically sound. However, we do not consider this likely in the current circumstances.

ElectraNet has not provided evidence to support its view that due to technological changes the technical and economic lives of an asset should be considered separately. In particular, it has not provided evidence to support its view that its existing transmission lines will not be replaced at the end of their 15-30 years remaining life. ElectraNet has assumed that uncertainty, alone, is a sufficient reason to adopt its proposal. In light of this uncertainty, we consider that there is no evidence that ElectraNet's proposal would lead to a depreciation schedule for the 2018–23 regulatory control period that reflects the nature of the assets in this asset class over their economic lives.

We expect most of ElectraNet's network to continue to operate well into the future, and we consider it unlikely that ElectraNet would not replace its transmission powerlines after 30 years. ElectraNet has not presented any decommissioning plans to this effect,[34] or that there are areas of its network that would become uneconomic after that time. Further, there is no evidence that ElectraNet has in the past sought to dispose of assets before they reach the end of their technical life, nor is ElectraNet forecasting any such disposals for the 2018–23 regulatory control period.

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[32] ElectraNet, *Email, RE: ElectraNet - information request #003 - Standard asset life of line extensions - 22 May 2017*, 2 June 2017.

[33] ElectraNet, *Email, RE: ElectraNet - information request #003 - Standard asset life of line extensions - 22 May 2017*, 2 June 2017.

[34] ElectraNet stated that the average age of the transmission lines to be refurbished is 56 years as at the end of the coming regulatory period, which exceeds the standard (technical) life of these line assets. This shows the economic life of the lines has typically exceeded the technical life for these assets.

Accordingly, we consider that, ElectraNet instead can be expected to continue to refurbish or replace the remaining transmission line components as they reach the end of their technical lives, resulting in further extensions to the life of the underlying transmission lines. Under this asset renewal approach, components that comprise ElectraNet's transmission lines effectively have a perpetual remaining life (limited only by their technical life) because the need for a transmission line does not have an end date. In turn, this means that that the technical life and expected economic life of the component assets will be the same.

For each asset component in the proposed new asset class, ElectraNet has proposed an economic life that is significantly shorter than the asset's technical life. We consider that adopting such an approach can lead to poor incentives, in the event that the lines do continue to provide services beyond ElectraNet's proposed economic lives (which we consider the likely outcome). For example, the proposed shorter asset life could encourage early replacement of assets once they are fully depreciated, even if they are technically sound. This is because operating fully depreciated assets would generate zero return for ElectraNet, while early replacement of the asset would allow it to earn a return on the replacement value.

For these reasons, we do not consider that ElectraNet's proposed standard asset life of 27 years reflects the expected economic life of the assets within the 'Transmission lines – life extension' asset class.

We have applied a weighted average approach to determine the standard asset life for the Transmission lines – life extension asset class. By weighting together the technical lives of the component assets, using the proportion of capex for each asset component as weights, we have calculated that an appropriate weighted average standard asset life for the asset class would be 48.1 years. The calculation is broken down by the component assets in Table 5.3 below.

Table 5.3 Weighted average standard asset life of the component assets associated with forecast transmission lines life extension capex

Component assets	Standard asset life (years)	Forecast capex ($2017–18 million)	Weights (per cent)	Weighted average standard asset life (years)
Transmission line tower fasteners	30	8.8	5.5	1.7
Transmission line conductors and attachment hardware; earthwires	55	91.3	57.5	31.6
Transmission line insulators and attachment hardware	40	58.7	37.0	14.8
Total		**158.8**	**100.0**	**48.1**

Source: ElectraNet, *Email, RE: ElectraNet - information request #003 - Standard asset life of line extensions - 22 May 2017*, 2 June 2017; AER analysis.

We consider that this amended standard asset life results in a depreciation profile that reflects the nature of the assets over the economic life of the assets within this asset

class.[35] This change will slightly reduce ElectraNet's forecast regulatory depreciation allowance by about $3.4 million (or 0.2 per cent).[36]

We also note that we have used a weighted average approach in the past to determine the transmission lines refit asset classes for Powerlink and TransGrid. The assets used for these transmission network's refits (for example, a significant proportion of Powerlink's refit involved paint works) generally had shorter standard asset lives than those ElectraNet is expecting to use for the 2018–23 regulatory control period. The standard asset lives for the refit asset classes for Powerlink and TransGrid are subject to review at each reset and we recently revised the standard asset life for TransGrid's transmission lines refit asset class to 35 years from 25 years to reflect the technical lives of the specific asset components.[37]

5.4.3.2 New asset class for synchronous condensers

ElectraNet proposed a new 'Synchronous condensers' asset class for expenditure associated with a contingent project that helps maintain stability in power supply.[38] Based on advice from its consultant GHD, it proposed that the standard asset life for these assets be 30 years.[39] These assets are reliant on the contingent project being triggered. Accordingly, the choice of assigning a standard asset life in this determination process has no immediate impact on the revenue ElectraNet would receive over the 2018–23 regulatory control period. However, it would impact the revenue recovery profile within and beyond that period if the contingent project proceeds.

We consider that there is significant uncertainty as to the final form of ElectraNet's contingent project. For example, what will be the final design, and how often will the assets be used—that is, only during summer peak demand. We will determine an asset life for this asset class once the contingent project trigger for this project is met. [40] At that stage, the final design and operation of the synchronous condensers will be better known. As such, at the time of this draft decision, we consider that ElectraNet's proposed standard asset life of 30 years for the 'Synchronous condensers' asset class would not lead to a depreciation profile that reflects the nature of the assets over the economic life of the assets within this asset class.

