

FINAL DECISION Australian Gas Networks Access Arrangement 2016 to 2021

Attachment 5 – Regulatory depreciation

May 2016



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Inquiries about this publication should be addressed to:

Australian Energy Regulator GPO Box 520 Melbourne Vic 3001

Tel: (03) 9290 1444 Fax: (03) 9290 1457

Email: AERInguiry@aer.gov.au

Note

This attachment forms part of the AER's final decision on the access arrangement for Australian Gas Networks South Australian distribution network for 2016–21. It should be read with all other parts of the final decision.

The final 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 Value of imputation credits
- Attachment 5 Regulatory depreciation
- Attachment 6 Capital expenditure

Attachment 7 - Operating expenditure

Attachment 8 - Corporate income tax

- Attachment 9 Efficiency carryover mechanism
- Attachment 10 Reference tariff setting
- Attachment 11 Reference tariff variation mechanism
- Attachment 12 Non-tariff components
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Shortened forms

Shortened form	Extended form
AA	Access Arrangement
AAI	Access Arrangement Information
AER	Australian Energy Regulator
AGN	Australian Gas Networks
ATO	Australian Tax Office
capex	capital expenditure
САРМ	capital asset pricing model
ССР	Consumer Challenge Panel
CESS	Capital Expenditure Sharing Scheme
CPI	consumer price index
CSIS	Customer Service Incentive Scheme
DRP	debt risk premium
EBSS	Efficiency Benefit Sharing Scheme
ECM	Efficiency Carryover Mechanism
ERP	equity risk premium
Expenditure Guideline	Expenditure Forecast Assessment Guideline
gamma	value of imputation credits
GSL	Guaranteed Service Level
MRP	market risk premium
NECF	National Energy Customer Framework
NERL	National Energy Retail Law
NERR	National Energy Retail Rules
NGL	National Gas Law
NGO	National Gas Objective
NGR	National Gas Rules
NIS	Network Incentive Scheme
NPV	net present value
opex	operating expenditure
PFP	partial factor productivity
PPI	partial performance indicators

Shortened form	Extended form
PTRM	post-tax revenue model
RBA	Reserve Bank of Australia
RFM	roll forward model
RIN	regulatory information notice
RoLR	retailer of last resort
RPP	revenue and pricing principles
SLCAPM	Sharpe-Lintner capital asset pricing model
STPIS	Service Target Performance Incentive Scheme
ТАВ	tax asset base
UAFG	unaccounted for gas
WACC	weighted average cost of capital
WPI	Wage Price Index

5 Regulatory depreciation

When determining the total revenue for AGN, we must decide on the depreciation for the projected capital base (otherwise referred to as 'return of capital').¹ Regulatory depreciation is used to model the nominal asset values over the 2016–21 access arrangement period and the depreciation allowance in the total revenue requirement.² This attachment outlines our final decision on AGN's annual regulatory depreciation allowance for the 2016–21 access arrangement period. Our consideration of specific matters that affect the estimate of regulatory depreciation is also outlined in this attachment. These include:

- the standard asset lives for depreciating new assets associated with forecast capex³
- the remaining asset lives for depreciating existing assets in the opening capital base.⁴

5.1 Final decision

Consistent with our draft decision, we approve AGN's revised proposal to use the straight-line method to calculate the regulatory depreciation allowance. However, we do not approve AGN's revised proposed regulatory depreciation allowance of \$122.5 million (\$nominal) for the 2016–21 access arrangement period. This is because of our updates to the revised proposed remaining asset lives as at 1 July 2016 and other components of AGN's revised proposal, in particular, the projected opening capital base (attachment 2), the forecast inflation (attachment 3) and the forecast capex (attachment 6). We also do not accept AGN's revised proposal to make a financeability adjustment in calculating the regulatory depreciation allowance.

Consistent with our draft decision, we accept AGN's weighted average method to calculate the remaining asset lives as at 1 July 2016. In accepting the weighted average method, we have updated AGN's revised proposed remaining asset lives as at 1 July 2016 to reflect the amended capital base roll forward for the 2011–16 access arrangement period (attachment 2). Also, we accept AGN's standard asset lives assigned to each of its asset classes for the 2016–21 access arrangement period which are consistent with the draft decision.

Our final decision on AGN's regulatory depreciation allowance is \$93.6 million (\$nominal) over the 2016–21 access arrangement period as set out in Table 5.1. This is \$28.9 million (or 23.6 per cent) lower than AGN's revised proposed amount.

¹ NGR, r. 76(b).

² Regulatory depreciation allowance is the net total of the straight-line depreciation less the annual inflation indexation on the projected capital base.

³ The term 'standard asset life' is also referred to as 'standard economic life', 'standard life', 'asset life' or (in the AGN proposal) 'economic asset life'.

⁴ The term 'remaining asset life' is also referred to as 'remaining economic life' or 'remaining life'.

We have revised the access arrangement having regard to our reasons for refusing to approve AGN's proposal and the further matters identified in the NGR section 64(2). Our revisions are reflected in the *Approved Access Arrangement for Australian Gas Networks' South Australian distribution network for 2016–21*, which gives effect to this decision.

	2016–17	2017–18	2018–19	2019–20	2020–21	Total
Straight-line depreciation	44.3	50.0	57.7	65.1	67.2	284.3
Less: indexation on capital base	33.1	35.7	38.1	40.6	43.2	190.7
Regulatory depreciation	11.2	14.3	19.6	24.5	24.0	93.6

Table 5.1AER's final decision on AGN's regulatory depreciationallowance for the 2016–21 access arrangement period (\$million, nominal)

Source: AER analysis.

5.2 AGN's revised proposal

Consistent with its initial proposal, AGN's revised proposal has applied the standard approach for depreciation in the PTRM. That is, it has indexed its capital base for inflation, and calculated its regulatory depreciation allowance as straight-line depreciation less this indexation adjustment.⁵

However, consistent with its initial proposal, AGN submitted that this proposal was contingent on an assessment of financial ratios used by credit rating agencies, called 'credit metrics'. In its revised proposal, AGN provided a report from NAB Client Solutions and Advisory (NAB) who identified the funds from operations (FFO) to debt ratio as a key credit metric that credit rating agencies use to assess AGN's financial profile.⁶ AGN identified nine per cent as the FFO to debt downgrade threshold from AGN's Baa1 Moody's rating.⁷ It also submitted a further report from Incenta Economic Consulting (Incenta) which identified that the capital base should be partially indexed by a rate of CPI–2 per cent to maintain a BBB+/Baa1 credit rating.⁸ It stated that this adjustment is required to avoid the key credit metric falling below the threshold if revenues were determined based on the rate of return approved by the AER in the draft decision.⁹

⁵ AGN, Access arrangement information, July 2015, p. 165.

⁶ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, pp. 2–3.

⁷ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, pp. 2–3.

⁸ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, pp. 3–4.

⁹ Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 3.

AGN's revised proposal applied the same standard asset lives as those we approved in the draft decision. It also used the weighted average approach to determine remaining asset lives of the capital base as at 1July 2016. AGN's revised proposed regulatory depreciation for the 2016–21 access arrangement period is set out in Table 5.2.

	2016–17	2017–18	2018–19	2019–20	2020–21	Total
Straight-line depreciation	44.6	50.4	58.4	65.8	68.1	287.2
Less: indexation on capital base	28.2	30.4	33.0	35.2	37.9	164.8
Regulatory depreciation	16.5	20.0	25.4	30.5	30.2	122.5

Table 5.2AGN's revised proposed regulatory depreciation for the 2016–21 access arrangement period (\$million, nominal)

Source: AGN, *Revised proposed PTRM*, January 2016; AER analysis.

Note: Numbers may not add due to rounding differences.

5.3 AER's assessment approach

We have not changed our assessment approach for regulatory depreciation from our draft decision. Section 5.3 of our draft decision details that approach.¹⁰

5.4 Reasons for final decision

We do not approve AGN's revised proposed regulatory depreciation amount of \$122.5 million (\$nominal) for the 2016–21 access arrangement period. We approve AGN's proposed method to calculate the regulatory depreciation allowance which is the straight-line depreciation less the annual inflation indexation on the projected capital base, as set out in AGN's revised proposed PTRM. This method is consistent with that approved in the draft decision.

However, we do not accept AGN's proposal to increase its regulatory depreciation forecast by making a financeability adjustment of two per cent to reduce the amount of the indexation applied to the projected capital base when the FFO to debt credit metric falls below nine per cent. This is because we consider such an adjustment will result in a depreciation schedule that is inconsistent with the requirements of the NGR and the long term interests of consumers and, therefore, will not be in accordance with the national gas objective (NGO) and revenue and pricing principles (RPPs).

Our final decision on AGN's regulatory depreciation allowance is \$93.6 million (\$nominal) over the 2016–21 access arrangement period, a reduction of \$28.9 million (\$nominal) (or 23.6 per cent) compared to the revised proposed amount. This

¹⁰ AER, Draft decision: Australian Gas Networks access arrangement – Attachment 5 – Regulatory depreciation, November 2015, pp. 9–11.

reduction is made because of updates to the revised proposed remaining asset lives as at 1 July 2016 and other components of the revised proposal, as discussed below.

Consistent with the draft decision, we approve AGN's standard asset lives assigned to each of its asset classes for the 2016–21 access arrangement period. We also accept AGN's proposed weighted average method to calculate the revised remaining asset lives as at 1 July 2016. However, we have updated AGN's remaining asset lives as at 1 July 2016 to reflect the amended capital base roll forward for the 2011–16 access arrangement period (attachment 2).

Our determinations on other components of AGN's revised proposal that affect the calculation of the regulatory depreciation allowance include:

- a reduction to AGN's revised opening capital base as at 1 July 2016 of \$15.7 million (\$nominal) or 1.1 per cent. Our assessment of the revised proposed opening capital base is set out in attachment 2.
- an increase to AGN's revised proposed forecast inflation for the 2016–21 access arrangement period from 2.01 per cent per annum to 2.39 per cent per annum. Our assessment of the revised proposed forecast inflation rate is set out in attachment 3.
- a reduction to AGN's revised forecast net capex of \$92.1 million (\$nominal) or 13.1 per cent. Our assessment of the revised proposed forecast capex allowance is set out in attachment 6.

5.4.1 Regulatory depreciation method

The regulatory depreciation approach we have applied for all gas transmission and distribution access arrangement decisions to date involves two components:

- 1. a straight-line depreciation allowance calculated by dividing the asset value by its standard economic life (for new assets) or remaining economic life (for existing assets); and
- an offsetting adjustment for indexation of the assets values. This component is necessary to prevent double counting of inflation when a nominal rate of return is applied to the inflation indexed capital base. We remove the revaluation (indexation) gain on the capital base from the depreciation building block when setting total revenue.

The net depreciation allowance is then termed as 'regulatory depreciation'. This is also the depreciation approach that is currently employed for AGN's 2011–16 access arrangement period. While there may be different depreciation approaches for setting total revenue, we refer to the regulatory depreciation approach described above as the 'standard approach' in this attachment.

The depreciation approach has been a relatively uncontroversial part of a regulatory decision for gas and electricity network service providers. In recent years there have been a few proposals put to us by gas and electricity network service providers for broad accelerated depreciation of their asset bases, using a variety of arguments to support their cases. AGN in its proposal for the 2016–21 access arrangement period

also proposed a change to the approach to depreciation. Against this background, we have sought to outline the role of depreciation in a holistic way. Appendix A to this attachment contains a paper we developed on depreciation's role in the regulatory context. This paper also provides a theoretical framework for our assessment of AGN's proposal on the depreciation approach.

The paper (as presented in appendix A) highlights how the current approach to depreciation delivers a relatively even recovery of revenues over an asset's life and that, in itself, such a profile is not distortionary to consumption or investment decisions. It notes that, in theory, an ideal depreciation profile would be set based on known future changes in demand and real replacement costs of assets. However, it also notes that future changes in demand and real replacement costs are unknown and that many networks we regulate are mature, with overall demand and real replacement costs that are relatively stable compared to, say, a new and limited customer network. The paper also highlights that depreciation is a blunt instrument¹¹ given its interactions with other building blocks and how all assets (at various stages of their lives) can be affected identically. The long term implication of a short term acceleration of depreciation also needs to be considered. Against these considerations, a change in depreciation approach from the current standard approach is a proposition that needs to be well justified.

In its initial proposal, AGN submitted if the AER determined a lower rate of return than AGN proposed, a different depreciation approach should apply to improve its financeability.¹² This alternative approach would produce a higher regulatory depreciation allowance by adjusting the indexation component (the second component above) of the regulatory depreciation allowance to the extent that the credit metrics for a BBB+ credit rating are achieved. This adjustment results in higher regulatory depreciation because it removes a smaller amount associated with the indexation component when setting total revenue.

