DRAFT DECISION
Jemena Gas Networks (NSW) Ltd
Access Arrangement

2020 to 2025

Attachment 4
Regulatory depreciation

November 2019

AUSTRALIAN ENERGY REGULATOR

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Note

This attachment forms part of the AER's draft decision on the access arrangement that will apply to Jemena Gas Networks (NSW) Ltd ('JGN') for the 2020–2025 access arrangement period. It should be read with all other parts of the draft decision.

The draft decision includes the following documents:

Overview

Attachment 1 – Services covered by the access arrangement

Attachment 2 – Capital base

Attachment 3 – Rate of return

Attachment 4 – Regulatory depreciation

Attachment 5 – Capital expenditure

Attachment 6 – Operating expenditure

Attachment 7 – Corporate income tax

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Shortened forms

Shortened form	Extended form
ACCC	Australian Competition and Consumer Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AGN	Australian Gas Networks
Capex	Capital expenditure
CCP/CCP19	Consumer Challenge Panel, sub-panel 19
CESS	Capital expenditure sharing scheme
COAG	Council of Australian Governments
ECA	Energy Consumers Australia
ENA	Energy Networks Australia
GSOO	Gas Statement of Opportunities
HP	high pressure
JGN	Jemena Gas Networks (NSW) Ltd
MP	medium pressure
NER	National Electricity Rules
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NPV	Net present value
Opex	Operating expenditure
PIAC	Public Interest Advocacy Centre
PTRM	Post-tax revenue model
RFM	Roll forward model
RPP	Revenue and pricing principles
Tribunal	Australian Competition Tribunal
WACC	Weighted average cost of capital
WARL	Weighted average remaining lives

4 Regulatory depreciation

When determining the total revenue for JGN, we include an allowance for the depreciation of the projected capital base (otherwise referred to as 'return of capital').[1] Regulatory depreciation is used to model the nominal asset values over the 2020–25 access arrangement period and the depreciation allowance in the total revenue requirement.[2]

This attachment outlines our draft decision on JGN's annual regulatory depreciation allowance for the 2020–25 period. Our consideration of specific matters that affect the estimate of regulatory depreciation is also discussed in this attachment. These include the:

- standard asset lives for depreciating new assets associated with forecast capital expenditure (capex)[3]
- year-by-year tracking approach to depreciating assets in the capital base
- proposed accelerated depreciation for existing pigging and inspection costs.

4.1 Draft decision

We determine a regulatory depreciation allowance of $411.4 million ($ nominal) for JGN for the 2020–25 access arrangement period. This represents a reduction of $30.8 million (or 7.0 per cent) from JGN's proposed regulatory depreciation allowance of $442.2 million ($ nominal).[4] In coming to this decision:

- We accept JGN's proposed standard asset lives for the majority of the proposed asset classes, including its proposed standard asset life of 15 years (reduced from the current 20 years) for the 'Meters'[5] and 'Meter reading devices' asset classes. However, we do not accept JGN's proposed reductions to other standard asset lives for the following asset classes (section 4.4.1):
    - 'Trunks'[6] and 'HP mains' asset classes (proposed reduction to 50 years from the current 80 years)
    - 'MP mains' and 'MP services' asset classes (proposed reduction to 30 years from the current 50 years).

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1 NGR, r. 76(b).

2 The regulatory depreciation allowance is the net total of the straight-line depreciation less the inflation indexation of the capital base.

3 The term 'standard asset life' may also be referred to as 'standard economic life', 'asset life', 'economic asset life' or 'economic life'.

4 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.2 – PTRM*, June 2019.

5 This relates to the 'Contract meters' and 'Tariff meters' asset classes.

6 This includes the 'Trunk Wilton-Sydney', 'Trunk Sydney-Newcastle' and 'Trunk Wilton-Wollongong' asset classes. We note that JGN has not proposed any forecast capex for these asset classes for the 2020–25 access arrangement period.

Our draft decision is to maintain the current standard asset lives for these asset classes for the purposes of calculating the regulatory depreciation allowance for the 2020–25 period.

- We accept JGN's proposal to use the year-by-year tracking method to calculate real straight-line depreciation for its existing assets. We have previously considered and approved this method in our decisions for other regulated businesses. However, we have corrected some modelling issues in JGN's application of the year-by-year tracking method in its proposed depreciation model (section 4.4.2).
- We accept JGN's proposed accelerated depreciation of the remaining value of the existing pigging and inspection costs as at 1 July 2020. However, we have reduced the proposed amount for the accelerated depreciation to $14.8 million from $16.5 million because we have corrected an input error in JGN's proposed pigging costs roll forward model (RFM) (section 4.4.3).
- We made determinations on other components of JGN's proposal which also affect the forecast regulatory depreciation allowance. Specifically, they relate to:
    - expected inflation rate (Attachment 3)
    - forecast capex (Attachment 5) including its effect on the projected capital base over the 2020–25 period.[7]

Table 4.1 sets out our draft decision on JGN's regulatory depreciation allowance over the 2020–25 period.

Table 4.1 AER's draft decision on JGN's regulatory depreciation allowance for the 2020–25 access arrangement period ($ million, nominal)

	2020–21	2021–22	2022–23	2023–24	2024–25	Total
Straight-line depreciation	152.4	164.8	173.6	184.0	170.6	845.5
Less: indexation on opening capital base	82.1	85.0	87.2	89.0	90.7	434.1
Regulatory depreciation	**70.3**	**79.8**	**86.4**	**95.0**	**79.9**	**411.4**

Source: AER analysis.

4.2 JGN's proposal

JGN proposed a total forecast regulatory depreciation allowance of $442.2 million ($ nominal) for the 2020–25 period, as set out in Table 4.2.

[7] Capex enters the capital base net of forecast disposals and capital contributions. It includes equity raising costs (where relevant) and the half-year WACC to account for the timing assumptions in the AER's PTRM. Our draft decision on the capital base (Attachment 2) also reflects our updates to the WACC for the 2020–25 access arrangement period.

Table 4.2 JGN's proposed regulatory depreciation allowance for the 2020–25 access arrangement period ($ million, nominal)

	2020–21	2021–22	2022–23	2023–24	2024–25	Total
Straight-line depreciation	152.3	166.7	178.6	192.8	186.2	876.7
Less: indexation on opening capital base	81.3	84.5	87.3	89.7	91.7	434.5
Regulatory depreciation	**71.0**	**82.2**	**91.3**	**103.2**	**94.5**	**442.2**

Source: JGN, *2020–25 Access Arrangement Proposal – Attachment 7.2 – PTRM*, June 2019.

To calculate the depreciation allowance, JGN proposed to use the straight-line depreciation method employed in our post-tax revenue model (PTRM). JGN proposed the following inputs to the PTRM:[8]

- the closing capital base value as at 30 June 2020 derived from its proposed capital base RFM
- proposed forecast capex for the 2020–25 period
- an expected inflation rate of 2.42 per cent per annum for the 2020–25 period
- the forecast depreciation (over the 2020–25 period) of the opening capital base as at 1 July 2020 using the year-by-year tracking depreciation method, which also implements the straight-line method:[9]
    - In its proposed depreciation model, JGN has kept the approved remaining asset lives largely unchanged for the purposes of depreciating the remaining value of the existing assets.
    - However, JGN proposed to reduce the remaining asset life for the accelerated depreciation of existing pigging and inspection costs to 5 years so that these costs can be fully recovered within the 2020–25 period. It has proposed to expense the future costs associated with this type of works for the 2020–25 period. JGN has calculated the amount for the accelerated depreciation in a separate pigging costs RFM.
- the proposed asset classes and standard asset lives for depreciating new assets associated with forecast capex for the 2020–25 period. JGN has used 24 asset classes for regulatory depreciation purposes. It has kept the current standard asset lives unchanged for most of the asset classes. However, it proposed to reduce the current standard asset lives for nine of the 24 asset classes associated with its pipelines and metering assets.[10] Table 4.3 sets out JGN's proposed changes to the standard asset lives for the relevant asset classes. It shows that about 81 per cent

[8] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.2 – PTRM*, June 2019.

[9] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.9 – Capital base,* June 2019, p. 8.

[10] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments*, June 2019, p. iv.

of the total proposed forecast capex for the 2020–25 period are allocated to these asset classes. The main reason raised by JGN for reducing its current approved standard asset lives for these asset classes is to address potential cost recovery uncertainties caused by a number of issues, such as the short term declining gas utilisation trend, forecast gas supply shortfalls and the NSW Government's planned 2050 carbon neutral target.[11] JGN stated that:[12]

- The pipeline assets with current standard asset lives of 80 and 50 years for high pressure (HP) mains and medium pressure (MP) mains and services, respectively, require equal annual asset recovery over a period much longer than the 2050 carbon neutral target.
- The metering asset classes with the current standard asset life of 20 years are higher than most of JGN's peers and do not reflect the risk of technical obsolescence arising from the need to be able to meet the future metrology standard for blending hydrogen into the distribution system.

Table 4.3 JGN's proposed reductions to standard asset lives (years)

Asset class	Current standard asset lives	Proposed standard asset lives	Percentage of total forecast capex allocated to asset class
Trunk Wilton-Sydney Trunk Sydney-Newcastle Trunk Wilton-Wollongong	80	50	0%
HP mains	80	50	13%
Contract meters Tariff meters Meter reading devices	20	15	21%
MP mains MP services	50	30	47%

Source: JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments*, June 2019, p. 1.

4.3 Assessment approach

In its 2020–25 access arrangement proposal, JGN must provide a forecast of the depreciation allowance for the 2020–25 period, including a demonstration of how the forecast is derived on the basis of the proposed depreciation method.[13] The

[11] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments,* June *2019*, pp. 4–11.

[12] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments,* June 2019, p. 9.

[13] NGR, r. 72(1)(c)(ii).

depreciation schedule sets out the basis on which the pipeline assets constituting the capital base are to be depreciated for the purpose of determining a reference tariff.[14] It may consist of a number of separate schedules, each relating to a particular asset or class of asset.[15]

In making a decision on the proposed depreciation schedule, we assess the compliance of the proposed depreciation schedule with the depreciation criteria set out in the NGR. The depreciation criteria[16] state that the depreciation schedule should be designed:

- so that reference tariffs will vary, over time, in a way that promotes efficient growth in the market for reference services[17]
- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets[18]
- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets[19]
- so that (subject to the rules about capital redundancy), an asset is depreciated only once[20]
- so as to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs.[21]

The depreciation criteria also provides that a substantial amount of depreciation may be deferred in circumstances where investment is made on the expectation of future demand growth.[22]

The NGR require that any forecast must be arrived at on a reasonable basis and must represent the best forecast or estimate possible in the circumstances.[23]

Our assessment takes into account revenue and pricing principles (RPP) and seeks to promote the National Gas Objective (NGO).[24] The NGO is the promotion of efficient investment in, provision of and use of, natural gas services for the long term interests of consumers with respect to price, quality, safety, reliability and security of supply of natural gas.[25] We are required, when carrying out our functions, to make a decision

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14 NGR, r. 88(1).
15 NGR, r. 88(2).
16 NGR, r. 89.
17 NGR, r. 89(1)(a).
18 NGR, r. 89(1)(b).
19 NGR, r. 89(1)(c).
20 NGR, r. 89(1)(d).
21 NGR, r. 89(1)(e).
22 NGR, r. 89(2).
23 NGR, r. 74(2).
24 NGL, s 28; NGR r. 100(1).
25 NGL, s. 23.

that will contribute to the achievement of the NGO.[26] In addition, when exercising our decision-making powers, we are required to take into account the RPP.[27] This includes principles that a service provider should be provided with effective incentives in order to promote efficient investment in, provision of and use of pipeline services. Further, we should have regard to the economic costs and risks of the potential for under- and over-investment in a pipeline and utilisation of a pipeline when making our decisions.[28]

Appendix A to this attachment discusses the role of depreciation in the regulatory context. It also provides a theoretical framework for our assessment approach on regulatory depreciation.

The regulatory depreciation approach we applied to gas network access arrangement decisions involves two components:

1. A straight-line depreciation component calculated by dividing the asset value by its standard asset life (for new assets) or remaining asset life (for existing assets). We consider that the straight-line method satisfies the NGR's depreciation criteria.[29] This is because the straight-line method smooths changes in the reference tariffs, promotes efficient growth of the market, allows assets to be depreciated only once and over its economic life, and allows for a service provider's reasonable needs for cash flow.
2. An offsetting adjustment for indexation of the value of assets in the capital base. This component is necessary to prevent double counting of inflation when a nominal rate of return is applied to the inflation indexed capital base. Therefore, we remove the revaluation (indexation) gain on the capital base from the depreciation building block when setting total revenue.

The regulatory depreciation allowance is an output of our PTRM, which adopts the above approach for calculating regulatory depreciation. JGN has used our PTRM for the purposes of its 2020–25 access arrangement proposal. We therefore assess JGN's proposed regulatory depreciation allowance by analysing the proposed inputs to the PTRM for calculating that allowance. Key inputs include the:

- opening capital base at 1 July 2020
- forecast net capex in the 2020–25 period[30]
- indexation adjustment—based on the forecast capital base and expected inflation rate for the 2020–25 period

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26 NGL, s. 28(1).

27 NGL, s. 28(2).

28 NGL, s. 24.

29 NGR, r. 89.

30 Capex enters the capital base, net of forecast disposals and capital contributions. 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 capital base (Attachment 2) also reflects our updates to the WACC for the 2020–25 access arrangement period.

- standard asset life for each asset class—used for calculating the depreciation of new assets associated with forecast net capex in the 2020–25 period
- straight-line depreciation amount associated with the opening capital base as at 1 July 2020—calculated in a separate year-by-year tracking depreciation model.