We make the following preliminary observations with regard to ElectraNet's proposed standard asset life:

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35 NER, cl. 6A.6.3(b)(1).

36 Calculation based on ElectraNet's proposal and made before any other changes to the models.

37 AER, *Draft Decision, TransGrid transmission determination 2018 to 2023, Attachment 5 – Regulatory depreciation*, September 2017, pp. 14–18.

38 Synchronous condensers are used by network service providers where the electrical network requires support to manage: reactive compensation, voltage support, system inertia, and low short circuit ratios.

39 ElectraNet, *ENET062, GHD - Synchronous Condenser Asset Life Review*, March 2017.

40 Approval will occur in accordance with the contingent project provisions in the NER, in particular, cl. 6A.8.2.

- We disagree with GHD's interpretation of clause 6A.6.3(b)(1) of the NER that an electricity transmission network may adopt the manufacturer's design life or the expected economic life of the assets for depreciation purposes, where the design life or the expected economic life of the asset may reflect the minimum life that most of the assets are expected to remain in service.[41] An asset's technical life is a function of the service provider's operations and maintenance regimes. A minimum life can be surpassed through good maintenance practices or if utilisation is less than what the asset was built for. Therefore, the effective (economic) life may be significantly longer than the minimum design life.
- While the synchronous condensers may require refurbishment in around 30 years, it only involves refurnishing certain components. We do not consider that this is a reason to write-off the entire asset in 30 years. Rather, if refurbishment occurs at the same time as the asset becomes fully depreciated, then the fully depreciated components that are not refurbished would be providing economic service at zero cost from that time until decommissioning.
- An example of synchronous condensers assets similar to those proposed by ElectraNet which have a standard asset life of longer than 30 years, is on the Victorian transmission network located at Brooklyn, Fishermans Bend and Templestowe Terminal Stations. These condensers were built during the 1960s and refurbished at various times. These condensers were due to be retired by 1 April 2017, approximately 50 years from when they were built.[42]
- GHD noted that there are no common asset categories across the electricity transmission utilities for reactive plant. GHD also stated that AusNet Services has a specific broad asset category for reactive plant, which includes synchronous condensers, capacitor banks and Static VAR compensators, to which they assigned a 40-year asset life.[43] This was accepted by the AER in the draft decision of July 2016. We note that this is a significantly longer standard asset life than that being proposed by ElectraNet.

5.4.3.3 Summary of standard asset lives

Table 5.3 sets out our draft decision on the standard asset lives for ElectraNet over the 2018–23 regulatory control period. We consider the standard asset lives would lead to a depreciation schedule that reflects the nature of the assets over the economic lives of the asset classes. Further, the sum of the real value of the depreciation attributable to the assets would be equivalent to the value at which the assets was first included in the RAB for ElectraNet.[44]

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42 ElectraNet, *ENET062, GHD - Synchronous Condenser Asset Life Review*, March 2017, pp. 5–6.

43 ElectraNet, *ENET062, GHD - Synchronous Condenser Asset Life Review*, March 2017, p. 3.

44 NER, cll. 6A.6.3(b)(1)–(2).

Table 5.3 AER's draft decision on ElectraNet's standard asset lives (years)

	Standard asset life
Commercial buildings	30.0
Communications - Civil	55.0
Computers, software, and office machines	4.0
Network switching centres	5.0
Office furniture, movable plant, and misc	10.0
Substation primary plant	44.8
Substation demountable buildings	15.0
Substation establishment	55.0
Substation fences	35.0
Substation secondary systems - Electronic	15.0
Transmission lines - Overhead	55.0
Transmission lines - Underground	40.0
Transmission lines - Life extension	48.1
Communication - Other (post 2018)	10.0

Source: AER analysis.

5.4.4 Depreciation of the 'Working capital' asset class

ElectraNet had assets that were under construction included in its RAB since 2003. To date the value of those assets have not been depreciated and are allocated to the asset class labelled 'Working capital' in the RAB. However, these assets are not working capital. They are fully commissioned assets.[45]

These assets are expected to be valued at about $17.7 million by 30 June 2018. Rather than allowing these assets to increase in value in nominal terms indefinitely due to indexation, we asked ElectraNet whether they should be depreciated going forward. ElectraNet stated the assets are fully commissioned and therefore should be depreciated—that is, their economic life is not indefinite.[46] ElectraNet agreed with our

[45] A working capital allowance is not required under the AER's regulatory framework. The label for this asset class would be better described now as completed works, but the existing label has been maintained for consistency with past models.

[46] ElectraNet, *Email, RE: ElectraNet - information request #005 - Working capital asset class - 22 May 2017*, 4 July 2017.

suggestion that this asset class should be depreciated using a remaining asset life of 43 years from 1 July 2018.[47]

Accordingly, we have amended ElectraNet's depreciation model and PTRM. The resulting depreciation of the assets has an insignificant impact on ElectraNet's overall revenues.

[47] The 43 years is based on a weighted average of standard asset lives of the expected assets included in that asset class. The weighting is based on the opening asset values at 1 July 2013, and is the same weighting used for equity raising costs for the previous regulatory control period.