In the draft decision, we did not accept AGN's proposal to adjust the indexation component of the regulatory depreciation allowance when certain credit metric thresholds could not be met. This was because:

- AGN's proposal on the alternative depreciation schedule was incomplete. AGN did not set out the relevant basis for calculating its alternative depreciation schedule in its proposal.
- AGN's claim of a financeability issue or a credit rating downgrade due to a lower rate of return was not sufficiently substantiated.
- AGN did not demonstrate that its alternative depreciation schedule satisfies the depreciation criteria as set out in the NGR and would be in the long term interests of consumers.

¹¹ That is, the impact of the change of depreciation approach can be disproportional to the size of the potential problem and there could be more targeted alternatives for dealing with the issues.

¹² AGN, Access arrangement information, July 2015, pp. 164–165.

• AGN did not provide a robust assessment of the long term impact of its proposed accelerated depreciation across the economic life of the assets.

In its revised proposal, AGN applied the standard approach for depreciation in its PTRM. However, AGN did not adopt our draft decision in full and consistent with its initial proposal, it maintained that its depreciation approach is contingent on the AER's approval of its revised proposed rate of return (8.66 per cent). It proposed to adjust the indexation applied to the capital base when calculating the depreciation building block so as to meet certain credit metrics used by credit rating agencies. AGN's revised proposal included a report from NAB that identified FFO to debt ratio as a key credit metric that credit rating agencies use to assess AGN's financial profile. It identified nine per cent as the FFO to debt downgrade threshold from AGN's Baa1 Moody's rating.¹³ It also submitted a further report from Incenta which identified that the capital base should be partially indexed by a rate of CPI–2 per cent to maintain a BBB+/Baa1 credit rating.¹⁴ The implication of this adjustment is that if CPI was two per cent, AGN's approach would give the equivalent outcome of the capital base not being indexed at all.

The issues of adjusting the indexation of the capital base from the calculation of regulatory depreciation and of financeability have been raised in our previous decisions. In 2012, APA GasNet proposed to remove the indexation of the capital base from the calculation of regulatory depreciation.¹⁵ The proposed approach was aimed to accelerate depreciation and therefore bring forward cash flows relative to the standard approach. APA GasNet also claimed financeability as one of the reasons for its proposed change to the depreciation approach on that occasion. In our 2013 decision for APA GasNet, we considered that indexation of the capital base remained necessary.¹⁶ APA GasNet subsequently sought review of our decision by the Australian Competition Tribunal. Our decision on this matter was upheld by the Tribunal.¹⁷ We note that APA GasNet's circumstances were not materially different to what is being proposed by AGN.¹⁸ Also, ActewAGL, in its 2016–21 access arrangement proposal, made its proposed regulatory depreciation approach contingent on meeting certain BBB to BBB+ credit metrics. Similar to our draft decision for AGN,

¹³ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, pp. 2–3.

¹⁴ Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 3.

¹⁵ AER, Final decision: Access arrangement final decision—APA GasNet Australia (Operations) Pty Ltd 2013–17: Part 2: Attachments, March 2013, pp. 141–142.

¹⁶ AER, Final decision: Access arrangement final decision—APA GasNet Australia (Operations) Pty Ltd 2013–17: Part 2: Attachments, March 2013, p. 140.

¹⁷ Australian Competition Tribunal: *Application by APA GasNet Australia (Operations) Pty Limited (No 2) [2013] ACompT 8,* September 2013, p. 51.

¹⁸ AGN's proposal is based on an adjustment to the indexation of the capital base resulting in a similar outcome as the one proposed by APA GasNet. While APA GasNet proposed no indexation to be applied to the capital base, AGN proposed the indexation of the capital base to be partially adjusted to the extent that the FFO to debt credit metric threshold of 9 per cent is achieved.

we did not accept ActewAGL's contingent proposal.¹⁹ ActewAGL subsequently adopted our draft decision and did not make further submissions on this matter in its revised proposal.

AGN's proposed adjustment to the depreciation approach is aimed at increasing the cash flows in the 2016–21 access arrangement period in order to meet certain credit metrics. However, we note that not only would the proposed adjustment have a significant impact on tariffs in the 2016–21 access arrangement period, it would also affect tariffs potentially over many future access arrangement periods.

Figure 5.1 shows that tariffs under AGN's proposed approach would be about 17 per cent higher than the tariffs determined under the standard approach in the 2016–21 access arrangement period. Tariffs would remain at a higher level when compared to the standard approach for about another 15 years under AGN's proposed approach, all else being equal.²⁰ However, in later years, tariffs under AGN's approach would be lower than the tariffs under the standard approach.²¹

¹⁹ AER, Draft decision: ActewAGL Distribution Access Arrangement 2016 to 2021: Attachment 5 – Regulatory depreciation, November 2015, pp. 13–14.

²⁰ We note that the impact of the change of depreciation approach for future access arrangement periods is sensitive to the underlying assumptions about the trend in future variable costs such as WACC, opex and capex. Here, we have held these costs constant from the 2016–21 access arrangement period to 2055–56 to show only the impact of the change of the depreciation approach on revenue.

²¹ Under AGN's approach, it would receive an additional \$156 million (or 17 per cent) in revenue compared to the standard approach in the 2016–21 access arrangement period. It would also receive additional revenues of \$121million (or 11 per cent), \$87million (or 7 per cent) and \$42 million (or 3 per cent) over the 2021–26, 2026–31 and 2031–36 access arrangement periods respectively, all else being equal. However, revenue under the AGN's approach would be lower that the revenue under the standard approach from 2036–37 to 2055–56.



Figure 5.1 Price path index (\$2015–16) – constant rate of return and constant capex

Source: Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 12. AER analysis.

We have considered the material provided in AGN's revised proposal, including the reports by Incenta and NAB, against the depreciation criteria of the NGR and taking into account the NGL's RPPs.²² We have also considered submissions by the CCP²³ and the Energy Consumers Coalition of SA²⁴ on this matter, and the impact of AGN's proposal on the long term interest of consumers, including the impact on prices over time.

Our final decision is not to accept AGN's proposed adjustment to the indexation component of the regulatory depreciation building block. This is because we consider AGN's proposed adjustment will result in a depreciation schedule which would not meet all the depreciation criteria required by the NGR. Specifically, we consider that the proposed adjustment would result in a depreciation schedule that:

 would not lead to tariffs varying, over time, in a way that promotes efficient growth in the market for reference services.²⁵ This is because AGN's proposed approach would not allow tariffs to vary with changes in variable costs over time. Accordingly,

²² NGR, r. 89 and NGL s. 24.

²³ Consumer Challenge Panel: Advice to AER from Consumer Challenge Panel sub-panel 8 regarding the AER draft decision and Australian Gas Networks' (SA) revised access arrangement 2016–21 proposal, March 2016, p. 5.

 ²⁴ Energy Consumers Coalition of SA: AGN revenue reset 2016–21: response to AER draft decision, February 2016, p. 39.

²⁵ NGR, r. 89(1)(a).

we consider the price paths generated under AGN's proposed approach will not lead to efficiency in network utilisation, investment and asset management. This therefore will not promote efficient growth in the market for reference services.

- would not be consistent with the long term interests of consumers with respect to price. This is because AGN's approach will result in price paths which are not cost reflective.
- would not promote the efficient investment in, provision of, or use of pipeline services. The proposed approach focuses on increasing cash flows to achieve certain credit metrics regardless of the reduction in costs forecast in the 2016–21 access arrangement period. This means that consumers will potentially have to pay more for reference services than the cost of producing those services for many years until a lower price may be applied sometime in the future. This would inefficiently discourage demand at a time of falling costs because prices are set above the efficient level. The lower prices in future will encourage excess demand when AGN expects costs to rise again.²⁶ This may also lead to current consumers cross-subsidising future consumers.

We consider that the uncertainty around future prices and the inter-generational inequity issue created under AGN's approach are not in the long term interests of consumers, having regard to the RPPs.

The foundation of the analysis from both of AGN's consultants depends on a comparison of estimated financial metrics against a threshold financial metric they assume for a particular credit rating. Their assumed financial metric thresholds are taken from excerpts within credit opinions by Moody's Investor Service (Moody's) and Standard & Poor's (S&P). We consider AGN and its consultants have placed excessive weight on short excerpts from these credit opinions without having regard to their full context and findings. In confidential appendix E to this attachment, we have summarised and assessed both of these credit opinions support the AER's approaches to rate of return and depreciation, and indicate that the regulatory framework has a positive and supportive impact on the creditworthiness of regulated businesses.

Therefore, for this final decision, we have not accepted the proposed adjustment to the indexation of the capital base in calculating AGN's regulatory depreciation for the 2016–21 access arrangement period. Rather, we have applied full CPI indexation annually in rolling forward AGN's capital base, and this full indexation amount is subtracted from the amount of the straight-line depreciation in calculating the regulatory depreciation building block as part of setting total revenue.

We consider the depreciation schedule set in this final decision meets the NGR's depreciation criteria and is in the long term interests of consumers, in accordance with

²⁶ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 4.

the NGO and RPPs. The sections below set out our assessment and consideration of the issues in further detail.

Efficient growth in the market for reference services

In assessing whether AGN's proposed depreciation approach complies with rule 89(1)(a) of the NGR, we have analysed the price path scenarios presented in Incenta's further report submitted as part of AGN's revised proposal. We have also conducted additional analysis of other possible price path scenarios which were not included in Incenta's further report. Appendix C discusses our consideration of the price path scenarios presented in Incenta's further report and our additional price path scenarios in detail.

Incenta's price path scenarios

Incenta modelled the expected tariff paths under different assumptions about future costs such as the rate of return and capex over a period of 40 years (from 2016–17 to 2055–56). Incenta compared the price paths generated using AGN's proposed approach with that of the standard approach under the different assumptions it made on the future trends of the rate of return and capex.

We note that the analysis of future price paths depends on the assumptions of the future trends for several key inputs such as rate of return, demand, opex and capex. Although these inputs will likely change over time, the exact timing, direction and degree of how these variables will change over the longer term are unknown. For the purposes of making a decision on AGN's 2016–21 access arrangement, we are required to make a forecast on these cost variables over the 2016–21 access arrangement period. Therefore, we consider any assumptions on the trend of these costs beyond the 2016–21 access arrangement period are speculative. While we have concerns with speculations about future costs, we have carefully considered the price path scenarios presented in Incenta's further report.²⁷

Our analysis of the price path scenarios shows that AGN's proposed approach would likely result in inefficiency in network utilisation. This will lead to inefficient growth in the market for reference services which is inconsistent with the requirement of rule 89(1)(a).

We consider that efficient utilisation for reference services requires variations in tariffs to reflect variations in costs over time. However, our analysis shows that AGN's approach does not allow tariffs to vary with changes in costs over time. For example, when costs are assumed to remain constant over time, the tariff path under AGN's proposed approach will start at a higher level due to the increased cash flows from depreciation. It then decreases over time because cash flows are reducing due to a

²⁷ We note that Incenta presented two price path scenarios in its first report submitted with AGN's initial proposal. As stated by Incenta, the two price path scenarios presented in the first report are similar to the first and second scenarios in its further report. Therefore, we have only focussed on the price path scenarios in Incenta's further report in our assessment. Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 9.

lower depreciation as a result of a smaller capital base, all things being equal. However, when rate of return and capex are assumed to increase in the future, the price paths under AGN's approach remain relatively flat over time.

We consider that this mismatch between costs and prices has the potential to send incorrect signals for asset utilisation because customers have to pay more (or less) for reference services than the cost of producing them. In contrast, the price path under the standard approach better tracks forecast changes in costs over time and therefore is less likely to distort utilisation over the life of the asset.

AER price path scenarios

Incenta's price path scenarios focused on the assumption that the rate of return is temporarily low and will revert to eight per cent in the future. However, we consider that although the rate of return and capex will likely vary over time, by how much and when exactly they will vary beyond the 2016–21 access arrangement period is uncertain. Figure 5.1 shows that when costs are assumed to remain constant over time, the price path under AGN's approach decreases over time. The standard approach, on the other hand, better tracks the change in costs over time when compared to AGN's approach.

We have also conducted additional price path scenarios assuming costs are decreasing over time in order to fully understand the impact of AGN's proposed approach on the price path. As presented in appendix C, under the scenario of decreasing costs, AGN's proposed approach results in customers paying a higher tariff for four to five access arrangement periods relative to the standard approach until a lower tariff may be applied. We consider this will likely have a significant impact on network utilisation. AGN's approach brings forward future cash flows in anticipation of future increase in costs. However, this may create cash flow problems in the future if it is later found that costs are actually being maintained or decreasing. This is because more revenue reduction in the future is required to offset the increase in revenue being recovered earlier in the period.