Our draft decision on JGN's regulatory depreciation allowance reflects our determinations on the opening capital base, expected inflation and forecast net capex (the first three inputs in the above list).[31] Our determinations on these components of JGN's proposal are discussed in Attachments 2, 3 and 5, respectively. In this Attachment 4, we discuss our assessment on the proposed standard asset life for each asset class and the year-by-year tracking depreciation model (the last two inputs in the above list).

In general, we consider that consistency in the standard asset life for each asset class across access arrangement periods will allow reference tariffs to vary over time in a manner which would promote efficient growth in the market for reference services. Our assessment on standard asset life of an asset class also takes into account the technical life (or the engineering designed life) of the assets associated with the asset class. We also benchmark JGN's standard asset lives with those used by other gas service providers for similar asset classes. JGN has proposed to reduce the standard asset lives for several of its asset classes. Section 4.4.1 discusses our assessment on the proposed shorter standard asset lives.

Our PTRM provides two options for calculating the straight-line depreciation for the existing assets:

- The 'weighted average remaining lives' (WARL) approach: This approach calculates the remaining asset life for an asset class by weighting together its remaining asset life at the beginning of the access arrangement period with the new capex added to the asset class during that period. The residual asset values are used as weights to calculate the remaining asset life at the end of that period. The WARL for the asset classes are calculated in our RFM and are inputs to the PTRM. We consider this approach meets the depreciation criteria of the NGR.
- The 'year-by-year tracking' approach: Under this approach, the capex (in addition to grouping assets by type via asset classes) for each year of an access arrangement period is depreciated separately and tracked on a year-by-year basis over the assigned standard life for the asset class. In general, we consider that this approach, if implemented correctly, would also meet the depreciation criteria of the NGR. While the detailed calculation under this approach is not conducted within the PTRM, there is a separate input section for recording the year-by-year tracking depreciation amounts from a separate depreciation model.

[31] Our final decision will update the opening capital base as at 1 July 2020 for revised estimates of actual capex and inflation.

JGN has proposed to apply the year-by-year tracking depreciation approach and has provided a separate year-by-year tracking depreciation model. Therefore, we must assess whether JGN's depreciation model has appropriately implemented the year-by-year tracking depreciation approach, including checking the proposed inputs to this model. Our assessment on this aspect of JGN's proposal is discussed in section 4.4.2.

While JGN has kept the remaining asset lives of the existing assets largely unchanged in the depreciation model, it proposed to reduce the remaining asset life of existing pigging and inspection costs to 5 years so that these costs can be fully recovered within the 2020–25 period. Section 4.4.3 discusses our assessment on the proposed accelerated depreciation of these costs.

4.3.1 Interrelationships

The regulatory depreciation allowance is a building block component of the total revenue requirement.[32] Higher (or quicker) depreciation leads to higher revenues over the access arrangement period. It also causes the capital base to reduce more quickly (excluding the impact of new capex being added to the capital base). This reduces the return on capital allowance, although this impact is usually smaller than the increased depreciation allowance in the short to medium term.[33] A 10 per cent increase in the straight-line depreciation causes revenues to increase by about 4.0 per cent.

Ultimately, however, a service provider can only recover the capex that it incurred on assets once.[34] The depreciation allowance reflects how quickly the capital base 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 capital base and the forecast capex. Any increase in these factors also increases the depreciation allowance.

In section A.3.2 of Appendix A, we discuss our standard approach for indexation of the capital base and what this means for the depreciation building block. In summary, our standard approach is to maintain the capital base in real terms, meaning the capital base is indexed for expected inflation. The return on capital building block has to be calculated using a nominal rate of return (WACC) applied to the opening capital base.[35] The total revenue requirement is calculated by adding the return on capital, depreciation, operating expenditure (opex), tax and revenue adjustments building blocks.[36] Because inflation on the capital base is accounted for in both the return on capital (based on a nominal rate of return) and the depreciation calculations (based on

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32 The PTRM distinguishes between straight-line depreciation and regulatory depreciation, the difference being that regulatory depreciation is the straight-line depreciation minus the indexation amount on the projected capital base.

33 This is generally the case because the reduction in the capital base amount feeds into the higher depreciation building block, whereas the reduced return on capital building block is proportionate to the lower capital base multiplied by the WACC.

34 NGR, r. 89(1)(d).

35 NGR, r. 87.

36 NGR, r. 76.

an indexed capital base), 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 capital base from the calculation of total revenue. Our standard approach is to subtract the indexation of the opening capital base—the opening capital base multiplied by the expected inflation for the year—from the capital base depreciation. The net result of this calculation is referred to as regulatory depreciation.[37] 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 capital base, which is indexed for inflation annually.

4.4 Reasons for draft decision

We have reduced JGN's proposed regulatory depreciation allowance by $30.8 million (or 7.0 per cent) to $411.4 million ($ nominal) for the 2020–25 access arrangement period. The majority of the reduction to the proposed regulatory depreciation allowance is due to our draft decision on JGN's proposed reductions to the standard asset lives for its pipeline asset classes (section 4.4.1).

Our draft decision on the proposed forecast capex also made a material contribution to the lower regulatory depreciation allowance. The lower forecast capex reduces the projected capital base over the 2020–25 period. This results in a lower forecast depreciation calculated on the projected capital base. Our draft decision on the forecast capex is discussed in Attachment 5. Our corrections to the year-by-year depreciation tracking model proposed by JGN, and the amount associated with the accelerated depreciation of the existing pigging and inspection costs, also affect the regulatory depreciation allowance (sections 4.4.2 and 4.4.3).

Our assessment of JGN's proposed standard asset lives, year-by-year tracking depreciation approach, and accelerated depreciation of existing pigging and inspection costs are discussed in turn in the following subsections.

4.4.1 Standard asset lives

JGN proposed to reduce the current standard asset lives for several asset classes associated with its pipelines and metering assets. The proposed reductions to the asset lives only affect the depreciation amount calculated on forecast capex incurred during the 2020–25 access arrangement period. However, JGN has kept the depreciation profile of the capital base as at 1 July 2020 unchanged for the purpose of forecasting the depreciation allowance associated with these existing assets. That is, JGN has continued to depreciate the existing assets using the approved asset lives for the 2015–20 period.

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[37] If the asset lives are extremely long, such that the capital base depreciation rate is lower than the inflation rate, then negative regulatory depreciation can emerge. The indexation adjustment is greater than the capital base depreciation in such circumstances.

We note that JGN has undertaken a significant customer engagement program to inform its 2020–25 proposal. JGN stated that most participants who attended its customer forums supported the proposal to shorten the standard asset lives.[38] However, whilst we recognise JGN's customer engagement, we must make our decision on JGN's proposal on the basis of all relevant evidence and submissions. We also assess the appropriateness of the proposal against the requirements of the NGR, taking into account the NGO and RPP. JGN's proposal to reduce the standard asset lives rests substantially on forecasts as to likely future outcomes. In this regard, we reiterate the requirement that forecasts must be arrived at on a reasonable basis, and must represent the best forecast or estimate possible. Outcomes from JGN's customer engagement program do not remove our obligation to decide these matters on the basis of evidence, using the best forecasts available to us.

Our draft decision is to accept JGN's proposed standard asset life of 15 years (reduced from the current 20 years) for the 'Meters'[39] and 'Meter reading devices' asset classes. This is because we consider that JGN's proposed standard asset life reflects the expected economic life of the assets allocated to these asset classes. Also, the proposed standard asset life is better aligned with those applied by other gas distributors for similar asset classes. Therefore, we are satisfied that the proposed standard asset life for these metering assets would result in a depreciation schedule which would meet the depreciation criteria required by the NGR.

However, we do not accept the proposed reductions to the standard asset lives for the 'Trunks', 'HP mains', 'MP mains' and 'MP services' (pipeline) asset classes. We have considered the issues raised by JGN that may affect the economic lives of its pipeline assets, including the forecast short term declining gas usage trend, the Australian Energy Market Operator's (AEMO) forecast gas supply shortfall, and the NSW Government's planned 2050 carbon neutral target. We do not consider there is sufficient evidence to conclude that these issues will result in the utilisation of JGN's network significantly declining. In our view, the assumption that these issues have reduced the expected economic life of JGN's assets is speculative at this point in time and has not been adequately established by evidence-based forecasts. While there is still much uncertainty about the viability of hydrogen gas at this stage, we consider the introduction of hydrogen gas could have a substantial positive impact on the future of gas distribution networks.

Therefore, on balance, we are not satisfied that JGN's proposed standard asset lives for its pipeline assets would result in a depreciation schedule which would meet the depreciation criteria required by the NGR. Specifically, we consider that the proposed standard asset lives would result in a depreciation schedule that:[40]

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38 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments*, June 2019, pp. 15–17.

39 This relates to the 'Contract meters' and 'Tariff meters' asset classes.

40 These considerations are connected to our conclusions as to the forecast economic lives of these assets, discussed further in the section below entitled 'Economic lives'.

- would not be depreciated over the economic life of JGN's asset classes.[41] This is because the proposed reductions to the standard asset lives do not reflect the expected economic lives of the assets associated with these asset classes. We consider that there is not sufficient evidence that the economic lives of the assets allocated to these asset classes would be significantly shorter than their intended technical lives. Therefore, the depreciation schedule for these asset classes should not be adjusted as the proposed reduced standard asset lives do not reflect the expected economic lives for these asset classes.[42]
- would not lead to tariffs varying, over time, in a way that promotes efficient growth in the market for reference services.[43] This is because there is insufficient evidence that the proposed shorter standard asset lives would reflect the expected economic lives of these assets. Therefore, the proposed reduction to the standard asset lives would accelerate the depreciation of these assets. This will result in network tariffs being set above the efficient cost for providing reference tariffs in the access arrangement period. We consider these inefficient tariffs could potentially result in inefficient utilisation, investment and asset management incentives.

Further, we are not satisfied that the proposed reductions to the standard asset lives will promote the long term interests of consumers, as it will result in an inefficient tariff path. We are also not satisfied that the proposed asset life reductions will promote efficient investment in, provision of or use of pipeline services, or that it appropriately addresses the costs and risks of the potential for under- or over-investment or use of pipelines. We therefore do not consider the proposed standard asset lives for these assets will contribute to the achievement of the NGO.

For this 2020–25 draft decision, we have maintained the current standard asset lives as applied for the 2015–20 access arrangement period for the 'Trunks', 'HP mains', 'MP mains' and 'MP services' asset classes. We consider that our draft decision on JGN's standard asset lives is consistent with the NGR's depreciation criteria and is in the long term interests of consumers, in accordance with the NGO and RPP.

The role of regulatory depreciation

Regulated service providers invest in large sunk assets. While some connection assets may be recovered from customers upfront, the greater proportion of the sunk costs are recovered over time. A depreciation charge is used for this purpose.[44] Under the building block approach, the efficient investment incurred (or forecast to be incurred) by the gas service provider will be rolled into its capital base. It will then receive a return on its investment through the return on capital building block. The initial investment included in the capital base is returned to the gas service provider via the

41 NGR, r. 89(1)(b).

42 NGR, r. 89(1)(c).

43 NGR, r. 89(1)(a).

44 The term amortisation is used to describe the depreciation of non-tangible assets such as goodwill.

return of capital (or regulatory depreciation) building block over the economic life of the assets.

Our standard regulatory depreciation approach (straight-line depreciation less indexation of capital base) produces a relatively even recovery of sunk costs over the economic lives of the assets.[45] Such a profile of recovery is generally neutral in terms of incentives. That is, of itself, an even recovery profile over the economic lives of the assets does not encourage or discourage early or later consumption or investment. In recent years, a few network service providers have proposed front loading (accelerated) depreciation of their entire asset bases (or part thereof), and submitted that they face particular circumstances requiring such a depreciation profile.

For example, financeability issues were raised by APA GasNet and Australian Gas Networks (SA) as a reason to accelerate the depreciation of their existing asset bases and new investments.[46] In another case, AusNet Services in its 2017 regulatory reset proposed to accelerate the depreciation of its new investments to address potential asset stranding risk caused by new technology.[47] In all cases, we did not accept the proposed accelerated depreciation for these network service providers.

Appendix A to this attachment discusses the role of depreciation in the regulatory context. It also provides a theoretical framework for our assessment approach on regulatory depreciation. As noted in that appendix, changing the depreciation approach in a building block framework can have a significant impact that goes beyond the depreciation allowance given its interactions with other building blocks. The long term implication of a short term acceleration of depreciation must also be considered. Therefore, any significant change to the depreciation profile of the capital base needs to be justified.

While JGN has applied our standard depreciation method (the straight-line depreciation less indexation of capital base), it has proposed accelerated depreciation of its key network assets by reducing the standard asset lives used to calculate the straight-line depreciation for new investments. The current standard asset lives for the pipeline assets as applied by JGN in its previous access arrangement periods reflect the generally accepted technical lives of these assets.

The main reason raised by JGN for reducing its current approved standard asset lives for the pipeline assets is to address potential cost recovery uncertainties caused by a number of issues, such as declining gas utilisation trend, forecast gas supply shortfall and the NSW Government's planned 2050 carbon neutral target. JGN also submitted that there is currently very little certainty that it will be able to transition to a low-carbon

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45 This even recovery profile of straight-line depreciation is also recognised in Australian Accounting Standards Board, *AASB 116, Property, plant and equipment*, December 2015, paragraphs 60–62.

46 AER, *Final Decision: APA GasNet Australia 2013–17, Part 2: Attachments*, March 2013, pp. 115–116; AER, *Final decision: Australian Gas Networks Access Arrangement 2016 to 2021, Attachment 5 – Regulatory depreciation*, May 2016, pp. 20–23.