Smoother price path

Incenta submitted that AGN's approach would produce a smoother and flatter price path than the standard approach if the rate of return reverts to the historical average of eight per cent and capex is at a high level. It also suggested that a smoother profile would be more consistent with encouraging the efficient use of the network. As demonstrated in appendix C, AGN's approach does not always lead to a smoother or flatter price path over time. Under the scenarios of decreasing costs over time, the price paths under the standard approach are smoother and flatter when compared with the price paths generated under AGN's approach. This is because the shape and variability of a price path are sensitive to assumptions on the future trend in cost variables.

Nevertheless, we consider that a smoother price path over time will not necessarily lead to efficient use of a network. While we consider smooth revenues, particularly within an access arrangement period, is important, it is not an end in itself. If it is efficient for tariffs to fall or rise between access arrangement periods, due to changes in other building blocks' efficient costs, they should do so. The revenue reductions in the draft decision (and this final decision) flow from the assessment of the efficient level of costs for each of the building block components for the 2016–21 access arrangement period. There are reductions in certain building blocks—such as the rate of return, forecast capex and opening capital base as at 1 July 2016.²⁸ Some of these reductions reflect changes in market conditions. We consider AGN should not apply accelerated depreciation to 'fill in' the reduction in revenues because this will lead to tariffs being set at an inefficient level for the 2016–21 access arrangement period.

Further, we note that Incenta's smoother price path is the result of specific assumptions it made on the smoothing factors (X factors) for year 2 to 5 in each access arrangement period.²⁹ However, we do not usually conduct price or revenue smoothing in such way. In our decisions, we would aim to smooth the price or revenue path between access arrangement periods and within an access arrangement period as much as possible. To do so, we will target the difference between the smoothed and unsmoothed revenue to be within three per cent. We would also take into consideration the views of customers and the business in relation to price path smoothing.

Other matters

Finally, we consider that AGN's proposed approach may also lead to inefficient investment and management of assets. This may lead to inefficient growth in the market for reference services which is inconsistent with the requirement of rule 89(1)(a). This is because AGN's proposed approach may:

- unnecessarily discourage upstream and downstream investment in the short and medium term because prices are higher, and encourage inefficient upstream and downstream investment in the future when prices are lower
- result in an incentive for AGN to replace its assets sooner based on reasons other than the efficient provision of reference services. This is because under AGN's approach, over utilisation may occur as assets approach the end of their useful life because price is relatively low. This may lead to replacement of assets being undertaken sooner than necessary. This view is supported by the Energy Consumers Coalition of SA. It submitted that using accelerated depreciation, assets can be written down much faster than implied by their engineering lives which may lead to new capex prematurely.³⁰

²⁸ The opening capital base is reduced because AGN's actual capex for the 2011–16 access arrangement period is less than the forecast capex determined at the reset for the 2011–16 access arrangement.

²⁹ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 7. For the constant capex scenarios, Incenta has set the X factors for year 2 to 5 of each access arrangement period at 1 per cent which implies an annual decrease in price in real terms. For the high capex scenarios, X factors are assumed to be at 0 per cent for year 2 to 5 which implies price remains constant in real terms.

³⁰ Energy Consumers Coalition of SA, *AGN revenue reset 2016–2021 response to AER draft decision*, February 2016, p. 39.

Reasonable cash flow needs

The depreciation schedule should be designed to meet certain requirements set out in rule 89 of the NGR. One of those requirements is to allow for the service provider's reasonable needs for cash flow to meet financing, non-capital and other costs. We are satisfied that the standard depreciation approach will allow AGN to achieve these reasonable cash flow needs.³¹

We do not consider that this criterion, which is one of a number of criteria that we must consider, requires us to adopt an approach to depreciation that guarantees a service provider will gain or maintain a particular credit rating.

We consider it is significant rule 89 specifies that the depreciation schedule should be designed so as to allow for the 'reasonable' cash flow needs of the service provider to be met. We take the view that 'reasonable' costs, as used here, should be assessed having regard to what a prudent business in the position of the service provider, acting efficiently, would require. It is not the actual costs of the business but rather the reasonable costs, that we need to consider. This approach is consistent with the general approach for determining various elements of an access arrangement final decision, as referred to throughout the NGR.

Designing a depreciation schedule that, amongst other things, will provide for the reasonable cash flow needs of the service provider, is not a test that requires the particular business to actually maintain a particular credit rating. It simply requires an approach to depreciation that will provide for reasonable cash flow needs to meet costs, while also meeting the other requirements set out in rule 89. We are satisfied that the standard approach to depreciation achieves this.

We consider AGN's proposed adjustment would likely result in its cash flow needs being exceeded in the short term. That would also meet the minimum requirement set out in rule 89(1)(e). However, this approach would potentially create future cash flow problems detrimental to both the service provider and the long term interests of consumers.³² Furthermore, while AGN's proposed approach may exceed the minimum requirement of rule 89(1)(e) of the NGR, we are not satisfied that the resulting depreciation schedule would also appropriately meet the other requirements that a depreciation schedule should meet, particularly rule 89(1)(a) of the NGR. That is, it might overcompensate cash flow in the short term but it would not lead to reference tariffs that vary in a way that promotes efficient growth in the market for reference services.

When we consider these issues overall, in light of the NGO and the RPPs, we are not satisfied that AGN's proposed adjustment will comply with the criteria in rule 89. This conclusion is based on our interpretation of reasonable cash flow needs and our analysis of the AGN's proposal on financeability and financial metrics.

³¹ NGR, r. 89(1)(e).

³² NGR, r. 89(1)(e).

Interpretation of 'reasonable cash flow needs'

From a regulatory perspective, AGN's reasonable cash flow needs under the NGR are the cash flow needs of a prudent provider acting efficiently. This should be assessed in the context of the NGL's RPPs.³³

These principles, for example, require that the business be given an effective incentive to promote economic efficiency, including the efficient use of the pipeline. As discussed above, we have concerns with the efficient use of the pipeline under AGN's proposed depreciation approach because of the potential impact on the price path. Therefore, the additional revenues AGN is seeking would not represent reasonable cash flows when judged against this benchmark.

Also, we do not consider that reasonable cash flow needs implies a particular credit rating must be achieved by the service provider, such as BBB+ as AGN submitted. This is not expressed anywhere in the NGR and it does not seem to be a necessary requirement to imply into the NGR.

Although we allow a return on capital commensurate with a 'benchmark efficient business', it is not for us to guarantee that a service provider will achieve a particular credit rating once the total efficient costs of service provision are recognised. In contrast, the benchmark credit rating is merely a broad indicator to reflect the level of risk (principally, default risk) that we consider a benchmark service provider faces. In this sense, it would be contrary to the general intent of incentive regulation to ensure that a service provider can maintain a particular credit rating, as that would require a focus on recovery of a service provider's actual costs rather than its efficient costs. It would also require a consideration of the various other specific factors unique to a particular business that might affect credit ratings, which may not be dependent on cash flows.

Importantly, our approach to implementing the return on debt is designed to reflect the efficient costs associated with raising debt at a benchmark credit rating and at a benchmark level of gearing. Where our estimate appropriately reflects these costs, an efficient service provider should be able to finance its debt in line with the benchmark. If our estimate of the appropriate return on debt does not reflect these costs, this issue should be addressed in determining the approach to estimate the return on debt. We are not persuaded that the depreciation allowance should be used to indirectly address AGN's perceived concerns, and we are not persuaded to make an adjustment in a manner that would then not appropriately meet all of the criteria in rule 89.

Furthermore, we note the depreciation criteria in the NGR envisage the potential for a deferral of a substantial proportion of depreciation in particular circumstances.³⁴ Such deferrals are unlikely to be possible if reasonable cash flow needs require a specific credit rating to be achieved in all circumstances.

³³ NGL, s. 24.

³⁴ NGR, r. 89(2).

In any case, we do not consider the standard approach to depreciation would lead to insufficient cash flow. The standard approach has been applied to all the gas and electricity service providers that the AER regulates. The debt and equity capital that the service providers must raise are directly proportional to the approved opex and capex allowances. In the present circumstances, the building block components have each been set at what we consider to be an efficient level for a prudent provider. The forecast regulatory depreciation amount for the 2016–21 access arrangement period set in this final decision is comparable with the depreciation allowance approved in the 2011–16 access arrangement period.

Financeability and financial metrics

We are not persuaded that AGN's analysis of financial metrics provides robust evidence of a negative credit rating outcome for an efficient service provider.

AGN submitted that the AER's approaches to the rate of return and depreciation would result in cash flows with which an efficient service provider could not maintain a BBB+ credit rating. It has based these conclusions on reports from Incenta and NAB. In particular, both reports depend on analysis of a series of financial metrics that credit ratings agencies use as one of the inputs into their ratings opinions. As employed by ratings agencies, financial metrics are measures of financial risk taking into account forecast revenue streams and cost drivers. The most commonly used ratios are measures of cash flow availability to meet its debt obligations, after taking into account the company's operating expenditures. AGN and its consultants have based their analysis exclusively on two metrics of debt coverage:³⁵

- funds from operations (FFO) to debt ratio: defined as FFO/debt; and to a lesser extent
- FFO interest cover: defined as (FFO + interest)/interest.

Of these two metrics, AGN and its consultants identify the FFO to debt ratio as the key metric.³⁶ The consultants have then estimated these metrics using the PTRM and compared them against threshold credit metrics that they have assumed for particular credit ratings. These threshold values come from short excerpts in credit opinions by S&P and Moody's.

We have reached our decision for the following reasons:

While they are relatively important in some ratings, financial metrics form only a
part of the credit rating analysis that agencies undertake. Credit ratings agencies
set out methodologies for their credit ratings with varying degrees of transparency.
S&P and Moody's both recognise the role of expert judgement, taking into account

³⁵ FFO means 'funds from operations'. Incenta has calculated this as Smooth revenue (including ancillary) – interest –opex – tax (gross). See: Incenta, Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics, June 2015, p. 15.

³⁶ AGN, Attachment 9.5—Response to draft decision: Financeability, January 2016, p. 3.

various subjective considerations about the market, in reaching their ratings decisions.

- In confidential appendix E to this attachment, we have summarised and assessed both credit opinions on which AGN and its consultants have based their analysis. The reports support the AER's approaches to rate of return and depreciation and consider the regulatory framework has a positive and supportive impact on the creditworthiness of regulated businesses. In contrast, we consider AGN and its consultants have placed determinative weight on short excerpts from these reports without having regard to their full context and findings.
- AGN and its consultants have relied entirely on a series of notional financial metrics to argue that the guideline approach to estimating the rate of return will result in a credit rating downgrade unless short term cash flows are increased by accelerated depreciation. AGN's consultants have calculated the financial metrics entirely within the building block revenue assumptions.³⁷ This results in an outcome where the estimated financial metric results only reflect a small number of revenue and cost inputs. As a consequence, this approach draws conclusions about overall cash flow sufficiency, but does not reflect many of the key drivers of credit and default risk.
- Other regulators (such as IPART) have recognised this shortcoming and have adopted varying approaches to resolve it. For example, IPART uses the service provider's actual debt balance and debt costs. As a consequence, the financial metrics that IPART estimates will reflect the majority of forecast cost and revenue drivers. However, we recognise that this analysis considers the position of the actual business, rather than a notional, efficient service provider. This does not appear to be consistent with the objectives of the NGR framework.
- Further, we are not persuaded that AGN or its consultants have sought to substantiate the implications of this limited analysis with other supporting evidence, such as RAB multiples or actual credit ratings.

For these reasons, we are not satisfied with AGN's proposal that our final decision is likely to result in a credit rating downgrade for an efficient service provider. Therefore, even if we agreed that the NGR implicitly required us to have regard to an estimated output credit rating, we would not be persuaded that our decision does not allow an efficient service provider to maintain a BBB+ rating. We consider that where possible, it is advantageous to undertake overall 'sense checks' of the revenue allowance. We also consider AGN's analysis places too much weight on analysis that is insufficiently fit-for-purpose or precise to rely on to make a conclusion on credit rating implications.

We have assessed both our rate of return and depreciation allowances for consistency with their respective rules and objectives. Overall, for the reasons set out in attachment 3 and this attachment, we are satisfied that our allowances for the return on capital and

³⁷ AGN, Attachment 9.5—Response to the draft decision: Financeability, January 2016, p. 2; Incenta, Assessing financeability for a benchmark regulated business: comment on the Draft Decision, January 2016, pp. 7–8.

for regulatory depreciation will contribute to a revenue allowance that encourages efficient investment in, and efficient use of, pipeline services while meeting the other requirements of the NGO and RPPs.³⁸ We do not agree with Incenta's claim that increasing the cost of capital or the depreciation allowance will necessarily reduce the long term costs of finance, or that AGN's proposal is an efficient means to achieve that outcome.³⁹ Rather, we consider that transparency and predictability in setting revenue allowance will more effectively contribute to this goal.