47 AER, *Final decision: AusNet Services transmission determination 2017–2022, Attachment 5 – Regulatory depreciation*, April 2017, pp. 12–13.

network by 2050. It submitted that due to these issues, the current standard asset lives will need to be reduced to account for the asset stranding risk on investments it has not yet made. JGN stated that this will reduce its risk associated with investments and preserve efficient investment incentives for it. JGN also submitted that technical lives alone is not sufficient to assess the expected economic life of these assets due to these uncertainties.[48]

We do not consider that there is sufficient evidence to show the utilisation of JGN's network will decline in a way that results in a material risk of assets being stranded. This is discussed in detail below. If there is, at a later point in time, sufficient evidence that the expected economic life of JGN's pipeline assets are significantly shorter than their technical life, then we will consider available options under the regulatory framework to provide JGN a reasonable opportunity to recover its efficient investment.

Stakeholders' submissions raised that the potential stranding of gas infrastructure assets is an industry-wide issue,[49] with Energy Consumers Australia (ECA) advocating for the development of a national strategy for addressing this issue.[50] We note that during the development of the 2018 rate of return instrument, some gas service providers requested asset stranding risk to be compensated for in setting the rate of return, by increasing the equity beta parameter relative to the benchmark for electricity network businesses. However, we did not accept this request. We considered the difference in exposure to systematic risk between gas pipelines and electricity network businesses is not material enough to reasonably justify different equity beta benchmarks.[51] Furthermore, we did not consider that an efficient rate of return should compensate businesses for non-systematic risks (including asset stranding risks).[52] Several stakeholders considered that JGN's proposal may potentially transfer risks from JGN's shareholders to consumers.[53]

We consider it is important that the standard asset life used for calculating the depreciation profile of an asset reasonably reflects the expected economic (or useful) life of the asset. If the standard asset life is set too short or too long when compared to the economic life of the asset, it will not provide incentives for efficient investment and utilisation of the network over time, and therefore would not promote efficient growth in the market for reference service. However, once efficient investment is incurred and added to the capital base, the NGR allow the remaining economic life of the asset to be adjusted when there is sufficient evidence that the initial economic life of the asset is expected to change. This would provide reasonable opportunity for the efficient

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48 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – Proposed changes to asset lives for new investments*, June 2019, pp. 4–11.

49 EnergyAustralia, *Submission on JGN 2020–25 AA proposal – Cover letter*, August 2019, p. 8; PIAC, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 8.

50 ECA, *Submission on JGN 2020-25 AA proposal – Cover letter*, August 2019, p. 15.

51 AER, *Rate of return instrument explanatory statement*, December 2018, pp. 51–56.

52 AER, *Rate of return instrument explanatory statement*, December 2018, pp. 42–46.

53 AGL, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 3; ECA, *Submission on JGN 2020–25 AA proposal – Cover letter*, August 2019, p. 15; PIAC, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 5.

investment made by the gas network to be recovered over the expected remaining useful life of the asset.

For this draft decision, we have assessed the proposed standard asset lives within the context of the depreciation schedule criteria in the NGR, the NGO and the RPP, as set out in the sections below. While the technical life of an asset is not the only factor we consider when determining the economic life of an asset, we do not consider there is sufficient evidence for us to conclude that the economic lives of JGN's pipeline assets[54] will be materially lower than their intended engineering design lives. Therefore, we consider that JGN's proposed depreciation schedule for the pipeline asset classes would not promote efficient growth in the market for reference services or serve the long term interests of consumers, as there is insufficient evidence that the proposed shorter standard asset lives for the pipeline assets reflect the expected economic lives of these assets.

JGN also proposed to reduce the standard asset life for its metering assets to 15 years from the current approved life of 20 years. We accept this proposal as the reduced standard asset life of 15 years better reflects the economic life of the metering assets, and is better aligned with the standard asset life applied by other gas distributors for similar assets. Therefore, we are satisfied that the proposed standard asset life for the metering asset classes meets the depreciation schedule criteria in the NGR.

Economic lives

The depreciation criteria state that the depreciation schedule should be designed:

- so that each asset or group of assets is depreciated over the economic life of that asset or group of assets[55]
- so as to allow, as far as reasonably practicable, for adjustment reflecting changes in the expected economic life of a particular asset, or a particular group of assets.[56]

This section discusses our consideration of whether JGN's proposed reductions to the standard asset lives reasonably reflect the expected economic lives of the assets allocated to the metering and pipeline asset classes.

Meters and meter reading devices asset classes

JGN proposed to reduce the standard asset life for its metering assets to 15 years from the current approved life of 20 years. It stated that the current 20 years standard asset

[54] These assets are included in the 'Trunk Wilton-Sydney', 'Trunk Sydney-Newcastle', 'Trunk Wilton-Wollongong', 'HP mains', 'MP mains', 'MP services' asset classes.

[55] NGR, r. 89(1)(b).

[56] NGR, r. 89(1)(c).

life is higher than most of its peers and does not reflect the risk of technical obsolescence arising from the need to be able to meet future metrology standard.[57]

We consider that JGN's proposed standard asset life of 15 years reasonably reflects the expected economic life of the meter related asset classes.

EnergyAustralia submitted that JGN is replacing its residential meters every 25 years, indicating a longer asset life could be more appropriate.[58] However, we note that the meter asset classes[59] consist of different types of meters that have different technical lives, and the typical useful life of a customer meter ranges from 5 to 25 years.[60]

We agree with JGN that the proposed standard asset life of 15 years is better aligned with those applied by other gas distributors for similar asset classes. As shown in Appendix B to this attachment, all the gas distributors (except for JGN) currently adopt a standard asset life of 15 years for meter related asset classes. Our Consumer Challenge Panel (CCP19) submitted that the AER should look at aligning JGN's standard asset lives with those used by other gas networks, noting the benefit of reducing the impact on consumers in the future should standard asset life reductions be considered necessary.[61] We therefore consider that JGN's proposed 15 year standard asset life is reasonable as it is better aligned with the standard asset life used by other gas distributors and is within the range of typical useful lives for metering assets.

We also accept JGN's proposed 15 year standard asset life for the 'Meter reading devices' asset class. In its response to our information request, JGN stated that the meter reading device is an electronic machine that has a modem and communications capability.[62] Generally, we have taken the position that devices composed of electronics and telecommunications technology should have a 15 year expected technical life. Therefore, we consider that the proposed 15 year standard asset life is reasonable for this asset class for regulatory depreciation purposes.

Pipelines asset classes

We do not consider JGN's proposed reductions to the standard asset lives associated with the pipelines asset classes reflect the expected economic life of these assets. We consider that there is insufficient evidence that the expected economic lives of the assets allocated to these asset classes will be significantly shorter than their technical lives.

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57 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 proposed changes to asset lives for new assets*, June 2019, p .9.

58 EnergyAustralia, *Submission on the JGN AA 2020–25 proposal – Cover letter*, August 2019, p. 8.

59 'Contract meters' and 'Tariff meters' asset classes.

60 JGN, *2020–25 Access Arrangement Proposal – Attachment 6.7 – Unaccounted for gas*, June 2019, p. 3.

61 CCP, *Submission on the JGN AA 2020–25 proposal*, August 2019, p. 34.

62 JGN, *Response to information request 031*, 6 September 2019.

We note the submissions from consumer groups and retailers have raised a number of concerns, including the level of evidence that the economic life of JGN's pipeline assets has been reduced, as well as the unnecessary price impact resulting from the asset life changes.[63] We also note the submissions from Energy Networks Australia (ENA) and AusNet Services. The ENA advocated for a shift in our approach to depreciation,[64] and AusNet Services submitted that we should give full consideration to reducing the economic lives of gas assets.[65]

We have considered the issues raised by JGN that may affect the economic lives of its pipeline assets. However, there are still significant uncertainties surrounding the likely impact of these issues on the future utilisation of JGN's gas network. Therefore, we consider the assumption that these issues will result in the economic life of JGN's network assets being significantly reduced is speculative at this point in time. It is not adequately established by evidence-based forecasts. We also note the industry development of hydrogen gas. While we consider that hydrogen could have a significant positive impact on the future of JGN's gas network usage, we acknowledge that there is still much uncertainty about the viability of hydrogen gas at this stage. On balance, based on the available information before us, we consider there is insufficient evidence at this time to justify any change to the economic lives of JGN's pipeline assets.

Decarbonisation

JGN submitted that current circumstances show that engineering considerations alone are no longer sufficient for assessing the economic life of an asset. It stated that the longest current standard asset life (80 years) inherently assumes that the JGN network will be viable through until 2100 even though the NSW Government has a planned net-zero carbon objective by 2050. JGN also raised that the NSW Government's current policies have been largely electricity-centric.[66]

We acknowledge the NSW Government's planned net-zero carbon objective. However, we note that it has not yet been legislated. We consider this objective, by itself, is not sufficient evidence that the economic lives of the pipeline assets will be significantly shorter than their technical lives. We are not aware of any specific climate change policies announced by the NSW Government that will directly cause a material long term negative impact on JGN's network utilisation. We consider any assumptions about the nature[67] and impact of any potential NSW Government net-zero carbon

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63 AGL, *Submission on JGN 2020–25 AA proposal,* August 2019, p. 3; CCP19, *Submission on the JGN AA 2020–25 AA proposal,* August 2019, pp. 33 and 34; ECA, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 15 and 16; Origin, *Submission on the JGN AA 2020–25 proposal,* August 2019, p. 8; PIAC, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 7–8.

64 ENA, *Submission on JGN 2020–25 AA proposal – Cover letter*, August 2019, pp. 1–2.

65 AusNet Services, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 1.

66 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 7.

67 There are numerous potential policy options, including carbon offset schemes, increased electrification and support of natural gas, which are explored further within the context of the ACT network in the following article by

policies would be speculative at this point in time. Therefore, we do not consider that the NSW Government's net-zero carbon objective alone is sufficient evidence that JGN's pipeline assets will not be used beyond 2050. We would require evidence-based forecasts enabling us to form a judgment as to the likelihood of this risk eventuating in actuality, before we could make an adjustment to depreciation schedules which would otherwise conflict with the NGO and NGR.

Development of hydrogen gas

We consider that the introduction of hydrogen could have a substantial positive impact on the future of gas distribution networks. There is currently a significant international trend towards hydrogen development, with several countries announcing national strategies.[68] The Australian Government is also developing a domestic hydrogen strategy, which is planned to be released by the end of 2019.[69] The ENA's 2050 Gas Vision provides '*for Australia to turn its gas resources into products and services that will enhance national prosperity while achieving carbon neutrality'*.[70] It identified that hydrogen is one way to make this vision a reality. Furthermore, several stakeholder submissions suggested hydrogen as potentially having a positive impact on gas network usage.[71]

JGN submitted that hydrogen gas will not be cost competitive by 2030, and this is a key concern for the future use of hydrogen in its network. It also raised uncertainty with technical limitations on the ability to blend hydrogen into existing networks at higher concentrations which may reduce the ability to use hydrogen as an alternative to natural gas.[72]

We recognise that there are still many technical and economic challenges for blending hydrogen into the gas distribution networks in Australia. However, we note there has been positive progress in moving towards utilising hydrogen in gas networks. In its July 2019 issues paper, the national hydrogen working group of the Council of Australian Governments (COAG) Energy Council identified that trials of hydrogen blending in gas distribution networks are underway internationally as well as domestically. Early findings to date from Australian trials indicate that existing gas distribution networks

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the ENA: https://www.energynetworks.com.au/news/energy-insider/how-can-we-use-gas-without-emissions#_edn3.

68 See for example, an outline of Japan's strategic roadmap for hydrogen and fuel cells at https://www.meti.go.jp/english/press/2019/pdf/0312_002a.pdf; The hydrogen sections of the US multi-year research, development and demonstration plan at https://www.energy.gov/eere/fuelcells/downloads/fuel-cell-technologies-office-multi-year-research-development-and-22.

69 COAG Energy Council hydrogen working group, *Workplan*, August 2019. http://www.coagenergycouncil.gov.au/publications/establishment-hydrogen-working-group-coag-energy-council

70 ENA, *Gas Vision 2050 report*, February 2018. https://www.energynetworks.com.au/sites/default/files/gasvision2050_march2017_0.pdf.

71 ECA, *Submission on JGN 2020–25 Access arrangement – Cover letter*, August 2019, p. 14; Origin, *Submission on JGN 2020-25 AA proposal*, August 2019, p. 8.

72 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 7.

should be able to accept the blending of some hydrogen.[73] We also note that JGN has been undertaking a hydrogen trial in conjunction with the Australian Renewable Energy Agency.[74] The national hydrogen working group identified that hydrogen production costs are currently high. However, there is potential for production costs to reduce to minimise retail price impacts of blending hydrogen into natural gas.[75] A report by Deloitte Access Economics on behalf of the ENA indicated that hydrogen production via electrolysis will be cost competitive with decarbonised electricity (including network costs) by 2050.[76]

We consider the factors raised by JGN, stakeholders, and those highlighted in our review of industry research above indicate there is a positive, albeit uncertain, outlook for the impact of hydrogen on JGN's network. Therefore, we consider an assessment of changing the economic life of pipeline assets is better supported at a later stage when there is greater certainty about the feasibility of hydrogen gas. We note submissions from Origin and ECA also support this view.[77]

JGN stated that any consideration of hydrogen as potentially protecting the status quo assumption about economic life of gas distribution assets must be considered within a regime explicitly designed for natural gas.[78] We consider that the NGR and NGL do not prevent us from considering any relevant factors that affect the assessment of an appropriate depreciation schedule, having regard to ways in which JGN could receive a return on its investment. Relevant factors include the potential economic uses for the assets beyond those explicitly covered under the existing NGL. Given that the distribution of hydrogen gas in JGN's network is a potential economic use for its assets, it is a relevant factor we have had regard to in our draft decision.