It is important to recognise that rule 89 contains a list of criteria that a depreciation schedule should meet. While various approaches to depreciation may meet, or even exceed, the requirements of one of those criteria considered in isolation, we must consider how the depreciation schedule achieves each of the criteria in an overall sense. The criteria in rule 89 operate as a set of minimum requirements that have to be balanced and considered together.

Appendix D includes further detail on our analysis of:

- the approach adopted by other regulators
- financial metrics within a building block framework
- the role of predictability and transparency
- other supporting evidence relating to financeability.

The UK experience with financeability adjustments

AGN's proposal and the reports prepared by its consultants refer to precedent in the United Kingdom (UK). Specifically, in past determinations the energy (Ofgem) and water (Ofwat) regulators have at various points accelerated revenue in part driven by financeability concerns. While some of these adjustments were not made strictly as adjustments to the depreciation allowance, the adjustments appear to have been NPV neutral and therefore have the same effect as accelerating depreciation.

Our assessment of the UK experience with accelerated revenue suggests that this approach was not clearly successful. In particular, this approach appears to have placed a disproportionate burden of costs on present day consumers at the expense of future users who will also enjoy comparable use of the same (though largely depreciated) assets.

We note that, in developing its own financeability policy, the Office of Gas and Electricity Markets (Ofgem) engaged Cambridge Economic Policy Associates (CEPA) to consider 'issues related to financeability'. CEPA summarised the UK experience with accelerated depreciation as follows:

³⁸ NGL s. 23.

³⁹ Incenta, Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics, June 2015, p. 6.

Regulation which is expected to mimic the operation of competitive markets has adopted an approach to financeability which places a major cost on today's consumers. In the energy sectors this has led to inter-generational equity concerns since the solution to financeability has been to halve the economic life of assets for depreciation in electricity distribution and transmission and to expense 50 per cent of a significant capex programme in gas distribution. In a competitive market when funding is required for projects with strong business cases but additional debt would breach financial ratios there would be a call on equity investors. There is no reason why this approach cannot happen in the regulated sectors and has been used recently by Ofwat (and to an extent Ofgem at TCPR4).⁴⁰

Ofgem noted similarly that:

Our approach of shortening the assumed asset lives for the DNOs and expensing 50% of gas mains replacement for the GDNs are largely to ensure that modelled cash flow ratios are consistent with those required for a comfortable investment grade credit rating. However, arguably, these measures mean that current consumers may be bearing too much of the cost of assets that have useful lives well beyond those assumed.⁴¹

We discuss the UK experience and approaches in greater detail at appendices A and D.

Long term interests of consumers

The NGO refers to the promotion of efficient investment in, and efficient investment 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.⁴² We are required, when carrying out our functions, to make a decision that will contribute to the achievement of the NGO.⁴³

In addition, when exercising our decision-making powers, we are required to take into account the RPPs.⁴⁴ These principles are designed to guide decision-making that will contribute to the achievement of the NGO. Significantly, they include the 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.

AGN and Incenta submitted that AGN's proposed approach will promote the long term interest of consumers because it:

⁴⁰ CEPA, *RPI-X* @20: providing financeability in a future regulatory framework, May 2010, p viii.

⁴¹ Ofgem, Emerging thinking—Embedding financeability in a new regulatory framework, January 2010, p. 13

⁴² Rule 100(a) of the NGR requires the access arrangement to be consistent with the national gas objective.

⁴³ NGL, s. 28(1).

⁴⁴ NGL, s. 28(2).

- is net present value (NPV) neutral
- would promote efficient investment
- would minimise future price shock.

We are not satisfied that AGN's proposal will promote the long term interests of consumers. We do not consider that it will promote the long term interests of consumers in respect of price, as it will promote an inefficient tariff path. In addition, we are not satisfied that it 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, whether in relation to issues of NPV neutrality, investment or minimisation of future price shocks.

We discuss these various considerations below.

Long term interests of consumers and price

AGN's proposed approach results in higher cash flows in order to achieve certain credit metric thresholds regardless of the reduction in costs forecast in the 2016–21 access arrangement period. Our price path analysis as presented in appendix C shows that under AGN's approach, consumers may have to pay more for reference services than the cost of producing those services for a lengthy period until a lower price may apply sometime in the future. The CCP submitted that AGN's approach is a concern to customers because it would increase cash flows to AGN and increase prices to customers.⁴⁵ The Energy Consumers Coalition of SA also submitted that it accepts the AER's draft decision to not permit AGN to make depreciation approach contingent upon the allowed rate of return. It considered that AGN's proposal will only serve the benefit of networks and not that of consumers.⁴⁶

AGN's proposed approach could also cause subsidies between current and future consumers, which are not in the interest of consumers. As shown in the above section, under AGN's approach, today's customer would be overpaying for reference services for many years before future consumers may start to benefit from that overpayment by relatively lower prices. We consider that it is unlikely that all customers would benefit from this overpayment 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 subsidisation by today's customers if we had accepted AGN's approach. This is unlikely to promote efficient investment in, and provision and use of, services.

⁴⁵ Consumer Challenge Panel: Advice to AER from Consumer Challenge Panel sub-panel 8 regarding the AER draft decision and Australian Gas Networks' (SA) revised access arrangement 2016–21 proposal, March 2016, p. 5.

⁴⁶ Energy Consumers Coalition of SA: AGN revenue reset 2016–21: response to AER draft decision, February 2016, p. 39.

NPV neutrality

Incenta's further report submitted that 'given that adjusting regulatory depreciation changes only the timing of revenue to the regulated business, but not its value, it must follow that the long term interest of consumers with respect to minimising charges is neutral to a change to regulatory depreciation.⁴⁷ AGN considered that because its proposed approach is NPV neutral for both consumers and AGN, there is no detriment to consumers where their interests are assessed over the long term.⁴⁸

Although AGN's approach will achieve an NPV neutral position consistent with the requirement of the NGR, we consider that this does not necessarily mean that it is in the long term interest 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 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 invested regardless of timing. However, individual customers are likely to pay more or less in depreciation depending on the timing and amount of their consumption.⁴⁹ NPV neutrality is discussed further in appendix A.

Efficient investment

Incenta and AGN submitted that the proposed approach will promote efficient investment and therefore is in the long term interests of consumers.⁵⁰ As discussed above, we have concerns that the proposed approach will lead to inefficient investment in the gas market for reference services. AGN's approach has the potential to encourage under-utilisation early in an asset's life because the resulting price is relatively high. This will unnecessarily discourage upstream and downstream investment in the early life of the assets. However, as the assets approach the end of their useful lives, over utilisation may occur because price is relatively low. This may lead to replacement of assets being required sooner than otherwise necessary. We do not consider such outcomes promote efficient investment in, or efficient operation and use of, natural gas services for the long term interests of consumers.

⁴⁷ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 23.

⁴⁸ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 12.

⁴⁹ 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 interest rate at their previous (now higher) level on the basis that it will provide lower than market interest rates 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.

⁵⁰ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 23; AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 4.

Price shocks

AGN stated its proposed approach would minimise price shock and therefore minimise the potential distortion of pipeline usage. It stated that the standard approach would result in greater price shock (or variability) and so maximise the potential for distortion of pipeline usage.⁵¹

We do not agree that the standard approach would result in greater variability of prices when compared to AGN's approach. This is because the shape and variability of a price path is sensitive to assumptions on the future trend in cost variables. Incenta's price path analysis assumes that if the rate of return increases by two per cent over two access arrangement periods, the price path under AGN's approach is smoother than the standard approach. We consider that such specific assumptions about the trend in the rate of return are speculative and therefore should not be used as the basis for changing the depreciation approach.

We have demonstrated in appendix C that if the assumption of cost increase is later found to be incorrect, customers would have paid a higher tariff for four to five access arrangement periods relative to the standard approach until a lower tariff may be applied. Such outcome would likely affect network utilisation and therefore is not considered to be in the long term interests of consumers.

We consider that a depreciation approach that does not reflect efficient costs over time will likely provide incorrect pricing signals and therefore distort demand decisions. Given the uncertainty in forecasting the trend of costs over the long term, we consider that the impact on demand would likely be minimised if we maintain an even recovery profile of sunk costs over time. This would allow prices to vary with the efficient costs determined at the start of each access arrangement period. The standard approach achieves this outcome.

Interrelationships

In its revised proposal, AGN submitted that the AER's approach focuses on component parts of a decision and does not analyse the links between them.⁵² We noted that AGN's contingent proposal raises a specific interrelationship question: whether the return of capital building block should be adjusted to offset the reduction in the return on capital building block.

In appendix A, we have considered depreciation's role in the building block framework in a holistic approach. It highlights that depreciation is a blunt instrument given its interactions with other building blocks and how all assets (at various stages of their lives) can be affected identically. In this attachment, we have also demonstrated that a

⁵¹ AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 13.

⁵² AGN, Revised proposal: Attachment 9.5 2016/17 to 2020/21 access arrangement information response to draft decision—Financeability, January 2016, p. 13.

short term acceleration of depreciation will have a significant long term implication on prices for consumers and financeability for AGN. Therefore, we do not consider an adjustment to the indexation component of the return of capital building block to offset the reduction in the return on capital building block is consistent with the NGR and the long term interest of consumers.⁵³

5.4.2 Asset lives

The straight-line depreciation component of regulatory depreciation is calculated by dividing the asset value for each asset class by its standard asset life (for new assets) or remaining asset life (for existing assets). Our final decision on AGN's standard and remaining asset lives follows.

Standard asset life

Consistent with the draft decision, we accept AGN's proposed standard asset lives assigned to each of its asset classes for the 2016–21 access arrangement period, because they are:

- consistent with our approved standard asset lives for the 2011–16 access arrangement period
- comparable with the standard asset lives approved in our recent determinations for other gas distribution service providers.⁵⁴

Also, consistent with our draft decision, we did not assign a standard asset life for amortising the benchmark equity raising cost associated with the forecast capex in the 2016–21 access arrangement period. This is because our final decision revenue modelling shows that no equity raising cost is required for the 2016–21 access arrangement period.

We are satisfied the proposed standard asset lives reflect the requirements of rule 89(1) of the NGR.

Table 5.3 sets out our final decision on the standard asset lives for AGN over the 2016–21 access arrangement period.

⁵³ NGR, r. 89.

⁵⁴ AER, Draft decision: Envestra (Victoria) access arrangement proposal 2013–17 Part 2: Attachments, September 2012, p. 158; AER, Final decision: Jemena Gas Networks (NSW) Ltd: Access arrangement 2015–20, Attachment 5–Regulatory depreciation, June 2015, p. 10; AER, Final decision: SPI Networks (Gas) Pty Ltd 2013–17 (AusNet Services), Part 2: Attachments, March 2013, p. 179; AER, Final decision: Multinet access arrangement 2013–17, Part 2: Attachments, March 2013, p. 210; AER, Final decision: Envestra Ltd (AGN Vic) access arrangement 2013–17, Part 2: Attachments, March 2013, p. 229; AER, Final decision: ActewAGL (ACT, Queanbeyan and Palerang) access arrangement 2010–15, March 2010, p. 35

Remaining asset lives

Consistent with our draft decision, we accept AGN's proposed weighted average method to calculate the remaining asset lives as at 1 July 2016. The revised proposed method is consistent with our preferred approach as discussed in attachment 5 of our draft decision. However, we have updated AGN's remaining asset lives as at 1 July 2016 to reflect the amended capital base roll forward for the 2011–16 access arrangement period (attachment 2).

In our draft decision, we updated the weighted average remaining asset lives for each asset class because we corrected some input and modelling errors used in AGN's calculation. AGN's revised proposal adopted our draft decision input corrections and updated the average remaining asset lives accordingly.

We noted in our draft decision that the remaining asset lives would be updated for the final decision because AGN's revised proposal would include revisions for 2014–15 actual capex and updated 2015–16 estimated capex. This is because these capex values affect the calculation of remaining asset lives under the weighted average method.

As discussed in attachment 6, we updated AGN's revised proposed capex for 2013– 14, 2014–15 and 2015–16. This is because AGN informed us that it had made a transcription error when its revised proposed RFM was updated for 2014–15 actual capex. AGN also made further updates to its revised proposed conforming capex for 2013–14, 2014–15 and 2015–16 to reflect the reclassification of the valve corrosion projects from capex to opex. We have therefore updated the revised proposed remaining asset lives to reflect the updated capex for these years.

Table 5.3 sets out our final decision on the remaining asset lives as at 1 July 2016 for AGN.

	Standard asset life	Remaining asset life
Mains	60	49.1
Inlets	60	52.3
Meters	15	8.0
Telemetry	20	12.7
Information technology systems	5	4.2
Other distribution equipment	40	23.4
Other	10	9.4

Table 5.3AER's final decision on AGN's standard and remaining assetlives as at 1 July 2016 (years)

Source: AER analysis.

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 accounts for 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.⁵⁵

For assets that do depreciate,⁵⁶ their useful life is used to either account for the reduction in the asset value evenly over that life (called straight-line approach)⁵⁷ or to determine a percentage⁵⁸ that is then applied to the asset value to work out the annual depreciation amount.⁵⁹ Applying a percentage leads to a declining depreciation amount over time and is therefore called a diminishing value approach.⁶⁰

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 tax office generally only allows historical cost accounting

⁵⁵ Australian Accounting Standards Board, *AASB 116, Property, plant and equipment*, December 2015, paragraph 58.

⁵⁶ 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.

⁵⁷ This approach is also referred to as prime cost.

⁵⁸ For example, an asset with 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.

⁵⁹ 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 life of 40 years is unlikely to produce 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.

⁶⁰ This approach is also referred to as declining balance.

for the value of the asset, but allows both the straight-line and diminishing value⁶¹ approaches for determining the annual depreciation amount.

A.2 Depreciation in a building block revenue framework

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.⁶²

The AER's current depreciation approach applies the straight-line method (coupled with an indexed asset base and nominal rate of return) and results in a relatively even recovery of sunk costs over time.⁶³ This is shown in the next section. Such a profile of recovery is generally neutral in terms of incentives.⁶⁴ That is, of itself, an even recovery profile does not encourage or discourage early or later consumption or investment. Such a general proposition, however, may not be correct in specific circumstances. In the AER's APA GasNet final decision, two specific circumstances were noted:⁶⁵

- 1. 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 scale and scope will be encouraged by having lower prices initially to encourage use of such an asset.
- 2. Where capacity has been reached and no augmentation occurs. In these circumstances tariffs may have to rise, 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.

Economic literature has supported even recovery, back loading, and front loading (accelerated) depreciation based on certain assumptions such as expected changes in demand and real replacement costs over time.⁶⁶ For example, if demand and costs are expected to be relatively constant over time, then an even depreciation profile is

⁶¹ The diminishing value approach is favoured by a business trying to minimise their tax payments in the short run. The use of this method also makes sense 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.

⁶² The term amortisation is used to describe the depreciation of non-tangible assets such as goodwill.

⁶³ 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.

⁶⁴ The neutrality in our depreciation approach is also reflected in the regulatory asset base (RAB) roll forward. We have moved away from actual depreciation to forecast depreciation in rolling forward the RAB for electricity service providers. In doing so we noted that it makes the roll forward approach more neutral in its incentives and therefore does not distort the capital expenditure sharing scheme (CESS).

⁶⁵ AER, Final Decision APA GasNet, Part 3, March 2013, pp. 128–129.

⁶⁶ Appendix B summarises some of the economic literature on depreciation.

supported by some economic literature. Some service providers have also recently been proposing accelerated depreciation and submitting that they face particular circumstances warranting a change of approach.⁶⁷ In the economic literature, 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 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.⁶⁸

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

- the return on capital, through depreciation's impact on the remaining value of the asset base
- the weighted average cost of capital (WACC) depending on whether it is measured in real or nominal terms
- the approved capex (and the CESS incentives in electricity).

These interactions make the depreciation approach a blunt instrument to achieve particular purposes. That is, the impact of the change of depreciation approach can be disproportional to the size of the potential problem⁶⁹ and there could be more targeted alternatives for dealing with the issues.

The networks we regulate are often mature and growing (albeit slower than early in their life). Accordingly, we would 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.

⁶⁷ AusNet Services, Regulatory 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.

⁶⁸ 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 certainty.

⁶⁹ 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.

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 revenue recovery profile. These areas of change are:

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

We discuss the impact of each of these areas of change 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 service provider.⁷⁰

A.3.1 Asset lives

Both the electricity and gas legislation require the funds invested to be recovered over the economic lives of the asset.^{71, 72} 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.⁷³ 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 lives (the expected useful life of existing assets). We have generally conducted the assessments of standard asset lives from an engineering perspective, by way of general benchmarking of these lives across service providers.⁷⁴ Some consumer groups have advocated further work in this regard. We have also allowed the revision to the remaining asset lives in particular cases. Shorter asset lives (that accelerate depreciation) were approved for the Amadeus Gas Pipeline (although the resulting

⁷⁰ 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.

⁷¹ NGR, rr. 89(1)(b) and (d); NER, cll. 6.5.5(b) and 6A.6.3(b).

⁷² We have considered r. 89(1)(a) of the NGR at times to review the price impact of a change in remaining asset life proposed based on efficient growth in the market. However, the AER has never rejected a proposed change to remaining asset lives on the grounds of an unduly large price impact that may affect efficient growth of the market as yet.

⁷³ 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.

⁷⁴ In some cases, we have been limited by the use of non-standardised asset categories across service providers reflecting previous regulation across different jurisdictions.

expected stranding of that pipeline did not occur) and shorter gas meter remaining lives were applied for Envestra based on revised technical performance data.

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 control period.

Finally, we have also accepted changes to the way remaining asset lives are updated between regulatory control 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.⁷⁵ 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'.⁷⁶

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. The AER considered the proposal but decided that indexation of the asset base remained appropriate. APA GasNet subsequently sought review of the matter by the Australian Competition Tribunal, which upheld the AER's decision. AGN's current access arrangement proposal is based on a similar adjustment to the indexation of the asset base. The higher regulatory depreciation caused by un-indexing the asset base is offset by a quicker reduction in the value of the asset base (and therefore the return on capital that is earned) thereby still achieving NPV neutrality in the long run. However, the profile of total revenue recovery (regulatory depreciation plus return on capital) over the asset's life is altered significantly.

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

1. 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

⁷⁵ NER, cll. S6.2.3(c)(4) and S6A.2.4(c)(4).

⁷⁶ 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.

to determine the return of capital (used previously by the ESCV, ESCOSA and IPART)

- 2. 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 (the AER's standard approach, also applied by the ACCC and QCA)
- 3. 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's⁷⁷ proposals).

The first and second approaches above deliver the same cash flow outcomes over the life the asset.⁷⁸ 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.⁷⁹ 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.⁸⁰

Figure 5.2 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, CPI of 2.5 per cent and nominal WACC of 10 per cent. The cost of the asset is initially \$100.⁸¹

⁷⁷ 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.

⁷⁸ All three methods lead to an NPV neutral revenue profile over the life of the asset.

⁷⁹ 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.

⁸⁰ 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.

⁸¹ This was the example presented in the APA GasNet draft decision.



Figure 5.2 Revenue path example – indexed vs un-indexed asset base (\$ nominal)

Source: AER analysis.

The decision to un-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. Within the legislative 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.

A.3.3 Straight-line versus diminishing value approach

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 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 5.3 for an asset with an expected standard asset life of 45 years and a \$100 starting value. It also uses a multiple of two in the diminishing value formula as proposed by AusNet Services (transmission) in its proposal, which doubles the depreciation amount initially (year 1). The analysis is in real dollars.




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 Services⁸²) 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 legislative context, the proportionality of such changes would need to be considered against the size of the issue to be addressed and the quality of the supporting evidence.

⁸² The diminishing value percentage is calculated as the reciprocal of the standard asset life and then potentially multiplied by a given number (the multiple). For example, an asset with a standard asset life of 20 years and a multiple of two would have a diminishing value percentage of 10 per cent per annum (i.e, $1/20 \times 2 = 0.10$). If no multiple was used, the diminishing value percentage would be 5 per cent per annum (i.e, 1/20 = 0.05) in this example.

A.4 The arguments for and against accelerated depreciation

There are economic arguments that could be made for accelerated depreciation in specific circumstances.⁸³ Some of these on the face of it appear to conflict but are presented as discrete issues by the service providers.⁸⁴ The arguments for accelerated depreciation that have been put forward by 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 legislation require the service provider to be allowed to recover only the funds it invested in net present value terms.⁸⁵ No revaluation gains can be kept by the service provider.⁸⁶ By the same token, there is no scope for prudently acquired assets to be written down without compensation, as would have occurred under previous optimisation approaches in valuing assets (e.g. under the depreciated optimised replacement cost—DORC—approach).⁸⁷ The proposed changes above are all NPV neutral in their application.

NPV neutrality is generally considered an important principle.⁸⁸ Even though it is an explicit principle in our regulatory framework, many economists recognise NPV neutrality as an implicit part of the regulatory compact.⁸⁹ NPV neutrality has also been

⁸³ 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.

⁸⁴ 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.

⁸⁵ NGR, r. 89(1)(d); NER, cll. 6.5.5(b)(2) and 6A.6.3(b)(2).

⁸⁶ Inflation is compensated for through the use of a nominal rate of return.

⁸⁷ This rule was largely developed to provide investor certainty in the context of a debate at the time as to how assets should be valued.

⁸⁸ 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). The AER has allowed such outcomes in limited circumstances. For example, in public lighting the AER has 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.

⁸⁹ See appendix B.

an important element in the UK in discussions on financeability. Uncertainty over whether financing concerns may be over stated 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 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.

NPV neutrality is an important principle but 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.⁹⁰ 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 the funds back in five years.⁹¹

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.⁹²

⁹⁰ Obviously if the asset is replaced as soon as funds are recovered, the customer would not be indifferent to the recovery period.

⁹¹ In theory, however, the service provider could set aside money received in advance to continue to operate the full 50 years.

⁹² 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 interest rate at their previous (now higher) level on the basis that it will provide lower than

The Tribunal in accepting the AER's position in relation to APA GasNet has also implicitly accepted that more than just NPV neutrality needs to be shown by the service provider to justify an accelerated depreciation approach.⁹³

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.⁹⁴

The AER 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 becoming under utilised

This argument is currently being made by AusNet Services to justify a diminishing value approach that accelerates depreciation for new assets. AusNet Services' submission is largely on equity grounds. That is, if customers leave the network, remaining customers pay higher per customer depreciation amounts. We have identified the following issues with AusNet Services' proposal, which are discussed further in the issues paper to AusNet Services' transmission revenue proposal:⁹⁵

 AusNet Services cited an AEMO report and noted an expected 6.2 per cent reduction in peak demand by 2034–35 due to emerging technologies, such as solar panels and battery storage that allow changes to energy sourced from traditional centralised network sources.⁹⁶ However, the reduction noted in the AEMO report was not relative to current maximum demand but relative to a rising maximum demand. This suggests that the technologies discussed may defer augmentation or replacement on the network. AEMO's analysis suggests a more gradual increase in utilisation than without these technologies.

market interest rates in ten years' time. Such a pricing approach may be NPV neutral for 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.

- ⁹³ Australian Competition Tribunal, Application by APA GasNet Australia (Operations) Pty Limited (No 2) [2013] ACompT8, 18 September 2013, para. 181.
- ⁹⁴ AER, Access Arrangement final decision, APA GasNet Australia (Operations) Pty Ltd, 2013–17, Part 2: Attachments, p. 147.
- ⁹⁵ AER, Issues Paper: AusNet Services electricity transmission revenue proposal 1 July 2017 to 30 June 2022, December 2015, pp. 15–16.
- ⁹⁶ AusNet Services, *Regulatory proposal 2017–22,* October 2015, pp.179–181.

- AusNet Services' depreciation proposal increases prices for customers in the 2017–22 regulatory control period (other things being equal) relative to the straightline method currently used by the AER. AusNet Services' proposal does not prevent falling utilisation,⁹⁷ so customers (particularly those who stay on the network) may face higher prices from the change of depreciation approach and any subsequent fall in utilisation.⁹⁸
- Bringing forward depreciation may also encourage early replacement of the asset to earn a return on the replacement value. Under the AusNet Services' proposed depreciation method, most depreciation occurs early in the asset's life and there is a residual that remains well past the standard asset life (to infinity). This suggests that the standard asset lives are not going to provide an indication on when assets are nearing the end of their economic lives under the proposed method.

A.4.4 Stranding risk

AusNet Services submitted that some of its assets are becoming stranded. There is also 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.⁹⁹ Such positions are usually advocated in rapid change technological sectors such as telecommunications.

We do not consider that the current regulatory framework results in uncompensated stranding, as the residual funds of any assets that are no longer used can be recovered from remaining customers. There is also scope for prudent discounts to be used to help keep customers on the network (and thereby contributing to some of the sunk costs) where bypass options may be possible.

However, we note that some stakeholders have submitted that not compensating businesses for stranded assets would be consistent with what happens in competitive markets when assets become stranded.¹⁰⁰ While the regulatory framework allows service providers certain benefits that may not be available in competitive markets (such as being allowed a return on assets that may only be partially utilised), such benefits are traded off so that service providers are willing to make large sunk investments in the first place. That is, such benefits are part of the 'regulatory compact' as some economists have labelled it.

As discussed in attachment 5 of the CitiPower, Powercor and AusNet Services (distribution) preliminary decisions released in October 2015, we proposed to accept their proposals that allow for specific assets that are no longer used or are likely to no

⁹⁷ It may be the case that higher prices may encourage lower utilisation.