Gas supply and demand

JGN submitted that the reduced demand per customer connection is indicative of a declining value proposition from gas to customers, and that this trend is forecast to continue over the next five years. JGN therefore submitted that it is appropriate to reduce its standard asset lives and increase prices in the short to medium term, but reduce the long term future prices, to preserve the value proposition for its long term customers.[79]

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73 COAG Energy Council, *National Hydrogen Strategy: Issues paper series – Hydrogen in the gas network*, July 2019, p. 4. https://consult.industry.gov.au/national-hydrogen-strategy-taskforce/national-hydrogen-strategy-issues-papers/.

74 https://arena.gov.au/projects/jemena-power-to-gas-demonstration/.

75 COAG Energy Council, *National Hydrogen Strategy: Issues paper series – Hydrogen in the gas network*, July 2019, p. 7. https://consult.industry.gov.au/national-hydrogen-strategy-taskforce/national-hydrogen-strategy-issues-papers/.

76 Deloitte Access Economics, *Decarbonising Australia's gas distribution networks*, November 2017, pp. 58–75.

77 ECA, *Submission on JGN 2020–25 AA proposal – Attachment*, August 2019, p. 13; Origin, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 9.

78 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 25.

79 This issue is considered in more detail in the section below on efficient growth in market for reference services.

We do not consider there is sufficient evidence that usage rates of JGN's assets will materially decline in the short to medium term.[80] We have identified that supply and demand factors indicate stable levels over the pre-2050 period. For the reasons discussed below, we consider that this material shows JGN's network is unlikely to face utilisation issues before 2050.

AEMO's annual consumption forecast through to 2038 indicates relatively stable levels of demand under all scenarios.[81] We also note that AEMO has recently released its 2019–20 Inputs and Assumptions Report which outlined the methodology for the 2020 Gas Statement of Opportunities (GSOO), and includes consideration of government policies[82] as a driver of future consumption, and recognises the need to assess the potential impact of a transition to a hydrogen economy.[83] We consider that the AEMO forecast, and the Inputs and Assumptions Report, provide a positive outlook on the overall utilisation of JGN's network.

We note that JGN has raised AEMO's forecast supply shortfall by 2030 as a potential issue for the utilisation of JGN's network.[84] AEMO has forecast supply adequacy concerns from 2030 onwards in the southern state gas markets,[85] and we note this may effectively put a ceiling on the amount of gas JGN can distribute. AEMO identified an upgrade to the Northern Gas Pipeline, which is owned by Jemena, as a potential solution to the supply constraints.[86] Jemena has indicated that it intends to commence preliminary works on the extension and expansion of the Northern Gas Pipeline in 2019.[87]

Further, we consider that although there are forecast supply shortfalls, these may be mitigated by a number of domestic supply solutions currently under consideration. There are high levels of domestic production of natural gas, particularly in Queensland, where the net production of gas is over seven times the total consumption of gas in NSW.[88] The Australian Domestic Gas Security Mechanism is designed to ensure that supply shortfalls are met. Finally, we note ECA raised the Port Kembla import terminal as another mitigating factor.[89] On balance, we consider that these factors, along with the potential Northern Gas Pipeline extension, do not indicate that issues arising from levels of domestic supply have been established as likely to eventuate.

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80 For more information on the forecast consumption per connection and forecast demand over the upcoming access arrangement period, please see Attachment 5 to this draft decision.

81 AEMO, *2019 GSOO National Gas Forecasting – Gas Annual Consumption – Residential and Commercial – NSW*, March 2019, accessed at http://forecasting.aemo.com.au/Gas/AnnualConsumption/Total.

82 AEMO, *2019–20 Forecasting and Planning Scenarios Inputs and Assumptions Report*, August 2019, p. 3.

83 AEMO, *2019–20 Forecasting and Planning Scenarios Inputs and Assumptions Report*, August 2019, p. 42.

84 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 8.

85 AEMO, *2019 Gas Statement of Opportunities*, March 2019, p. 46.

86 AEMO, *2019 Gas Statement of Opportunities*, March 2019, p. 56.

87 Jemena, *Jemena welcomes decision to lift fracking moratorium* accessed at https://jemena.com.au/about/newsroom/media-release/2018/jemena-welcomes-decision-to-lift-fracking-moratori.

88 Department of Environment and Energy, *Australian Energy Statistics – Table Q*, September 2019.

89 ECA, *Submission on JGN 2020–25 AA proposal – Attachment*, August 2019, p. 13.

We acknowledge that the potential issues JGN's network may face post-2050, including their impact on the utilisation of JGN's assets and therefore the economic lives of the assets, are difficult to assess at this point in time. However, on balance, we are not persuaded that the economic lives of JGN's pipeline assets will not achieve their technical lives. We have examined short and long term market factors and we have not found sufficient evidence that network utilisation is likely to significantly decline. Our draft decision reflects the view of consumers and retailers, that there is currently insufficient evidence to suggest that the economic lives of JGN's pipeline assets will be significantly reduced.[90]

Benchmarking of standard asset lives

JGN submitted that the proposed reductions to the standard asset lives were not out of line with those asset lives used by other gas networks for similar asset classes.[91] We have reviewed the standard asset lives benchmarking examples provided by JGN.

As discussed above, we consider that changing the standard asset life for metering assets to 15 years from 20 years is consistent with the economic life applied by other gas distributors for meter related assets. However, we do not consider the proposed shorter standard asset lives for the 'Trunks', 'HP mains', 'MP mains' and 'MP services' asset classes are consistent with those asset lives applied by other gas distributors for similar asset classes.

In its response to our information request, JGN acknowledged that its pipeline asset classes are more disaggregated, and therefore not directly comparable with most of the gas distributors used in its benchmarking examples.[92] Appendix B to this attachment details the standard asset lives used by each gas distributor for metering and pipelines asset classes.

Efficient growth in the market for reference services

We do not consider the proposed shorter asset lives would lead to tariffs varying, over time, in a way that promotes efficient growth in the market for reference services.[93] This is because there is insufficient evidence that the standard asset lives proposed for JGN's pipeline assets reflect their economic lives. The inconsistency between the proposed standard asset lives and economic lives of JGN's pipeline assets may create inefficient utilisation, investment and asset management incentives. These inefficient incentives can arise due to the depreciation profiles resulting from the proposed standard asset lives.

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90 ECA, *Submission on JGN 2020–25 AA proposal – Attachment*, August 2019, p. 13; AGL, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 3; Origin, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 8; PIAC, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 8.

91 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, pp. 22–23.

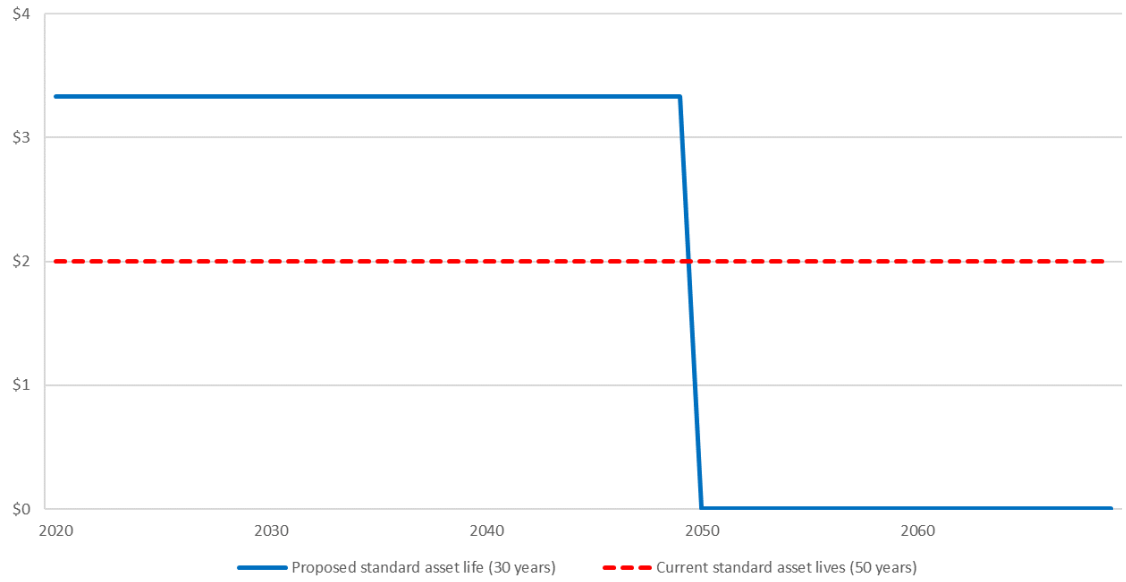
92 JGN, *Response to information request 031*, 6 September 2019.

93 NGR, r. 89(1)(a).

The impact of the shorter standard asset life on the depreciation profile of the medium pressure assets is demonstrated in Figure 4.1. This figure is based on $100 medium pressure mains capex incurred in 2020.[94] It shows that the depreciation profile under the proposed shorter asset life (the blue line) will result in a higher amount of depreciation during the period of cost-recovery through to 2050 for medium pressure assets.[95] There is then no depreciation of the medium pressure assets past 2050.[96] This results in there being no depreciation over the last 20 years of the expected economic life[97] of the medium pressure pipelines. This compares against the depreciation profile under the current standard asset life (the red dashed line), which reflects the expected economic life of medium pressure assets.

We discuss the impact of such a depreciation profile on the utilisation, investment and asset management of JGN's network in the sections below.

Figure 4.1 Depreciation profile of medium pressure assets under different standard asset lives ($ real)



Source: AER analysis.

Efficient utilisation of JGN's network

The depreciation schedule should be designed to ensure it promotes the efficient utilisation and growth of JGN's network over time. We must therefore consider the

94 This amount is depreciated over 30 years for the proposed standard asset life and depreciated over 50 years for the current standard asset life.

95 This would correspondingly be through to 2070 for high pressure pipeline assets.

96 This would correspondingly be past 2070 for high pressure pipeline assets.

97 As discussed above, we consider the expected economic life of JGN's medium pressure pipeline assets is 50 years.

economic price signals that the depreciation schedule may send to customers.[98] Ideally, depreciation should be set in a manner that least distorts demand for network services over time. Within the context of this decision, we consider that ensuring JGN's assets are evenly depreciated over the expected economic life of these assets will better promote efficient utilisation and growth of JGN's network. Furthermore, we consider that depreciating JGN's assets at a higher rate over a period shorter than their economic life could unnecessarily distort network utilisation.

Both the current standard asset lives and proposed standard asset lives ensure an even recovery of costs between years over time. For the reasons discussed above, we consider the current standard asset lives for JGN's pipeline assets better reflect the expected economic lives than JGN's proposed shorter standard asset lives for these asset classes.

All else being equal, the proposed shorter standard asset lives will result in higher prices for customers pre-2050, and lower prices for customers post-2050. These price signals will encourage customers to consume less gas pre-2050 and more gas post-2050.[99] We therefore consider that the proposed reductions to the standard asset lives may distort utilisation of JGN's assets over their expected economic lives. This distortion in the utilisation of JGN's assets is unlikely to promote efficient growth in the market for reference services.

Investment incentives

We consider JGN's proposed standard asset lives may also lead to inefficient investment and management of assets. JGN's proposed standard asset lives may create an incentive for JGN to replace its assets sooner than necessary. This is because we do not consider there is evidence that JGN's proposed standard asset lives are better aligned with the economic lives of its assets. The proposal may also result in JGN's assets being over-utilised, when the depreciation of its assets is relatively low and, all else being equal, the prices are lower. Over-utilisation may result in assets requiring replacement sooner.

Furthermore, JGN may have little incentive to continue using its assets beyond the end of the proposed standard asset life,[100] as there will be no further returns for fully recovered assets. Origin and AGL also raised these concerns.[101] We consider these outcomes may result in inefficient investment and asset management incentives, and are therefore unlikely to promote efficient growth in the market for reference services.

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98 It does so to the extent it impacts the overall level of revenues, although other building block costs can be even more significant at affecting overall revenues.

99 This is further supported by the Core demand forecasting methodology, which identifies price of gas as a key demand driver, see JGN, *2020–25 Access Arrangement Proposal – Attachment 8.2 – Demand forecast report*, pp. 40–41 and 46–47 for more information.

100 This is despite the economic (technical) lives of these assets being up to 30 years longer than the proposed standard asset lives.

101 Origin, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 9; AGL, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 3.

Long term interests of consumers

JGN submitted that its proposed approach will achieve the NGO and RPP because it:

- maintains a high degree of confidence that the costs will be recovered over the economic life of the assets
- it does not lead to a recovery in a profile over time that distorts the efficient use of the assets
- it acknowledges the asymmetric risk consumers face in regard to investment incentives, whereby the consequence of under-investment is worse than that of over-investment
- ensures economic lives reflect the current and future customers value.

JGN stated that most participants who attended the JGN customer forums supported this proposal to shorten the standard asset lives. It submitted that the customer forum attendees raised that they are willing to spend a little more today, if it means saving future customers significantly more on their bills. JGN stated that customer forum attendees had a positive outlook on the future of JGN's network, and the attendees also supported the proposed asset lives reduction as it pays off the asset sooner, and thereby reduces future bills if its network thrives.[102]

We have considered the customer engagement outcomes, and have concerns that some of the stated views may lead to adverse outcomes which are not in the long term interests of consumers. We also consider that there is insufficient evidence that the proposed standard asset lives meet the depreciation criteria under the NGR (as discussed in the above subsections).

We note that CCP19 has raised concerns around customers' ability to understand the complex nature of the issue. CCP19 also submitted that framing the concept of depreciation within the topic of fairness may have induced customers to want to appear like 'good people and to err on the side of what they think is generosity'.[103] Furthermore, as discussed above, the majority of stakeholder submissions we received did not support JGN's proposal to shorten the standard asset lives.[104]

On balance, we are not satisfied that JGN's proposal will promote the long term interests of consumers in respect of price as it will result in an inefficient tariff path. We are also not satisfied that the proposed reductions to the standard asset lives will promote efficient investment in, provision of or use of pipeline services, or that it appropriately addresses the costs and risks of the potential for under- or

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102 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 15.