⁹⁸ Accelerating depreciation does not differentiate between customers likely to stay on, and those likely to leave, the network. A customer staying on the network could therefore pay accelerated depreciation on the assets they use and then the residual cost of the assets of anyone that leaves the network.

⁹⁹ See appendix B.

¹⁰⁰ Energy Users Coalition of Victoria, A response to AusNet revenue reset proposal for the 2017-2022 period, February 2016, pp. 42, 44.

longer be used over the 2016–20 regulatory control period to be fully depreciated over that period.

A.4.5 Smoother prices

Coupled with the arguments above, APA GasNet, AGN and AusNet Services have submitted that their approaches lead to smoother prices.

While we accept smooth revenues, particularly within a regulatory control period, as an important consideration, it is not an end in itself. If it is efficient for prices to fall or rise due to changes in the efficient costs of other building blocks, they should do so. We consider that the depreciation approach should not be amended to offset a lower WACC or any other building block, 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'.¹⁰¹ 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 control period. Forecasting is uncertain, particularly across a number of regulatory control 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.¹⁰² Arguments on the temporary nature of cost reductions also have not addressed annual updates that occur in the regulatory framework. For example, the WACC is updated annually for the cost of debt.¹⁰³ If the cost of debt rises each year, the WACC will rise each year. If depreciation has been increased too (due to accelerated depreciation) during the regulatory control period then customers face higher prices from both the higher depreciation and the rising WACC over that period.¹⁰⁴ The impact on customers of changing the depreciation approach is not 'temporary' but long lasting (even if cost reductions prove to be 'temporary'). If the cost of debt falls or 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.¹⁰⁵ It would only be in coincidental circumstances—for example, coincidental timing of replacement of assets

¹⁰¹ Incenta, Assessing financeability for a benchmark regulated business: comment on the draft decision, January 2016, p. 3.

¹⁰² 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 WACC than previously, then this will create a step change problem in depreciation and therefore prices when the asset is replaced.

¹⁰³ There are also annual cost pass throughs that can occur during a regulatory control period.

¹⁰⁴ That is, an overshooting in revenues necessarily occurs over the regulatory control period. To prevent this outcome within the regulatory control period, any step change in depreciation during the regulatory control period would have to be avoided. Instead, depreciation would have to decline from its current levels as the cost of debt increases to maintain stable prices over the regulatory control period.

¹⁰⁵ See for example; AER, Access arrangement final decision APA GasNet Australia (Operations) Pty Ltd 2013–17 Part 3: Appendices, March 2013, pp. 137–142.

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 control 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.4.6 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 the APA GasNet decision and this attachment for AGN, we are not persuaded that these financial metrics can be used determinatively in a building block revenue framework. As a result, we are not satisfied that there is strong evidence in support of an accelerated depreciation profile. Nonetheless, we have assessed AGN's revised proposal to accelerate depreciation via an adjustment to the indexation of the asset base. Overall, we are not satisfied that AGN has addressed the potential consequences of its proposed approach. Specifically, we consider:

- Increasing depreciation in the short run will mean relatively lower depreciation in the future. Unless the return on equity increases substantially, this may exaggerate the impression of weak financial metrics.¹⁰⁶ We illustrate this effect below.
- We are required to estimate the rate of return in a way that achieves the allowed rate of return objective. 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 are satisfied that the rate of return achieves the allowed rate of return objective, we are not persuaded there is a basis to make compensatory adjustments to the depreciation allowance.

Illustration of impact on financeability

To illustrate the effect of accelerating depreciation on financial metrics, we have set out a simple example of a building block revenue stream over a 20 year period.¹⁰⁷ In these

¹⁰⁶ 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.

¹⁰⁷ For simplicity, we haven't included all of the calculations here. However, the key assumptions are: the opening capital base is valued at \$100. The standard life of the asset is 30 years and gearing is 60 per cent. The starting RoD is 8% and the RoE is 10%. We assume \$10 of opex per year (roughly 30 to 40 per cent of revenue), gamma is 0.4, the tax rate is 30 per cent, and that tax depreciation is equal to regulatory depreciation. Further, we assume that inflation is zero.

examples, we have assumed constant opex, and returns on debt and equity over time. Then, under these conditions we have calculated financial metrics using the approach adopted by Incenta (on behalf of AGN). The following focus on funds from operations (FFO) to debt,¹⁰⁸ which is identified by Incenta as the key financial metric that ratings agencies focus on.

For the reasons discussed at appendix D, we are not persuaded that these metrics are applied as rigidly as Incenta submitted, or that variations in these metrics over time will necessarily result in changes to credit ratings. However, adopting the approach proposed by Incenta and applying it to a generalised building block scenario, we conclude that:

- Accelerating depreciation has significant long term implications for financial metrics calculated using benchmark revenue assumptions.
- Even if we do not accelerate depreciation in the short term, there is a natural tendency for financial metrics to improve over time as the RAB is depreciated.
- Forecasting the ultimate impact of accelerated depreciation depends on assumptions about future input costs or capital base additions (and hence debt and equity raising). This sort of forecasting is difficult and imprecise, which indicates a high degree of risk in relying on these forecasts.
- However, accelerated depreciation in one or more regulatory control periods means that future financial metrics will necessarily be relatively worse compared to a long term straight-line depreciation approach in the same circumstances of input costs.

The following charts step through different underlying assumptions that impact on the results. For context, Incenta submitted in its initial report that approximately a two per cent improvement in the FFO/debt ratio would result in an efficient service provider maintaining a BBB+ rating,¹⁰⁹ compared to potentially falling to a BBB– rating. Simplistically this suggests that, based on Incenta's analysis, a one per cent difference between paths could result in a single band downgrade or upgrade:

• Credit metric scenario 1—A single asset base that depreciates but is never added to (i.e. no capex). This shows that if the asset base is allowed to depreciate in a straight-line without substantial additions, financial metrics will gradually improve as depreciation becomes a relatively higher proportion of revenue compared to the return on capital. The two lines in Figure 5.4 compare a scenario of straight-line depreciation against a scenario where depreciation is accelerated for five years, then this accelerated portion is 'caught up' over the following 15 years. To shorten the period of 'catch up' results in the accelerated depreciation profile dipping even further below straight-line depreciation after the initial period of acceleration.

¹⁰⁸ FFO in this context is the service provider's revenue allowance less opex, tax and interest expenses.

¹⁰⁹ Incenta, Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics, June 2015, p. 23.



Figure 5.4 Credit metric scenario 1—single asset and no new capex

Credit metric scenario 2—An asset base with the same starting assumptions as scenario 1, but assumes that a proportion of the opening asset base is increased through capex at the start of each period.¹¹⁰ This is to show a more realistic (although still simplified) profile of cash flows over time where a firm incurs capex compared to a single asset that is never added to. In particular, Figure 5.5 shows that credit metrics do not uniformly rise over time as capex is added to the capital base. This is because, where new assets are added to the capital base, the return on capital (and hence assumed interest payments) makes up a larger proportion of the overall revenue allowance compared to a more heavily depreciated asset. However, unless very sizeable additions are made to the capital base, the financial metrics will still tend to improve over time.

Source: AER analysis.

¹¹⁰ Specifically, 20 per cent.



Figure 5.5 Credit metric scenario 2—new capex added at the start of each access arrangement period

-----Replenished asset- SL depreciation ------Replenished asset- accelerated depreciation

Source: AER analysis.

 Credit metric scenario 3—This shows the same asset base profile as scenario 2. However, we test the impact of a one per cent ongoing decrease in the return on equity in regulatory year 6 under the two different depreciation paths. Figure 5.6 shows that the necessary downward drag on credit metrics from 'catching up' accelerated depreciation, coupled with a drop to the return on equity, could result in problematically lower credit metrics than forecast. This is important, because proposals to accelerate depreciation in the short term depend significantly on forecasts and assumptions about long term input costs and demand.

Figure 5.6 Credit metric scenario 3—one per cent ongoing increase or decrease in the return on equity



Source: AER analysis.

The UK experience with financeability adjustments

In AGN's proposal, and the reports prepared by its consultants, they have referred to precedent in the UK. Specifically, in past determinations the energy (Ofgem) and water (Ofwat) regulators have at various points accelerated revenue in part driven by financeability concerns. While some of these adjustments were not made strictly as adjustments to the depreciation allowance, the adjustments appear to have been NPV neutral and therefore have the same effect as accelerating depreciation.

Our assessment of the UK experience with accelerated revenue suggests that this approach was not clearly successful. In particular, this approach appears to have placed a disproportionate burden of costs on present day consumers at the expense of future users who will also enjoy comparable use of the same (though largely depreciated) assets.

We note that, in developing its own financeability policy, Ofgem engaged CEPA to consider 'issues related to financeability'. CEPA summarised the UK experience with accelerated depreciation as follows:

Regulation which is expected to mimic the operation of competitive markets has adopted an approach to financeability which places a major cost on today's consumers. In the energy sectors this has led to inter-generational equity concerns since the solution to financeability has been to halve the economic life of assets for depreciation in electricity distribution and transmission and to expense 50 per cent of a significant capex programme in gas distribution. In a competitive market when funding is required for projects with strong business cases but additional debt would breach financial ratios there would be a call on equity investors. There is no reason why this approach cannot happen in the regulated sectors and has been used recently by Ofwat (and to an extent Ofgem at TCPR4).

If there are concerns about the credibility of the regulatory system which would lead to a higher cost of finance there are additional actions that can be taken to strengthen regulatory commitment. Given that a strong regime with a significant track record exists it is difficult to believe that insufficient commitment is perceived by the markets, but if that is the case Ofgem can take appropriate actions.

What is key is ensuring that the building blocks which ensure that the commitment to long-term financial capital maintenance is delivered are estimated appropriately. There are primarily incremental actions that Ofgem can take to strengthen its existing position.¹¹¹

Ofgem noted similarly that:

Our approach of shortening the assumed asset lives for the DNOs and expensing 50% of gas mains replacement for the GDNs are largely to ensure that modelled cash flow ratios are consistent with those required for a comfortable investment grade credit rating. However, arguably, these measures mean that current consumers may be bearing too much of the cost of assets that have useful lives well beyond those assumed.¹¹²

Similarly, Ofwat observed that:

We have not adopted a policy of accelerated depreciation in our past price determinations as we have considered it breaks the link between asset lives and the capital expenditure required to maintain and replace the asset base.¹¹³

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 WACC).

The gas and electricity rules require the depreciation approach to reflect the nature of the assets over their economic lives in the asset base. An approach that allows recovery of depreciation evenly in real terms over an asset's useful life reflects a

¹¹¹ CEPA, *RPI-X* @20: providing financeability in a future regulatory framework, May 2010, p. viii.

Ofgem, Emerging thinking—Embedding financeability in a new regulatory framework, January 2010, p. 13
Ofwat, Financeability and financing the asset base – a discussion paper, March 2011, p. 29. See at http://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_inf1103fpl financeability.pdf.

general expectation that both present and future consumers are likely to get similar economic use from the assets. Of itself, 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, mitigating congestion by reducing demand through higher prices caused by the accelerated depreciation. 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 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 and falling utilisation looks particularly problematic in the long run. Accelerating depreciation reinforces these problems in the long run, absent some future counterbalancing factors.

B Literature review and observations

The academic literature on depreciation in a regulatory context broadly addresses two distinct issues:

- What conditions are necessary to ensure that a regulatory depreciation allowance will be 'compensatory'. A compensatory depreciation allowance is one under which the net present value of depreciation cash flows are exactly equal to the face value of the initial investment, which means that the firm is fairly compensated from the perspective of both investors and consumers.
- Amongst compensatory depreciation paths, which path of depreciation over time is optimal for the regulated service provider, and which path is optimal for consumer welfare.

Importantly, the theory of depreciation is closely linked to the rate of return framework. All conclusions about whether a depreciation approach is compensatory depend on the combination of the depreciation approach with a compatible approach to the return on capital.

B.1 Compensatory depreciation

Schmalensee stated the requirements for a compensatory depreciation path within a depreciated original cost framework are as follows: ¹¹⁴

... even though rate-of-return regulation is based on accounting profitability, rate-of-return regulation is in principle fair to both investors and rate-payers no matter how depreciation is computed. More precisely, if a regulated firm is allowed to earn its actual (nominal) one-period cost of capital on the depreciated original cost of its investments, and if actual earnings equal allowed earnings, then the net present value of all investments is zero for any method of computing depreciation.

A 'depreciated original cost' framework refers to a regulatory framework where the asset base is valued at historical cost less the cumulative value of depreciation on that asset to date. This is different to the framework we operate in, where the asset base is indexed each year for inflation. However, Brennan showed that the same principle applies under an 'inflation adjusted original cost' framework.¹¹⁵ This is close to the framework that we apply, and is equivalent in NPV terms.¹¹⁶

¹¹⁴ 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.

¹¹⁵ 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.

¹¹⁶ The key difference is that the return on capital in an IAOC framework is calculated using the inflation-adjusted asset base and a real return on capital. In contrast, we use a nominal return on capital, and make an adjustment to the depreciation allowance to offset the indexation of the asset base. This adjustment is necessary to prevent double counting of inflation when a nominal rate of return is applied to the inflation adjusted asset base.

This means that under the capital cost framework that we adopt, investors are fairly and fully compensated regardless of the depreciation path that we choose. We have previously discussed this equivalency in detail in the 2013 APA GasNet decision.

Crew and Kleindorfer analysed a scenario where technological change or new competition might require front-loading of depreciation in order for the firm to be assured of full recovery of its asset base.¹¹⁷ However, under the NER and NGR¹¹⁸ frameworks, once capex enters the asset base the service provider is guaranteed to recover the investment over the lives of the assets. As a result, this risk has relatively lesser weight in our analysis.

B.2 Optimal depreciation paths

The academic literature on the optimal path of depreciation for regulatory purposes is typically based on relatively simplified models of capital costs within a regulatory model. Given the relatively greater complexity of applying these frameworks in practice, we found no definitive principles that we could straightforwardly apply. However, these papers do illustrate some important intuitive conclusions:

- Brennan found that if the regulator determines the same discount rate as investors (i.e. sets the rate of return at the investors' true rate of return) and real demand and costs are constant over time, then the optimal depreciation path is that which contributes to constant real output prices.¹¹⁹
- Crew and Kleindorfer analysed a scenario where technological change or new competition might require front-loading of depreciation in order for the firm to be assured of full recovery of its asset base.¹²⁰
- Burness and Patrick found that, where demand and input costs are stationary, both the welfare and profit optimising depreciation path is achieved by back-loading depreciation. They further find that stationary demand and some technological progress are sufficient conditions for back-loading.¹²¹

Compared to these theoretical analyses with predictable costs and/or demand trends, an even recovery profile (i.e. straight-line depreciation) is not likely to be the optimal approach in all cases. However, in practice, neither demand nor costs are reliably predictable over the life of the assets. This makes the choice of an optimal depreciation path challenging. For example, a service provider might argue that future demand is

¹¹⁷ 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.

¹¹⁸ Under the NGR assets made be set aside as redundant, but can re-enter the asset base if they are used again. No assets have ever been deemed as redundant by the AER.

¹¹⁹ 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.

¹²⁰ 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.

¹²¹ 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.

likely to decrease on its network. Therefore, to maintain stable real output prices (or to mitigate the risk of non-recovery), it would argue that the regulator should accelerate depreciation so that a greater proportion of cost is recovered over the period where there is relatively higher current demand. However, if the underlying assumptions about demand have not been forecast accurately and stay constant or increases, the accelerated depreciation imposes an unnecessarily high burden on current customers. In turn, this results in a welfare outcome that is worse than either back-loading depreciation or straight-line depreciation.

Accordingly, while straight-line depreciation may not be optimal where costs and demand trends are knowable and therefore a more targeted depreciation profile can be developed, it mitigates the risk of mis-forecasting which could lead to highly undesirable welfare consequences. It effectively assumes that in the long run demand will be reasonably stable. As a general proposition, for mature networks of significant size and with assets at various stages of their lives demand is likely to be relatively stable. The approach also effectively assumes real replacement costs are relatively stable (based on historical actuals). As a general proportion, this expectation is appropriate. Falling real replacement costs into the future would provide some support for a declining depreciation profile, but such general trends have not been observed over previous regulatory control periods.

C Price path analysis

This appendix discusses our consideration of the price path scenarios presented in Incenta's further report and our additional price path scenarios.

Incenta's price path scenarios — rate of return remains constant and capex increases

The first and second price path scenarios in Incenta's further report are presented in Figure 5.7 and Figure 5.8 below. In the first scenario, Incenta assumed the rate of return and capex are relatively constant costs into the future. In the second scenario, Incenta tested the effect of higher capex by assuming a step increase in capex of 50 per cent from 2020–21 to 2021–22.

In general, the standard depreciation approach results in a relatively even recovery of sunk costs over time. This approach allows the price path to track the change in variable costs over time. We consider that the standard approach to depreciation will generally promote efficient growth in the market for reference services because it does not encourage early or later consumption. However, the price path under AGN's proposed approach does not vary in the same direction or degree with the future change in costs.

As shown in Figure 5.7, the price path under the standard approach shows an initial price reduction due to the lower rate of return forecast for the 2016-21 access arrangement period. The price path then remains at a relatively flat profile when costs remain constant from 2021–22 onwards.¹²² In contrast, the price path under AGN's proposed approach shows a much higher starting tariff and then decreases from 2021-22 at a faster rate than the standard approach. This is because AGN's proposed approach brings forward the depreciation of assets. However, increasing depreciation in the short run will mean relatively lower depreciation in the future. Therefore, when costs remain constant over time, the tariff path under the AGN's proposed approach will start at a higher level due to the increased cash flows from depreciation. It then decreases over time because cash flows are reducing due to a lower depreciation as a result of a smaller capital base, all things being equal. We consider the price path under AGN's approach has the potential to send an incorrect signal for asset utilisation. It will encourage under-utilisation early in an asset's life (because tariffs are relatively high) and over-utilisation towards the end of its life (because tariffs are relatively low).

Figure 5.8 shows when capex is assumed to increase by 50 per cent at 2021–22, the price path under AGN's approach remains flat from 2021–22 to 2035–36. However, tariffs are higher in the 2016–21 access arrangement period relative to the standard approach. This means that today's consumers are effectively paying in advance on an

¹²² The price path under the standard approach is slightly downward sloping and reflect the assumption (made by Incenta) that demand is increasing slightly by 1.1 per cent per year from 2021–22 onwards.

assumption of a 50 per cent step increase in capex at 2021–22. The price path under the standard approach, on the other hand, reflects this increase in capex when it is forecast to occur. If the assumption of capex increase proves incorrect, the impact on prices under the standard approach will reflect the actual capex incurred. However, under AGN's approach, an incorrect assumption of future costs will have a more significant impact on future prices. This is demonstrated in Figure 5.11 below. If capex has instead decreased by 50 per cent at 2021–22, the price path under AGN's approach will need to drop more significantly from 2021–22 onwards to compensate for the higher tariff in the 2016–21 access arrangement period.

Incenta considered that the difference in the price paths under the AGN's and AER's approaches as presented in Figure 5.7 and Figure 5.8 is not sufficiently large to consider a material difference in economic efficiency.¹²³ We disagree with this view. AGN's approach seeks to reduce the fall in price due to cost decreases from 2016-17 onwards by bringing forward cash flows to achieve a price path over the 2016-21 access arrangement period that is closer to the current level (2015–16). We consider that efficient utilisation for reference services require variations in tariffs to reflect variations in costs over time. It does not preclude tariffs being reduced through an adjustment in tariffs from one access arrangement period to the next if an assessment of the efficient costs has occurred. However, AGN's proposed approach fails to recognise the extent of reductions in variable costs when they occur. This mismatch between costs and prices has potential to send the incorrect signal for asset utilisation because customer has to pay more (or less) for reference services than the cost of producing them. The price path under the standard approach, on the other hand, better tracks forecast changes in costs over time and therefore is less likely to distort utilisation over the life of the asset.

¹²³ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 13.



Figure 5.7 Price path index (\$2015–16) – constant rate of return and constant capex

Source: Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 12; AER analysis.

Figure 5.8 Price path index (\$2015–16) — constant rate of return and 50 per cent step increase in capex at 2021–22



Source: Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 13; AER analysis.

Incenta's price path scenarios — rate of return revert to historical average and capex increases

Figure 5.9 and Figure 5.10 show Incenta's price path scenarios under the assumption that the rate of return will increase to the historical average of 8.02 per cent from 2026–27 onwards. Figure 5.10 also assumed a 50 per cent step increase in capex at 2021–22. Under these assumptions, Incenta has reduced the indexation adjustment factors in later periods of the analysis because less reduction in the indexation of capital base is required to meet AGN's proposed credit metrics threshold as the rate of return increases over time.

In its initial report, Incenta's analysis was based on the assumption that rate of return remains constant. In our draft decision, we noted that Incenta did not test the sensitivity of its analysis to different assumed levels of the rate of return. We considered that this was a significant weakness in Incenta's analysis because rates of return are variable over time and have a significant impact on the revenue allowance.¹²⁴ In its further report, Incenta agreed with our draft decision and suggested that a more reasonable assumption would be that rate of return will revert to a level that is more indicative of a long term average over time.¹²⁵

Incenta also considered that flexibility to adjust depreciation as the rate of return increases may result in a smoother price path over time. Incenta submitted that this will in turn encourage efficient use of the network and avoid the risk that consumers make investments based on the temporarily low price. It stated that AGN's proposed approach 'banks' this benefit to consumers to be realised in future periods when the rate of return reverts to historical levels.¹²⁶

We disagree with Incenta that the AER has implied that the rate of return is expected to return to a historical average.¹²⁷ We have not in any way suggested such a trend in our draft decision. Although the rate of return will likely vary over time, we consider that any assumption on the trend of the rate of return beyond the 2016–21 access arrangement period is highly speculative. Therefore, whether there really is any 'banked' benefit and when this would be returned to consumers is unknown.

As shown in Figure 5.9 and Figure 5.10, AGN's approach does not allow tariffs to vary with changes in costs over time. The price paths under AGN's approach are relatively flat when there is a significant increase in rate of return and capex from 2021–22. Tariffs remain at a higher level for two access arrangement periods (until about 2026–27), potentially discouraging demand over these periods. If the assumptions of a higher

¹²⁴ AER, Draft decision: Australian Gas Networks access arrangement 2016–21— attachment 3 rate of return, November 2015, p. 219.

¹²⁵ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, pp. 13–14.

¹²⁶ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 21.

¹²⁷ Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 17.

rate of return and capex prove incorrect, then a significant downward correction on tariffs would be required. This would again distort demand. As shown in Figure 5.11 and Figure 5.12, if the rate of return and capex decrease over time, tariffs under AGN's approach will remain at a higher level for many access arrangement periods before a lower tariff can be realised. This is because that in addition to the cost reductions, more revenue reduction in the future is required to offset the increased depreciation in the early years.

We consider that AGN's proposed approach may also lead to inefficient investment and management of assets. It could unnecessarily discourage upstream and downstream investment in the short and medium term because prices are higher and encourage inefficient upstream and downstream investment in the future when prices are lower. AGN's proposed approach may also result in an incentive for it to replace its assets sooner based on reasons other than the efficient provision of reference services. For example, over utilisation may occur as assets approach the end of their useful life because price is relatively low. Such congestion can lead to replacement of assets being undertaken sooner than necessary. This view was put forward by the Energy Consumers Coalition of SA who considered that AGN's proposed accelerated depreciation may lead to replacement of assets prematurely.¹²⁸

¹²⁸ Energy Consumers Coalition of SA, *AGN revenue reset 2016–2021 response to AER draft decision*, February 2016, p. 39.



Figure 5.9 Price path index (\$2015–16) — rate of return revert to 8 per cent from 2026–27 and constant capex

Source: Incenta: Assessing financeability for benchmark regulated business: comment on the draft decision Australian Gas Networks Limited, January 2016, p. 20; AER analysis.

Note: The rate of return applied is 6.02 per cent in the 2016–21 access arrangement period, 7.02 per cent in the 2021–26 access arrangement period and 8.02 per cent from 2026–27 onwards. The adjustment to the indexation component reduces from 2 per cent in the 2016–21 access arrangement period, to 1.5 per cent in the 2021–26 access arrangement period and to 1 per cent from 2026–27 onwards.



Figure 5.10 Price path index (\$2015–16) — rate of return revert to 8 per cent from 2026–27 and 50 per cent step increase in capex at 2021–22



Note: The rate of return applied is 6.02 per cent in the 2016–21 access arrangement period, 7.02 per cent in the 2021–26 access arrangement period and 8.02 per cent from 2026–27 onwards. The adjustment to the indexation component reduces from 2 per cent in the 2016–21 access arrangement period, to 1.5 per cent in the 2021–26 access arrangement period and to 1 per cent from 2026–27 onwards.

AER price path scenarios — rate of return and capex decreases

Incenta's price path analysis focussed on the assumption that the rate of return is temporarily low and will revert to 8 per cent in the future. It submitted that AGN's approach would produce a smoother and flatter price path than the standard approach if the rate of return reverts to the historical average of 8 per cent and capex is at a high level. It also suggested that a smoother profile would be more consistent with encouraging the efficient use of the network.