103 CCP, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 32–33.

104 AGL, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 3; CCP19, *Submission on the JGN AA 2020–25 AA proposal,* August 2019, pp. 33–34; ECA, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 15–16; Origin, *Submission on the JGN AA 2020–25 proposal,* August 2019, p. 8; PIAC, *Submission on JGN 2020–25 AA proposal,* August 2019, pp. 7–8.

over-investment or use of pipelines. Therefore, we do not consider the proposed reduction in standard asset lives for the pipeline asset classes[105] will contribute to the achievement of the NGO.

Long term interests of consumers and price

JGN stated that its proposal has been heavily influenced by the following customer values: a long term investment horizon; affordability of gas prices; and intergenerational equality.[106]

However, we consider that the proposed reduction to the standard asset lives may not be consistent with these values. For example, we note that JGN has adopted a long term investment horizon and forward thinking capex strategies. However, this long term capex strategy may not be appropriate if the network usage trend is expected to decline significantly post-2050. In contrast, the customer value of intergenerational equality, addressed by the proposed accelerated depreciation, is only appropriate if there is sufficient certainty that network usage trend is expected to drop off significantly post-2050. Combining the two strategies reduces the affordability of gas prices in the short term, and potentially results in intergenerational inequality over the long term if demand does not drop off significantly post-2050.

Under JGN's approach, today's customer would be paying more than necessary for reference services for many years before return of capital will reach a level where future consumers may start to benefit from that higher payment through relatively lower prices. We consider that it is unlikely that all customers would benefit from this higher payment over time. This is because some current customers may have stopped using the reference services before a lower price could apply to them. On the other hand, future customers would be paying a lower price for reference services as a result of the higher payment made by today's customers if we were to accept JGN's proposed shorter standard asset lives. This is unlikely to promote efficient use of reference services.

JGN stated that the impact of its proposed shorter asset lives is a $22 million increase in revenue over the 2020–25 access arrangement period. This equates to $3 per customer per year increase over this period. It noted that in the context of other reductions in its total proposed revenues and the increase in total customer numbers, the net pricing outcome for customers is a total saving of $244 in the annual gas bills over this period.[107]

However, we note that a significant portion of this saving is due to the remittal amount of $169.1 million ($2019–20) being returned to customers through lower total revenue

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[105] These assets are included in the 'Trunk Wilton-Sydney', 'Trunk Sydney-Newcastle', 'Trunk Wilton-Wollongong', 'HP mains', 'MP mains', 'MP services' asset classes.

[106] JGN, *2020–25 Access Arrangement Proposal – Attachment 5.1 – Capital Expenditure*, June 2019, pp. 2–3.

[107] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 1.

for JGN over the 2020–25 period. This reduction in revenue is required to reflect our remade final decision for JGN for the 2015–20 period. After excluding the adjustment amount for the remittal, JGN's proposal would result in a reduced saving of $150 in total over the 2020–25 period.

The proposed shorter standard asset lives will increase prices in the 2020–25 period. We do not consider this to be consistent with the consumer value of affordability of gas prices identified in JGN's customer forum. Several stakeholders indicated that the price increase resulting from JGN's proposed reduction to the standard asset lives is concerning given its impact on consumers, with some noting that energy affordability is currently a major community issue.[108]

We have also reviewed the long term bill impact analysis of JGN's proposed reduction of standard asset lives submitted as part of its proposal. Our review of the submitted material identified some issues with the underlying assumptions and presentation of the analysis. These issues are discussed in Appendix C to this attachment.

Efficient investment and asset management

We consider that providing incentives for efficient investment and asset management promotes the long term interests of consumers. However, we do not consider JGN's proposed shorter standard asset lives will result in incentives for efficient investment. As discussed above, we do not consider there is sufficient evidence that JGN's assets would not be able to be used until the end of their intended technical lives. Therefore, JGN's proposal may result in recovery of its investments made in the 2020–25 period much earlier than its economic lives. If JGN was able to recover the cost of its assets before the end of their economic lives, this may encourage JGN to replace assets sooner than it would otherwise. This concern of inefficient investment incentives was also raised by Origin and AGL in their submissions.[109]

NPV neutrality

JGN's proposed reduction to its standard asset lives results in earlier cost recovery of its investment but would achieve a net present value (NPV) neutral position consistent with the requirement of the NGR.[110] However, we consider that this does not necessarily mean that it is in the long term interests of consumers.

This is because we consider that NPV neutrality is not equivalent to efficiency. The number of NPV neutral depreciation profiles that could be developed is practically limitless. Many of these NPV neutral depreciation profiles, however, could produce inefficient outcomes that are not in the long term interests of consumers. Those profiles

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[108] CCP, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 33; Origin, *Submission on JGN 2020–25 AA proposal,* August 2019, p. 9; AGL, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 3.

[109] Origin, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 9; AGL, *Submission on JGN 2020–25 AA proposal*, August 2019, p. 3.

[110] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. 2.

that could be considered efficient are likely to be more limited in number. Further, NPV neutrality from the service provider's perspective is unlikely to be NPV neutral from a customer perspective. This is because the service provider recovers the funds it invests regardless of timing. However, individual customers are likely to pay more or less in depreciation depending on the timing and amount of their consumption.[111]

Summary of the draft decision on standard asset lives

For this draft decision, we accept JGN's proposed standard asset lives for the majority of the proposed asset classes, except for the 'Trunks'[112], 'HP mains', 'MP mains' and 'MP services' asset classes. Table 4.4 sets out our draft decision on the standard asset lives for JGN over the 2020–25 access arrangement period. We are satisfied the standard asset lives approved in this draft decision will result in a depreciation schedule that reflect the depreciation criteria of the NGR, taking into account the NGO and RPP.

Table 4.4 AER's draft decision on the standard asset lives (years)

Asset class	Standard asset life
Trunk Wilton-Sydney	80.0
Trunk Sydney-Newcastle	80.0
Trunk Wilton-Wollongong	80.0
Contract meters	15.0
Fixed plant – distribution	50.0
HP mains	80.0
HP services	50.0
MP mains	50.0
MP services	50.0
Meter reading devices	15.0
Country POTS	50.0
Tariff meters	15.0
Computers – IT infrastructure	5.0

[111] For example, assume mortgage interest rates drop two per cent in the market. Your bank may come to you and say it is planning to keep the interest rate at its previous (now higher) level on the basis that it will provide a lower than market interest rate in ten years' time. Such a pricing approach may be NPV neutral from the bank's perspective. However, it would not be for a customer with only 10 years left on their mortgage. That customer would pay only the higher than market interest rate and receive no benefit from the lower than market rate in the future.

[112] This includes the 'Trunk Wilton-Sydney', 'Trunk Sydney-Newcastle' and 'Trunk Wilton-Wollongong' asset classes.

Asset class	Standard asset life
Fixed plant	10.0
Furniture	10.0
Land	n/a
Low value assets	10.0
Mobile plant	10.0
Vehicles	6.0
Existing pigging and inspection costs	n/a
Leasehold improvements	10.0
Buildings	48.0
Software – Inhouse[a]	5.0
Equity raising costs[b]	40.4

Source: AER analysis.

a This asset class was previously named 'Software'. It has been renamed for clarity.

b For this draft decision, the forecast capex determined for JGN does not meet a level to trigger any benchmark equity raising costs. JGN has calculated the standard asset life for equity raising costs based on the weighted average of the standard asset lives of the asset classes (using the net forecast capex as weights). This is consistent with the approach we have applied in our recent decisions for other network service providers. Therefore, we have updated the standard asset life for this asset class to reflect our draft decision on the forecast capex and standard asset lives for the asset classes.

4.4.2 Implementation of the year-by-year tracking depreciation approach

JGN proposed the year-by-year tracking approach to implement the straight-line method for calculating the depreciation schedule for its existing assets as at 1 July 2020. This represents a change from the current approach to determining remaining asset lives at the end of each access arrangement period, as employed for the 2015–20 access arrangement period. JGN has provided a separate depreciation model to implement the year-by-year tracking approach.

We have reviewed JGN's proposed depreciation model and the inputs to this model. We are satisfied that the proposed depreciation schedule for existing assets as at 1 July 2020 as calculated in the proposed depreciation model meets the depreciation criteria of the NGR. This is because the proposed depreciation model applies the straight-line depreciation method and adopted the same depreciation rates as approved in the 2015–20 access arrangement. Therefore, this will result in a depreciation schedule that allows the reference tariffs to vary over time in a manner

that would promote efficient growth in the market for reference services, allows assets to be depreciated only once and over its economic lives, and also allows for a service provider's reasonable needs for cash flow.[113]

We have previously accepted the year-by-year depreciation tracking approach in the 2018–22 access arrangements for Australian Gas Networks (AGN), AusNet Services and Multinet.

While we accept JGN's proposal for a year-by-year depreciation tracking approach, we have corrected some modelling errors in its depreciation model. We have also updated the WACC value for 2019–20 in the depreciation model to be consistent with the updates we have made in the capital base RFM (discussed in Attachment 2). In its response to our information request, JGN stated that it has no concerns with our modelling and input amendments.[114]

4.4.3 Accelerated depreciation for existing pigging and inline inspection costs

We accept JGN's proposal to apply accelerated depreciation to the residual value of existing pigging and inspection costs in the capital base as at 1 July 2020 to allow these costs to be fully depreciated by the end of the 2020–25 access arrangement period. This is because certain costs associated with pigging and inline inspection will be treated as opex in the 2020–25 period under JGN's new capitalisation policy.

JGN proposed to reallocate some of its capitalised pigging costs from its existing asset classes to a new asset class labelled 'Existing pigging and inspection costs', applying from 1 July 2020.[115] JGN proposed a remaining asset life of 5 years apply to this asset class to fully depreciate the residual value for pigging and inspection costs over the 2020–25 period.

We consider that the proposed reduced asset life for the 'Existing pigging and inspection costs' asset class is appropriate as it better reflects the expected remaining economic life of the assets.[116] While we accept the proposed shorter remaining asset life, we have reduced the amount to be depreciated to $14.8 million from the proposed $16.5 million. This is because we have corrected an input error in JGN's proposed pigging costs RFM. In its response to our information request, JGN has confirmed that this error correction is required.[117]

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113 NGR, rr. 89(a)–(b) and (e).

114 JGN, *Response to information request 017*, 22 August 2019.

115 JGN, *2020–25 Access Arrangement Proposal – Attachment 7.9 – Capital base*, June 2019, p. 9.

116 NGR, r. 89(b).

117 JGN, *Response to information request 042*, 8 October 2019.

4.5 Revisions

We require the following revisions to make the access arrangement proposal acceptable:

Revision 4.1:	Make all necessary amendments to reflect this draft decision on the regulatory depreciation allowance for the 2020–25 access arrangement period, as set out in Table 4.1.
Revision 4.2:	Make all necessary amendments to reflect this draft decision on the standard asset lives, as set out in Table 4.4.
Revision 4.3:	Make all necessary amendments to reflect this draft decision on the accelerated depreciation amount for existing pigging and inspection costs, as set out in section 4.4.3.

A Depreciation approaches in the regulatory context

This appendix discusses depreciation approaches in the regulatory context.

A.1 What is depreciation?

Traditionally, depreciation is an accounting construct. Depreciation in accounts indicates the use of an asset over the accounting year and represents its loss of value due to wear and tear over its useful life. Some assets, such as land, are not depreciated as they have an unlimited useful life.[118]

For assets that do depreciate,[119] their useful life is used to either account for the reduction in the asset value evenly over that life (called 'straight-line approach')[120] or to determine a percentage[121] that is then applied to the asset value to work out the annual depreciation amount.[122] Applying a percentage leads to a declining depreciation amount over time and is therefore called a 'diminishing value approach'.[123]

The size of the annual depreciation charge also depends on the basis of the accounting approach used for valuing the asset. The two broad approaches to asset valuation are historical cost and current cost accounting. Historical cost accounting records the asset value at the nominal price paid. Current cost accounting will update the asset value for inflation and may also revalue the asset periodically using various revaluation approaches.

The circumstance in which depreciation is applied determines the precise accounting approach. For example, the Australian Tax Office generally only allows historical cost

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118 Australian Accounting Standards Board, *AASB 116, Property, plant and equipment*, December 2015, paragraph 58.

119 Depreciation is defined in AASB 116 (property, plant and equipment) as the systematic allocation of the depreciable amount of an asset over its useful life. The accounting standard requires depreciation to be charged on a systematic basis over the life of the asset.

120 This approach is also referred to as 'prime cost'.

121 For example, an asset with a 10 year life could have a depreciation percentage of 10 per cent (i.e. 1/10) applied to the remaining asset value each year. This percentage may also have a multiple applied. For example, tax law may allow the 10 per cent to be doubled to 20 per cent for certain assets. The higher the multiple applied, the greater the decrease in the value of the asset early in its life due to faster depreciation.

122 Accounting standards also allow a 'units of production' approach. Under this approach annual depreciation depends on units produced. For example, a car may be able to 'produce' 300,000 km of travel in its life. A per km depreciation charge could be developed and an annual charge determined based on km driven each year. This approach is information intensive and therefore unlikely to be practical in many cases. For many regulatory assets, the units of production are likely to be 'years of service'. For example, a power line with an expected useful life of 40 years is unlikely to be in service for another 40 years just because its capacity was half used for the first 40 years. If 'years of service' is the 'production unit', the units of production approach effectively becomes a straight-line depreciation approach.

123 This approach is also referred to as 'declining balance'.

accounting for the value of the asset, but allows both the straight-line and diminishing value[124] approaches for determining the annual depreciation amount.

A.2 Depreciation in a building block revenue framework

Regulated network service providers invest in large sunk assets. While some connection assets may be recovered from customers upfront, the greater proportion of the sunk costs are recovered over time. A depreciation charge is used for this purpose.[125] The depreciation approach, for return of capital purposes, we have applied in all our regulatory determinations to date the straight-line method (coupled with an indexed asset base and nominal rate of return).[126] This approach results in a relatively even recovery of sunk costs over the economic life of the asset.[127] Such a profile of recovery is generally neutral in terms of incentives. That is, of itself, an even recovery profile over the economic life of the asset does not encourage or discourage early or later consumption or investment.

Economic literature has supported even recovery[128], back loading[129], and front loading (accelerated)[130] depreciation based on certain assumptions such as expected changes in demand and real replacement costs over time. Furthermore, the NGR allow for the deferral of a substantial portion of depreciation, where a market is relatively immature and is expected to grow significantly.[131] In general, when demand and costs are expected to be relatively constant over time, then an even depreciation profile is more appropriate than a back or front loading depreciation profile. In our APA GasNet 2013 final decision, we noted two specific circumstances that an even depreciation profile may not be appropriate:[132]

- where large lumpy investments occur with little initial demand. In this case, the deferral of depreciation may be necessary to encourage asset use. Economies of

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124 The diminishing value approach is favoured by a business trying to minimise their tax payments in the short run. The use of this method is also optimal given that the tax office does not allow asset values to be indexed for inflation. That is, historical cost accounting could lead to NPV<0 outcomes as inflation is not accounted for. Of course, a competitive business is free to set any price it wishes and may therefore recover this inflation cost outside of tax depreciation credits.

125 The term amortisation is used to describe the depreciation of non-tangible assets such as goodwill.

126 For tax purposes, we have started to model tax depreciation using the diminishing value approach. See: AER, *Final report: Review of regulatory tax approach*, December 2018, p. 76.

127 This even recovery profile of straight-line depreciation is also recognised in Australian Accounting Standards Board, *AASB 116, Property, plant and equipment*, December 2015, paragraph 60–62.

128 T Brennan, *Depreciation, investor compensation, and welfare under rate-of-return regulation, Review of industrial organization*, Vol. 6, Iss. 1, January 1991, pp. 73–87.

129 HS Burness and R Patrick, *Optimal depreciation, payments to capital, and natural monopoly regulation, Journal of regulatory economics*, Vol. 4, Iss. 1, March 1992, pp. 35–50.

130 M Crew and P Kleindorfer, *Economic depreciation and the regulated firm under competition and technological change, Journal of regulatory economics*, Vol. 4, Iss. 1, March 1992, pp. 51–61.

131 NGR, r. 89(2).

132 AER, *Final Decision APA GasNet, Part 3*, March 2013, pp. 128–129.

scale and scope will be encouraged by having lower prices initially to encourage use of such an asset.

- where capacity has been reached and no augmentation occurs. In these circumstances, tariffs may have to rise (which can be achieved in the short to medium term by increasing depreciation) rather than remain flat. However, there are a variety of ways to achieve this. In the first instance, the efficient response would be to restructure tariffs to deal with any localised constraints. If the network is constrained overall, tariff structures are less relevant and the recovery of sunk costs more quickly could be an efficient way to ration supply of the fixed capacity.

Some network service providers have also previously proposed front loading (accelerated) depreciation and submitted that they face particular circumstances warranting such depreciation profile.[133] This is discussed further in section A.3 below.

In economic literatures, accelerated depreciation is most likely to have relevance in industries characterised by rapid technological change, such as telecommunications (where demand for a technology may suddenly fall due to obsolescence), and in circumstances where the business bears the full risk of any stranding of assets. We consider that expectations of a persistent decline in demand and persistent declining real replacement costs may also support such an approach.[134]

The networks we regulate are often mature and growing (albeit slower than early in their life). Accordingly, we generally expect a mix of assets at different stages of their lives that are being replaced with continuing demand for the services and some new growth related assets. At a high level, we consider that a high degree of predictability on future demand and real replacement cost trends would be needed to assume the trend in real replacement costs or demand are to change significantly for that historically observed.

Changing the depreciation approach in a building block framework can have a significant impact that goes beyond the depreciation allowance. The approach for depreciation interacts with:

- the return on capital, through depreciation's impact on the remaining value of the asset base
- the weighted average cost of capital depending on whether it is measured in real or nominal terms

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[133] AusNet Services, *Revenue proposal 2017–22,* October 2015, pp. 175–190; AGN, *Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability*, January 2016, pp. 1–14.

[134] Both trends in real costs and demand would need to be considered. For example, if there is an expectation of persistently falling real costs, but even faster rising demand then back loading depreciation may be preferable. Accelerating depreciation on the expectation of persistent falls in real costs alone encourages greater use in the future and with rising demand will likely lead to steep falls in prices, congestion and potentially earlier need for augmentation. This example illustrates that determining an ideal depreciation path is difficult when expected trends in real costs and demand have a high degree of uncertainty.

- the approved capex (and the capital expenditure sharing scheme (CESS) incentives).

These interactions make regulatory depreciation a large and blunt instrument to achieve particular purposes. That is, the impact of the change of depreciation approach or the overall depreciation profile can be disproportional to the size of the potential problem[135] and there may be more targeted alternatives for dealing with the issues.

A.3 Proposed changes and the impact on the revenue profile

There have been three components of the depreciation approach where gas and electricity network service providers have proposed changes that impact the recovery profile of their investment. These areas of change are:

- reducing asset lives
- non-indexation of the asset base
- applying diminishing value, rather than straight-line depreciation approach.

We discuss the impact of each of these areas of changes briefly, before exploring the arguments for and against some of these proposals. In all cases, however, the proposals are aimed at increasing (or accelerating) the rate at which funds are recovered by the network service provider.[136]

A.3.1 Asset lives

Both the electricity and gas legislation require the funds invested to be recovered over the economic lives of the assets.[137;138] Determining the economic life of an asset is difficult. The economic life need not match the technical life of the asset, but if an asset is technically available for use, then clearly it can serve an economic purpose.[139] An implicit assumption in most analysis of depreciation is that the economic and technical lives are closely related in practice, particularly if the investment was approved with relative certainty. We have generally taken a similar approach in practice.

The proposed changes we have encountered regarding asset lives relate to both standard asset lives (the expected useful life of new assets) and the remaining asset

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135 We noted this in the APA GasNet decision and how all assets are affected in the same way, even when the problem may relate only to a certain section of the network.

136 Each change is NPV neutral in that it returns the initial cost of the asset. That is, only the profile of revenue is affected. This is discussed further in the subsection on NPV neutrality below.

137 NGR, rr. 89(1)(b) and (d); NER, cll. 6.5.5(b) and 6A.6.3(b).

138 We have considered r. 89(1)(a) of the NGR at times to review the price impact of a proposed change in remaining asset life based on efficient growth in the market.

139 That is, an asset at the end of its technical life has no economic worth. Similarly, an asset that is technically sound may have no economic worth if no one demands it at any price.

lives (the expected useful life of existing assets). We have generally conducted the assessment of standard asset life of an asset class based on an engineering perspective. We also take into account of the standard asset lives used by other network service providers for similar assets.[140] For example, we approved Multinet's proposal to reduce the standard asset life of its 'Meters' asset class as the proposed shorter life better aligns with those used by other electricity distribution network service providers for similar assets.[141]

We have allowed a revision to the remaining asset life of an asset class in particular cases. For example, we approved AusNet Services' proposed reduction to the remaining asset lives (accelerated depreciation) of certain assets that had been, or were expected to be, decommissioned.[142] Accelerated depreciation was also allowed where specific assets were destroyed and no longer providing services. For example, the remaining value of Ergon Energy's assets destroyed by Cyclone Larry was allowed to be recovered over one regulatory period.[143]

Finally, we have also accepted changes to the way remaining asset lives are updated between regulatory periods. Year-by-year tracking of depreciation has become more popular in recent times compared to the weighted average remaining lives approach. In the short run, all things being equal, this has increased the depreciation allowance of those who adopted it. In the long run, however, the depreciation profile will come to depend more on individual timing of replacement of the year-by-year tracked assets.

A.3.2 Indexation of the asset base

The electricity legislation requires the indexation of the asset base with the use of a nominal WACC.[144] This means that to prevent double counting of inflation, we remove the revaluation (indexation) gain on the asset base from the depreciation building block. The net depreciation allowance is then termed as 'regulatory depreciation'.[145]

In gas, the case is not so prescribed. The indexation of the asset base, and therefore the impact on regulatory depreciation, was challenged by APA GasNet in relation to its access arrangement proposal in 2012. In that case, we decided that indexation of the asset base remained appropriate. APA GasNet subsequently sought review of the matter by the Australian Competition Tribunal (Tribunal), which upheld our decision.

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140 In some cases, we have been limited by the use of non-standardised asset categories across service providers reflecting previous regulation across different jurisdictions.

141 AER, *Draft decision: Multinet gas access arrangement 2018 to 2022, Attachment 5 – Regulatory depreciation*, July 2017, pp. 16–17.

142 AER, *Final decision: AusNet Services transmission determination 2017–18 to 2021–22, Attachment 5 – Regulatory depreciation*, April 2017, pp. 9–10.

143 AER, *Final decision: Queensland distribution determination 2010–11 to 2014–15*, May 2010, p. 232.

144 NER, cll. S6.2.3(c)(4) and S6A.2.4(c)(4).

145 The indexation (revaluation) gain is subtracted from depreciation by convention. It could instead, for example, be included as a separate negative building block. The impact of changing this indexation on overall revenues will be the same regardless of its labelling.

Similarly, we did not accept AGN (SA)'s proposal to make a financeability adjustment to the indexation of the asset base.

In theory, there are three possible methods for determining revenue profiles using straight-line depreciation and asset lives based on their expected usefulness:

- applying a real WACC to the asset base indexed for inflation to determine the return on capital and applying straight-line depreciation of the indexed asset base to determine the return of capital (used previously by the Essential Services Commission of Victoria, Essential Services Commission of South Australia and Independent Pricing and Regulatory Tribunal)
- applying a nominal WACC to the asset base indexed for inflation to determine the return on capital and applying straight-line depreciation of the indexed asset base, plus an adjustment for the inflation of the asset base, to determine the return of capital (our standard approach, also applied by the ACCC and Queensland Competition Authority)
- applying a nominal WACC to the asset base at historical cost (un-indexed) to determine the return on capital and applying straight-line depreciation of the historical cost asset base to determine the return of capital (APA GasNet's and AGN's proposals[146]).

The first and second approaches above deliver the same cash flow outcomes over the life of the asset.[147] The cash flows of these methods lead to a relatively flat revenue profile which is expected to generate relatively stable prices, and a relatively even utilisation of the asset over its life.[148] In contrast, the third method front loads cash flows and consequently produces a steeper revenue profile leading to higher prices early in the asset's life, and lower prices later in the asset's life.[149]

The decision to not index the asset base is a significant one. The service provider's revenues increase by roughly the amount of the expected inflation rate multiplied by its asset base. Figure 4.2 shows recovery of revenue over the assumed entire useful life of an asset of 25 years, with a real WACC of 7.32 per cent, Consumer Price Index of 2.5 per cent and nominal WACC of 10 per cent. The cost of the asset is initially

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146 AGN's proposal is to only un-index the asset base by a fixed percentage so the impact in terms of the change in the slope of the line is only proportional to what APA GasNet proposed.

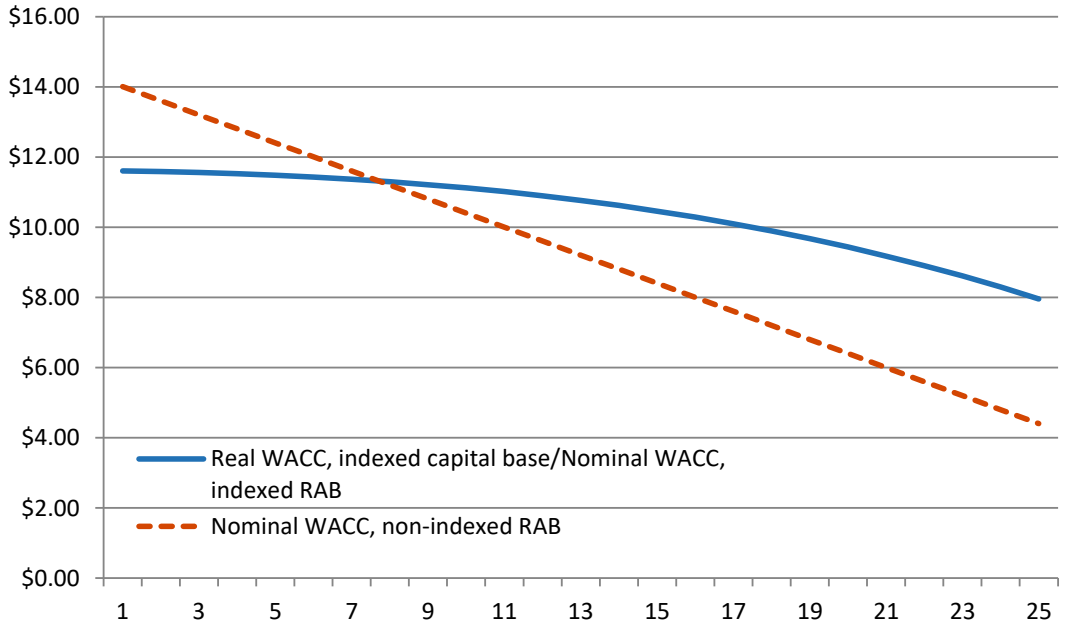
147 All three methods lead to an NPV neutral revenue profile over the life of the asset.

148 The precise path can be a slow decline or increase depending on such factors as the WACC and inflation, but relatively speaking the approach is flatter than the accelerated or back load approaches, which are obviously not of themselves aimed at achieving a flat revenue profile.

149 A switch in approach midway through an asset's life can be done in an NPV neutral way. When it occurs there is a step change in depreciation at the time of the switch. This timing also affects the change to future depreciation for each year of the asset's remaining life. For example, a switch that causes an increase in depreciation immediately requires depreciation to reduce in later years. The bigger the initial increase, and the closer the switch occurs towards the end of the asset's life, the steeper the decline in depreciation that has to occur over the remaining life of the asset to maintain NPV neutrality.

$100.[150] It shows that the higher regulatory depreciation caused by un-indexing the asset base significantly alters the profile of total revenue recovery (regulatory depreciation plus return on capital) over the asset's life. Therefore, within the legal context, the proportionality of such a change would need to be considered against the size of the issue to be addressed and the quality of the supporting evidence.

Figure 4.2 Revenue path example – indexed vs un-indexed asset base ($ nominal)



Source: AER analysis.

A.3.3 Straight-line versus diminishing value approach

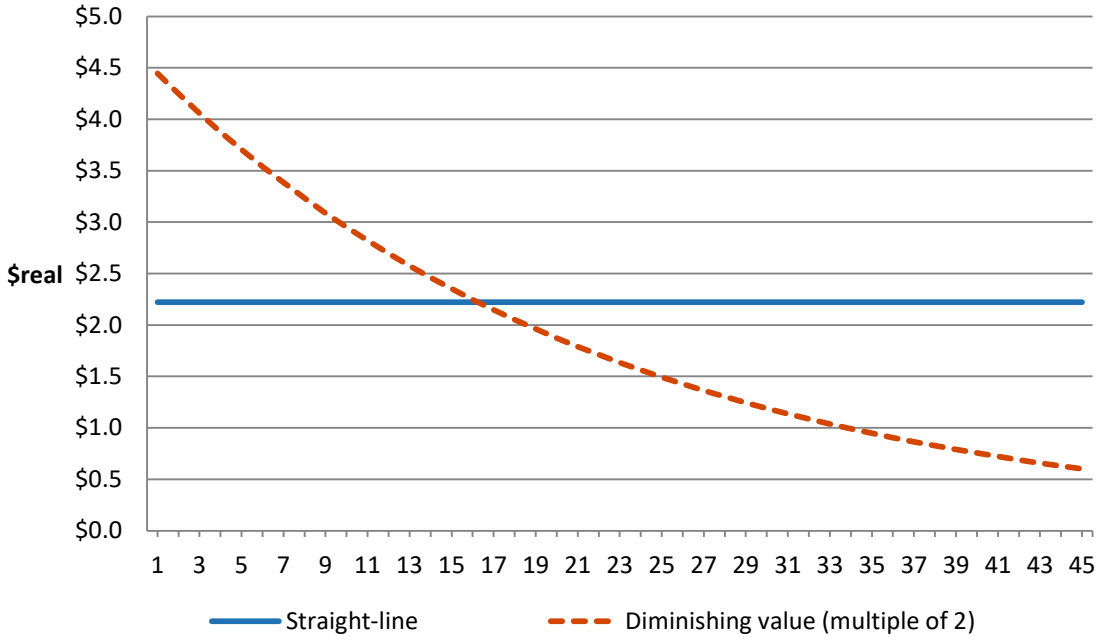
We have previously considered AusNet Services' (transmission) proposal to apply the diminishing value method instead of the straight-line method for depreciation. Straight-line depreciation is calculated by dividing the asset value by the number of years the asset is still expected to be in service. This means that there is an even recovery of depreciation, in real terms, over the useful life of the asset. The diminishing value method, on the other hand, depreciates an asset's remaining value by a given percentage each year.

Regardless of the percentage chosen, diminishing value results in the depreciation amount declining (reducing) each year as the percentage is applied to a decreasing asset value. This difference is reflected in Figure 4.3 for an asset with an expected standard asset life of 45 years and a $100 starting value. It also uses a multiple of two

[150] This example was first presented in the APA GasNet draft decision. AER, *Draft Decision APA GasNet, Part 2,* September 2012, pp. 177–178.

in the diminishing value formula as previously proposed by AusNet Services (transmission), which doubles the depreciation amount initially (in year 1).

Figure 4.3 Depreciation path – straight line vs diminishing value ($ real)



Source: AER analysis.

The diminishing value method leaves a residual value for the asset after it is expected to expire, whereas the straight-line method does not. This requires an ad hoc adjustment at the end of the asset's useful life to remove the remaining value or the life is effectively extended indefinitely.

The decision to switch to a diminishing value approach with a multiple is a significant one. It would be less so, if there was no multiple applied to the way the diminishing value rate was calculated. In that case, depreciation would reduce relatively slowly from its current levels. However, if a multiple is applied to the calculation (such as the value of two proposed by AusNet Services), then there will be an initial step change in depreciation equal to this multiple and the rate of decline in depreciation will also be greater compared to no multiple being applied. Within the legal context, the proportionality of such changes would need to be considered against the size of the issue to be addressed and the supporting evidence for such a case.

A.4 The arguments for and against accelerated depreciation

There are economic arguments that could be made for accelerated depreciation in specific circumstances.[151] Some of these on the face of it appear to conflict but are presented as discrete issues by the network service providers.[152] The arguments for accelerated depreciation that have been put forward by network service providers are:

- their proposal leads to an NPV neutral outcome
- the network is becoming constrained
- the network is becoming under-utilised due to disruptive technologies
- stranding risk
- promoting smooth prices for customers
- financeability concerns.

A.4.1 NPV neutrality

Both the electricity and gas legislations require the service provider to be allowed to recover only the funds it invested in NPV terms.[153] No revaluation gains can be kept by the service provider.[154]

NPV neutrality is generally considered an important principle.[155] Even though it is an explicit principle in our regulatory framework, many economists recognise NPV neutrality as an implicit part of the regulatory compact.[156] NPV neutrality has also been an important element in the UK in discussions on financeability. Due to uncertainty over whether financing concerns may be overstated and to prevent service providers getting any windfall gain or loss in the long run, accelerating depreciation has been considered as an option by regulators in the UK because it is at least NPV neutral. Other changes to depreciation, such as un-indexing of the asset base, while causing

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151 There have also been arguments presented for back loading depreciation, particularly in relation to greenfield pipelines, but we have not presented these arguments as no stakeholder is currently seeking such an outcome. Economically, back loading of depreciation is usually justified by theories such as fostering positive network externalities by encouraging connections or to overcome a first mover disadvantage or prisoner dilemma.

152 The CCP in response to our Issues Paper on AusNet Services' proposal also noted the various rationales being presented by the service providers for accelerated depreciation.

153 NGR, r. 89(1)(d); NER, cll. 6.5.5(b)(2) and 6A.6.3(b)(2).

154 Inflation is compensated for through the use of a nominal rate of return.

155 There are also approaches that look beyond this principle. Such approaches can recognise depreciation as the stream of future benefits from the assets over its life and may even include the cost of eventual replacement of the asset. In such cases, the depreciation allowance is divorced from the actual costs paid by the regulated service provider (and does not affect the asset base). We have allowed such outcomes in limited circumstances. For example, in public lighting we have allowed an annuity based approach to depreciation to be used based on the expected replacement cost of these lighting assets and a set expected asset life.

156 R Schmalensee, *An expository note on depreciation and profitability under rate-of-return regulation, Journal of regulatory economics*, Vol. 1, Iss. 1, September 1989, pp. 239–298.

step change increases in depreciation initially, can also be NPV neutral by requiring depreciation to fall relatively more (than the indexed approach) in later years. In fact, the proposed changes to the depreciation approach discussed in section A.3 above are all NPV neutral in their application.

While NPV neutrality is an important principle, it is also a directionless one as almost a limitless number of NPV neutral depreciation profiles could be developed. To take an extreme example for illustrative purposes, the funds of an asset with a 50 year standard life could be recovered in five years in an NPV neutral way. Theoretically, a customer should be indifferent to paying for an asset in five or 50 years, as long as the customer has use of the asset for 50 years.[157] However, if the speed of recovery is too extreme, demand will be inefficiently deterred. In such an extreme case, a service provider may also find it difficult to operate for another 45 years if they had received all of the funds back in five years.[158]

In the APA GasNet decision, we considered that:

> "…APA GasNet's proposed change of depreciation approach was largely NPV neutral. However, there are two important points to observe regarding this standard:
>
> 1. NPV neutrality is not equivalent to efficiency. It is adopted as a standard to make sure a business is kept whole—that is, what is invested by the business is returned to it in NPV terms over the economic life of its assets. However, even if recovery of funds were, say, deferred by a hundred years in a NPV neutral way, this deferral would likely send the business bankrupt. Similarly, if customers were asked to pay for all investment immediately (again consistent with NPV neutrality) those customers could go bankrupt or simply stop consuming. Neither outcome would be efficient.
>
> 2. NPV neutrality from the business perspective is unlikely to be NPV neutral from a customer perspective. It is reasonable to assume that the current service provider will still be delivering the service into the future. Accordingly, there is scope to consider when it is optimal for the business to recover sunk costs. However, it is less certain that today's customers will also be future customers. It is even less likely customers will consume the same amount of services in each period, which would be necessary for NPV neutrality from a customer perspective."[159]

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[157] Obviously if the asset is replaced as soon as funds are recovered, the customer would not be indifferent to the recovery period.

[158] In theory, however, the service provider could set aside money received in advance to continue to operate the full 50 years.

[159] For example, assume mortgage interest rates drop two per cent in the market. Your bank may come to you and say it is planning to keep the interest rate at its previous (now higher) level on the basis that it will provide a lower than market interest rate in ten years' time. Such a pricing approach may be NPV neutral from the bank's perspective. However, it would not be for a customer with only 10 years left on their mortgage. That customer

The Tribunal, in accepting our position in relation to APA GasNet, also implicitly accepted that more than just NPV neutrality needs to be shown by the service provider to justify an accelerated depreciation approach.[160]

A.4.2 Network constraints

This premise was presented by APA GasNet who suggested that higher depreciation (that leads to higher prices) at that time would better allocate scarce resources.[161]

We accepted this argument at a high level, but rejected APA GasNet's approach on the following grounds:

- General network wide constraints were not evident. Only certain parts of the network appeared to possibly be subject to constraint. We suggested peak pricing solutions for these areas. Adopting an un-indexed asset base approach would have accelerated depreciation across the entire network.
- Augmentation allowances were approved that could be used to remove these constraints. If no augmentation was planned, constraints may have been expected to be more prevalent.

A.4.3 Network utilisation and asset stranding risk

In its 2020–25 proposal, JGN has raised this issue to justify its proposed reduction to the standard asset lives for its key pipeline assets. It noted potential cost recovery uncertainties caused by a number of issues, such as declining gas utilisation trend, forecast gas supply shortfall and the NSW Government's planned 2050 carbon neutral target. JGN submitted that the accelerated depreciation will reduce risk associated with investments and preserve efficient investment incentives for it.

AusNet Services (transmission) also previously proposed accelerated depreciation to address potential decline in network utilisation caused by new technology.

There is economic literature supporting front loading of depreciation where there is stranding risk—that is, the risk the service provider will be uncompensated if the asset is no longer used.[162] Such positions are usually advocated in rapid change technological sectors, such as telecommunications.

As discussed above, we consider that changing the depreciation approach in a building block framework can have a significant impact that goes beyond the depreciation

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would pay only the higher than market interest rate and receive no benefit from the lower than market rate in the future.

160 Australian Competition Tribunal, *Application by APA GasNet Australia (Operations) Pty Limited (No 2) [2013] ACompT8*, 18 September 2013, para. 181.

161 AER, *Access Arrangement final decision, APA GasNet Australia (Operations) Pty Ltd, 2013–17, Part 2: Attachments*, p. 147.

162 M Crew and P Kleindorfer, *Economic depreciation and the regulated firm under competition and technological change, Journal of regulatory economics*, Vol. 4, Iss. 1, March 1992, pp. 51–61.

allowance given its interactions with other building blocks. Therefore, any significant change to the depreciation approach will need to be justified.

Based on our assessment of the evidence before us, we have identified the following concerns with JGN's proposal, which are discussed in this Attachment:

- AEMO data suggested that through until 2038, there is stable NSW commercial and residential gas demand under all forecasting scenarios. AEMO has also forecast a supply shortfall by 2030. However, there is a significant level of domestic gas production,[163] an Australian Domestic Gas Security Mechanism and several interstate transmission pipelines commissioned, including the Northern Gas Pipeline (run and operated by Jemena).[164] These indicate that network utilisation is less likely to be significantly impacted over the short to medium term.
- There is significant uncertainty around the NSW Government's policies on decarbonisation, and their potential impact on JGN's network utilisation. We are not aware of any policies that would have a direct negative impact on JGN's network utilisation.
- Higher depreciation and prices in the short term may accelerate any decline in utilisation. That is, higher prices (caused by accelerated depreciation) may discourage customers to connect to the gas network.
- Incentives for efficient capex. Our specific concerns are:

  (a) Whether the capex is warranted – If utilisation of the network is expected to fall significantly, it would be questionable whether the capex should be approved in the first place. Rather than accelerating depreciation on new assets, providing service providers with incentives/funding to extend the lives of existing assets, instead of building new assets, may be preferable. Other alternatives, such as requiring greater upfront connection costs for augmentation, could also be a better solution for specific areas of concern rather than a change to a depreciation approach that affects all new assets and customers in the same way.

  (b) Accelerated depreciation can encourage early asset replacement – If the asset is largely depreciated before its useful life ends, the service provider may be encouraged to replace the asset sooner than necessary. The lower returns in later years (given the asset value has been quickly depreciated away) may provide incentives for early asset replacement to maintain prices at higher levels. More generally, it is questionable whether a service provider would be willing to continue to operate an asset for many years on which it is getting very little return, having recovered most of its money in the early years of the asset's life.

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[163] Department of Environment and Energy, *Australian Energy Statistics – Table Q*, September 2018.

[164] AEMO, *2019 Gas Statement of Opportunities*, March 2019, p. 56.

- We do not consider that depreciation is an appropriate tool to reduce a network service provider's exposure to potential network-wide asset stranding risk. Stakeholders' submissions raised that the potential stranding of gas infrastructure assets is an industry-wide issue, with the ECA advocating for the development of a national strategy for addressing such issue.[165]

A.4.4 Price impact

JGN stated that the proposed reductions to its standard asset lives will only contribute to a small increase in revenues and therefore prices. Given other reductions in its total proposed revenues for the 2020–25 access arrangement period, the net pricing outcome will still result in a reduction in customer bills.

We consider that it is important that prices are varied over time to reflect the changes in the efficient costs of other building blocks. We consider that the depreciation profile should not be amended to offset a lower WACC or any other building block costs, thereby maintaining prices at higher than economically justified levels, distorting investment and consumption decisions.

Some service providers have submitted other building block cost reductions are only 'temporary'.[166] These suggestions go beyond expected use and replacement costs of the assets. We consider that to engage in such broader forecasting is effectively extending the entire building block assessment beyond the relevant regulatory period. Forecasting is uncertain, particularly across a number of regulatory periods as there is more scope for things to change over multiple periods. Errors in such long term forecasting are more likely to lead to unintended impacts.[167]

Arguments on the temporary nature of cost reductions also have not addressed annual updates that occur in the regulatory framework. For example, the rate of return is updated annually for the return on debt.[168] If the return on debt rises each year, the rate of return will rise each year. If depreciation has been increased too (due to accelerated depreciation) during the regulatory period, then customers face higher prices from both the higher depreciation and the rising rate of return over that period.[169] The impact on customers of changing the depreciation profile is not temporary but long lasting (even if cost reductions prove to be temporary). If the return on debt falls or

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165 ECA, *Submission on JGN 2020–25 AA proposal – Cover letter*, August 2019, p. 15

166 Incenta, *Assessing financeability for a benchmark regulated business: comment on the draft decision*, January 2016, p. 3.

167 For example, the replacement costs of assets may be expected to rise in the future suggesting back loading of depreciation. However, if depreciation is instead accelerated due to a lower rate of return than previously, then this will create a step change problem in depreciation and therefore prices when the asset is replaced.

168 There are also annual cost pass throughs that can occur during an access arrangement period.

169 That is, an overshooting in revenues necessarily occurs over the access arrangement period. To prevent this outcome within the access arrangement period, any step change in depreciation during the access arrangement period would have to be avoided. Instead, depreciation would have to decline from its current levels as the return on debt increases to maintain stable prices over the access arrangement period.

remains relatively flat each year, then cost reductions could not be considered temporary.

We have been able to demonstrate that accelerated depreciation is unlikely to lead to smoother long term prices in the cases encountered to date.[170] It would only be in coincidental circumstances—for example, coincidental timing of replacement of assets or specific changes in other building block costs—that a declining depreciation profile would lead to smoother revenue than our approach that adopts a flat depreciation recovery profile.

Such coincidental circumstances are unlikely to be maintained in the long run. Instead, in the modelling conducted, accelerating depreciation generally leads to relatively higher prices for a number of regulatory periods before prices reduce significantly. After the initial step up in depreciation (and therefore prices), prices only slowly decline for a number of periods, because the 'temporarily' lower costs are still rising to their assumed future level in the models. From that point on, the downward trajectory of accelerated depreciation dominates the change in prices year on year.

A.4.5 Financeability

APA GasNet and AGN (more recently) submitted that we should adjust the depreciation allowance in order to meet certain financial metrics necessary to achieve the adopted benchmark credit rating for estimating the return on debt.

As discussed in our decisions for APA GasNet and AGN, we were not persuaded that these financial metrics can be used determinatively in a building block revenue framework. As a result, we were not satisfied that there is strong evidence in support of an accelerated depreciation profile for such reason. Specifically, we considered:

- Increasing depreciation in the short run would mean relatively lower depreciation in the future. Unless the return on equity increases substantially, this may exaggerate the impression of weak financial metrics.[171]
- We were required to estimate the rate of return in a way that achieved the rate of return objective of promoting efficient investment in, and efficient operation and use of, the network services for the long term interests of consumers. Similarly, we set revenue allowances to compensate the service provider for its efficient opex, tax and capital expenses (through return on and of capital). As we were satisfied that the rate of return achieved the objective, we were not persuaded there was a basis to make compensatory adjustments to the depreciation allowance.

[170] See for example; AER, *Access arrangement final decision APA GasNet Australia (Operations) Pty Ltd 2013–17 Part 3: Appendices,* March 2013, pp. 137–142.

[171] However, we consider that the credit ratings agencies might also be inclined to accept lower metrics in line with the lower return on equity environment.

A.5 Conclusion

Depreciation is only one driver impacting overall revenues and therefore prices. Pricing structures can also be used to address many issues without adopting a particular depreciation profile. Adopting a particular depreciation profile may counter other aspects of the regulatory decision (for example, a higher depreciation allowance offsetting a lower rate of return).

The National Gas and Electricity Rules require the depreciation profile to reflect the nature of the assets over their economic lives in the asset base.[172] An approach that allows recovery of depreciation evenly in real terms over an asset's useful life reflects a general expectation that both present and future customers are likely to get similar economic use from the assets. Of itself, an even recovery of invested funds does not distort the timing of consumption or investment decisions. Accelerating or decelerating depreciation necessarily distorts the timing of consumption and investment decisions to achieve a particular end—for example, accelerating depreciation in the face of falling utilisation, raises prices and is likely to encourage further reductions in utilisation.

Given depreciation is a blunt instrument, great confidence in the size and direction of any expected trends would be needed before a particular depreciation profile is adopted. The consequences of applying a particular depreciation profile in the short run may exacerbate the problem it was intended to solve or create new problems in the long run. Using a depreciation approach to deal with short term cash flow problems (as proposed previously by AGN), falling utilisation or asset stranding risk (as proposed previously by AusNet Services and currently by JGN) looks particularly problematic in the long run. Accelerating depreciation reinforces these problems in the long run, absent some future counterbalancing factors.

[172] NGR, rr. 89(1)(b) and (d); NER, cll. 6.5.5(b) and 6A.6.3(b).

B Standard asset lives applied by gas distributors

The tables below set out the standard asset lives currently adopted by the gas distributors in Australia (except for WA) for asset classes related to metering and pipeline assets.

JGN (NSW)			
Asset class	**Current standard asset life (years)**	**Proposed changes (years)**	**Types of capex**
HP mains	80	50	HP mains
MP mains	50	30	MP mains
MP services	50	30	MP services
Contract meters	20	15	Meters
Tariff meters	20	15	Meters
Meter reading devices	20	15	Meter reading devices

AGN (SA)		
Asset class	**Standard asset life (years)**	**Types of capex**
Mains	60	HP mains, MP mains & MP services
Meters	15	Meters

Evoenergy (ACT)		
Asset class	**Standard asset life (years)**	**Types of capex**
HP mains	80	HP mains
MP mains	50	MP mains
MP services	50	MP services
Contract meters	15	Meters
Tariff meters	15	Meters

AGN (Vic & Albury)		
Asset class	**Standard asset life (years)**	**Types of capex**
Mains & services	60	HP mains, MP mains & MP services
Meters	15	Meters

AusNet Services (Vic)		
Asset class	**Standard asset life (years)**	**Types of capex**
Transmission pipelines	60	HP mains & HP services
Distribution pipelines	60	MP Mains & MP services
Meters	15	Meters

Multinet (Vic)		
Asset class	**Standard asset life (years)**	**Types of capex**
Transmission and distribution	50	HP mains, MP mains & MP services
Meters	15	Meters

APT Allgas (Qld) (now under light regulation)		
Asset class	**Standard asset life (years)**	**Types of capex**
HP steel mains	80	HP mains
Distribution mains	50	MP mains
M/LP customer services	50	MP services
Metering equipment	15	Meters

Envestra (Qld) (now under light regulation)		
Asset class	**Standard asset life (years)**	**Types of capex**
Mains	60	HP mains, MP mains, MP services
Meters	15	Meters

C Long term bill impact of the reduction in asset lives

As part of assessing JGN's proposed standard asset lives reductions for the 2020–25 access arrangement period, we have reviewed the long term bill impact analysis undertaken by JGN in Appendices A and B of attachment 7.10 of its proposal. We have the following comments on JGN's analysis.

C.1 Dollar terms

We note that the long term price impact numbers presented in Appendices A and B of attachment 7.10 of the proposal are shown in nominal dollar terms. We also note that it is typical to factor in the impact of inflation when comparing costs across different periods.

For example, JGN stated that customers would be paying $43 and $86 more on their annual gas bills if the proposed change to asset lives is deferred by 5 and 10 years respectively from 2050–51 onwards.[173] However, we note that the impact of deferring the change to asset lives would be halved to approximately $21 and $42 if they are expressed in current ($2019–20) dollar terms. We calculated the real dollar values by removing 31 years of forecast inflation (2.37 per cent per annum) from the nominal annual bill impact values.[174]

In our view, presenting the price impact figures in real dollar terms is a better approach when comparing the difference in the bill amount across periods and over a long period of time.

C.2 Declining volume trend scenario

We note that the declining volume trend is an important assumption that JGN relied on in its long term bill impact analysis presented in Appendix B to attachment 7.10 of its proposal. However, this declining trend is not consistent with AEMO's forecast on annual gas consumption in NSW. As shown in Table 4.5 below, AEMO has forecast that the annual gas consumption in NSW will continue to grow until 2038 under all scenarios in its 2019 GSOO.[175]

Our understanding is that JGN's use of a declining volume trend forecast is based on the assumption that hydrogen would be proven to be technically and economically unviable around 2030. It then assumed that the rate of decline would be doubled every

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[173] JGN, *2020–25 Access Arrangement Proposal – Attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. B–1.

[174] We have adopted a forecast inflation rate of 2.37 per cent per annum consistent with the forecast inflation applied in Attachment 7.10A. For the purpose of this analysis, we have assumed the nominal bill impact values ($43 and $86) are in 2050–51 dollar terms.

[175] For residential and commercial customers.

five years after 2031–35. However, we note that AEMO's forecast incorporated a much broader range of factors that affect annual gas consumption than those considered by JGN for its volume declining trend forecast.[176]

In its response to our information request, JGN provided reasons why it did not rely on AEMO's forecast in its previous customer engagement. It also raised a number of concerns with AEMO's forecast.[177] While we note the concerns raised by JGN, our view is that AEMO's forecast should be considered as a reliable alternative reference for gas consumption trend in NSW. As shown in Table 4.5, AEMO's forecast under all scenarios deviate from the JGN's volume declining scenario.

Table 4.5 Annual consumption forecasts (per cent)

	2025–30	2031–35	2036–40[b]	2041–45	2046–50
JGN – Volume declining scenario	1.00%	–1.35%	–2.70%	–5.40%	–10.80%
2019 AEMO GSOO – Fast scenario[a]	0.70%	0.68%	0.60%	n/a	n/a
2019 AEMO GSOO – Neutral scenario[a]	0.45%	0.43%	0.36%	n/a	n/a
2019 AEMO GSOO – Slow scenario[a]	0.34%	0.25%	0.13%	n/a	n/a

Source: JGN, *2020–25 access arrangement proposal – attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, Table B1–2; AEMO, *2019 GSOO publication*, March 2019; AEMO annual consumption forecasts for NSW residential and commercial customers only.

(a) The fast, neutral and slow scenarios represent different approaches to estimating the key drivers of the AEMO annual consumption forecast. The fast scenario represents strong economic and population growth, and a faster decarbonisation rate. In contrast, the slow scenario represents weak economic and population growth, and a slow decarbonisation rate. For more information on the scenarios and their drivers, see page 14 of the AEMO 2019 GSOO.

(b) Please note, the AEMO 2019 GSOO forecasts concludes at 2038.

n/a Not available.

C.3 Bill impact under flat or increasing volume scenarios

We note that JGN has presented a bill impact analysis comparing three options for asset lives reduction under flat or increasing demand trend scenarios in its proposal.[178] JGN's analysis indicated that its proposed asset lives reduction occurring in 2020–25

[176] The factors considered by AEMO include weather conditions, connection growth, energy efficiency savings, climate change impact, behavioural response to retail prices and gas-to-electricity switching. AEMO also forecast the annual consumption trend under different scenarios to reflect different rate of economic and population growth, decarbonisation of stationary energy and transport sectors, development of renewable generation and decentralisation; AEMO, *Gas demand forecasting methodology information paper*, March 2019, p. 17; AEMO, *2019 GSOO publication*, March 2019, p. 14.

[177] JGN, *Response to information request 038 – Annual bill and asset lives*, 23 September 2019, pp. 6–9.

[178] JGN, *2020–25 access arrangement proposal – attachment 7.10 – proposed changes to asset lives for new assets*, June 2019, p. B–2.

(option 1) will result in lower bills for customers post-2050 than the other options of deferring the reduction by five years or ten years (options 2 and 3, respectively). This result is to be expected, as the higher costs are being spread over a longer period.

Furthermore, our view is that JGN should also consider the bill impact of reducing the standard asset lives (e.g. option 1) against a base case of maintaining the current standard asset lives. This is because the proposed asset lives reduction may not be required if annual demand is expected to stay flat or increase over time compared with a declining demand scenario. We are not aware of any reasons why asset lives would still need to be reduced under flat or increasing demand trends. We consider that this additional analysis could help better inform customers on the cost impact of JGN's proposed asset lives reduction under scenarios where demand increases or stays flat over time.