We consider that although the rate of return and capex will likely vary over time, by how much and when exactly they will vary beyond the 2016–21 access arrangement period is uncertain. Therefore, in order to fully understand the impact of AGN's proposed approach on the price path, we consider it relevant to also examine the scenario of decreasing costs over time. Therefore, we have conducted additional price path scenarios assuming costs are decreasing over time. These additional scenarios show that AGN's approach does not always lead to a smoother or flatter price path over time.

Figure 5.11 and Figure 5.12 show that when the rate of return and capex decreases over time, the price paths under the standard approach are smoother and flatter than

the price path produced under AGN's approach. This shows that the shape and variability of a price path is sensitive to assumptions on future trend in cost variables. AGN's approach brings forward future cash flows in anticipation of future increase in costs. However, this may create cash flow problems in the future if it is later found that costs are actually being maintained or decreasing. This is because more revenue reduction in the future is required to offset the increase in revenue being recovered earlier in the period. Under these scenarios, customers have to pay a higher tariff for four to five access arrangement periods relative to the standard approach until a lower tariff may be applied. We consider this will likely have a significant impact on network utilisation.

Further, we consider that a smoother price path over time may be desirable. However, it may not necessarily lead to efficient use of a network. It is important that efficient use of network is when the price paid by consumers for using the network reflects the underlying costs over time. While we consider that a smooth price path within an access arrangement period is important, it is not a long term objective in itself. It is efficient for tariffs to fall or rise across access arrangement periods, due to changes in other building block's efficient costs. As demonstrated above, AGN's proposed approach fails to recognise the extent of cost reductions forecast in the 2016–21 access arrangement period. By doing so, it will affect prices in a way that will distort demand over that period and into the future.

The revenue reductions in the draft decision (and this final decision) flow from the assessment of the efficient level of costs for each of the building block components for the 2016–21 access arrangement period. There are reductions in certain building blocks—such as the rate of return, forecast capex and opening capital base as at 1 July 2016¹²⁹. Some of these reductions reflect changes in market conditions. We consider AGN should not apply accelerated depreciation to 'fill in' the reduction in revenues because this will lead to tariffs being set at an inefficient level for the 2016–21 access arrangement period.

¹²⁹ The opening capital base is reduced because AGN's actual capex for the 2011–16 access arrangement period is less than the forecast capex determined at the reset for the 2011–16 access arrangement.



Figure 5.11 Price path index (\$2015–16) — constant rate of return and 50 per cent step decrease in capex at 2021–22

Source: AER analysis.

Note: The 2 per cent adjustment on the indexation of the capital base over time is required to achieve the 9 per cent credit metrics threshold.



Figure 5.12 Price path index (\$2015–16) — rate of return decreases to 5 per cent from 2026–27 and 20 per cent step decrease in capex at 2021–22

Source: AER analysis.

Note: The rate of return applied is 6.02 per cent in the 2016–21 access arrangement period, 5.52 per cent in the 2021–26 access arrangement period and 5.02 per cent from 2026–27 onwards. The 2 per cent annual adjustment on the indexation of the capital base over time is required to achieve the 9 per cent credit metrics threshold.

D Financial metrics

This appendix sets out our analysis of:

- the approach adopted by other regulators
- financial metrics within a building block framework
- the role of predictability and transparency
- other supporting evidence.

D.1 The approach adopted by other regulators

In reaching our decision on the use of financial metrics, we have considered in detail the approaches, commentary and expert advice adopted by other regulators in Australia and in the United Kingdom. Overall, we consider this body of evidence highlights that:

- regulators do not apply financial metrics as strictly or with the weight that AGN proposes to give to this analysis
- where there appear to be short term dips in financial metrics, regulators refer these issues to the regulated service providers to manage in the first instance
- regulators recognise the shortcomings of using financial metrics based on notional benchmark relationships, as AGN has proposed to do. In particular, IPART has adopted a different approach that has regard to the service provider's actual interest expense and gearing ratio, as opposed to the benchmark levels that AGN has used.

In its initial proposal, AGN referred to the financeability analysis undertaken by Ofgem in the UK as a precedent that supports its proposed approach.¹³⁰ Ofgem's financeability obligation arises because the licence conditions for regulated electricity and gas service providers explicitly requires those service providers to maintain investment grade credit ratings.¹³¹ No such obligation exists in Australia. However, Ofgem stated that:¹³²

[A]s long as the allowed return, depreciation profile and capitalisation policy are set appropriately and that there is consistency in their respective future determinations, the notional company should be financeable.

Further, in describing its likely responses to credit metric analysis, Ofgem stated that: $^{\rm 133}$

¹³⁰ AGN, Access arrangement information, July 2015,

¹³¹ Joint regulators group, *Cost of capital and financeability*, March 2013, p. 13.

¹³² Ofgem, Regulating energy networks for the future: RPI-X@20—Current thinking working paper—Financeability, May 2010, p. 10.

¹³³ Ofgem, *Regulating energy networks for the future: RPI-X@20—Current thinking working paper—Financeability*, May 2010, p. 10.

[W]e would not advance cash flow in light of apparent short-term dips in cash flow metrics. We would seek to understand the reason behind such failures (e.g. high capital expenditure relative to RAV) but the onus would be on the company to resolve the situation, including by injecting equity and/or reducing dividend payments as they see fit.

In contrast, when relative expenditure levels decrease, the company may choose to remove equity if it deems appropriate, e.g. through the payment of special dividends.

By placing a greater onus on companies to take action to maintain their investment grade credit ratings, it reduces the requirement for Ofgem to make adjustments to other areas of the price control.

In addition, Ofgem's financeability tests are designed to preserve a 'comfortable investment grade' credit rating,¹³⁴ where Ofgem calculates its cost of debt using an average of the broad A and broad BBB non-financial debt indices.¹³⁵ That appears to suggest an effective benchmark rating comparable to the BBB+ benchmark that we adopt. It also means that Ofgem may target a lower credit rating for its financeability assessment (BBB– or BBB) compared to the rating it uses to estimate the return on debt (by implication A–or BBB+). In contrast, while AGN has referred to Ofgem's financeability approach as an example of its use in a regulatory context,¹³⁶ AGN proposed that it is necessary to maintain exactly the BBB+ credit rating used to estimate its return on debt.¹³⁷ Therefore, we conclude that AGN appears to be proposing a narrower and stricter threshold for use of financial metrics than has been adopted in any other regulatory environment that we are aware of.

In addition to Ofgem, the UK water regulator (Ofwat) stated that:¹³⁸

We have not adopted a policy of accelerated depreciation in our past price determinations as we have considered it breaks the link between asset lives and the capital expenditure required to maintain and replace the asset base.

To avoid the limitations that are inherent in AGN's proposed approach, other regulators such as IPART follow a different approach to AGN's consultants in calculating financial metrics.¹³⁹ Specifically, IPART uses actual balance sheet information for the particular

¹³⁴ In practice, it is not clear what specific rating band 'comfortable investment grade' refers to. However, an investment grade rating is one at BBB– or better. We have therefore interpreted 'comfortable investment grade' as BBB– or BBB.

¹³⁵ Ofgem, Cost of debt indexation model—2015, October 2015.

¹³⁶ AGN, Access arrangement information, July 2015, p. 164.

¹³⁷ Incenta, Using the profile of prices during an access arrangement period and return of capital to improve financial *metrics*, June 2015, pp. 10–11.

¹³⁸ Ofwat, *Financeability and financing the asset base – a discussion paper*, March 2011, p. 29. See at http://www.ofwat.gov.uk/wp-content/uploads/2015/11/prs_inf1103fpl_financeability.

¹³⁹ IPART, *Financeability tests in price regulation*, December 2013, p. 2.

service provider, including actual interest expenses and unregulated revenue.¹⁴⁰ IPART described this as follows:¹⁴¹

Our final decision is that, consistent with our objective, we will use a financeability test based on a utility's actual gearing ratio and a forecast of the actual interest expense. A test based on notional gearing and interest expense, as proposed by stakeholders, is not consistent with the objective of our financeability test.

It is unclear whether this approach could be implemented under the NGR, as revenue allowances are broadly required to reflect the costs incurred by an efficient service provider rather than the individual service provider in its actual circumstances. However, this approach does provide a more informative analysis of financial risk than the approach proposed by AGN and its consultants. Nonetheless, this is not the approach AGN has proposed, and AGN does not appear to have engaged with these alternative approaches in its proposal. This is important, because AGN's proposed approach has shortcomings that have been recognised by other regulators and independent experts,¹⁴² and we are not satisfied that these shortcomings have been addressed. We discuss these shortcomings in the following section.

For these reasons, to the extent that it is implicit within the depreciation criteria that we must have regard to the benchmark service providers' likely output credit rating, we are not persuaded that it is appropriate to give determinative weight to financial metrics. We have assessed both the rate of return and the depreciation allowance in detail, and are satisfied that they comply with the rules that relate to the rate of return (rule 87) and depreciation (rule 89). In particular, we consider that the depreciation schedule and rate of return allow for AGN's reasonable needs for cash flow to meet financing, non-capital and other costs. Therefore, in line with the conclusions of the other regulators whose approaches AGN has cited as precedent, we are satisfied that the notional benchmark company will be financeable.

D.2 Financial metrics in a building block revenue framework

We are not persuaded by the specific approach to assessing notional financial metrics that AGN's consultants have adopted. We have reached this decision for the following reasons:

• We do not agree that the way that AGN and its consultants have implemented the financial metrics for a regulated service provider is consistent with the way that credit agencies use these metrics as a test on actual companies. Specifically, for actual companies, the financial metric analysis would take into account all drivers of costs and revenue. This is because, for an actual company, there is not a

¹⁴⁰ IPART, *IPART financeability test— ratio calculations*, December 2014, p. 2.

¹⁴¹ IPART, *Financeability tests in price regulation*, December 2013, p. 2.

¹⁴² Such as Ofgem, IPART and CEPA.

binding relationship or benchmark proportions between revenue and costs. Therefore, all aspects of its costs and revenue drivers are reflected in the financial metrics.

- In contrast, the approach that AGN and its consultants have taken to estimating financial metrics is primarily an indirect test of the return on equity, and to a lesser extent the value of imputation credits.¹⁴³ When the estimated return on equity is low, this approach necessarily results in worse financial metrics (and vice versa). We illustrate this relationship in section D.2.2. In contrast, the allowances for opex and the return on debt have no impact on the FFO/debt metric. However, we are satisfied that our final decision on the return on equity appropriately reflects the required return on equity capital in the Australian market for the benchmark efficient entity with a similar degree of risk as AGN in supplying reference services.¹⁴⁴ We therefore do not agree that financial metrics that are relatively lower than in the previous access arrangement period indicate a financeability problem.
- Based on Incenta's analysis, AGN has proposed that if the AER does not accept its proposed rate of return, it should make an adjustment to indexation of the capital base, which has the effect of accelerating regulatory depreciation and improving financial metrics in the short term.¹⁴⁵ However, neither AGN nor Incenta have engaged with the potential consequences of this approach, or demonstrated why accelerated depreciation would be in the long term interests of consumers. In light of these consequences, other regulators such as Ofgem and IPART require firms in the first instance to manage their own financeability, where possible, through equity raising or reduced dividends.¹⁴⁶ This is consistent with the approach that would be adopted in a competitive market.¹⁴⁷

The rest of this section sets out:

- background to the use of financial metrics in a building block revenue framework
- the calculation of FFO/debt in a building block revenue framework
- key factors that influence regulatory financial metrics, including:
 - o sensitivity to the return on equity

¹⁴³ The benchmark proportion of gearing is also an important input, but this is based on a benchmark observed sector average and has historically been less contentious in our decisions. As a result, the benchmark level of gearing is not a critical lever in determining relative metrics over time.

¹⁴⁴ In addition, we benchmark the gearing level on the efficient levels observed amongst a sample of comparator entities to the benchmark efficient entity. Therefore, to the extent that the individual return on debt and return on equity allowances reasonably reflect the required costs of debt and equity, the service provider should receive efficient overall compensation for the necessary rates of return. We note that AGN has not provided evidence to indicate that it or the benchmark entity has reduced its gearing in response to the lower interest rate environment.

¹⁴⁵ AGN, Access arrangement information, July 2015, p. 164.

¹⁴⁶ IPART, *Financeability tests in price regulation*, December 2013, p. 2; Ofgem, *Regulating energy networks for the future: RPI-X@20—Current thinking working paper—Financeability*, May 2010, p. 10.

¹⁴⁷ CEPA, *RPI-X* @20: Providing financeability in a future regulatory framework, May 2010, p. ii.

- the regulatory depreciation allowance
- the benchmarks that financial metrics are assessed against.

In addition, we have relied on commentary and information from the credit ratings agencies presented in confidential appendix E.

D.2.1 Background to the use of financial metrics in a building block revenue framework

As employed by ratings agencies, financial metrics are measures of financial risk taking into account forecast revenue streams and cost drivers. The most commonly used ratios are measures of cash flow availability to meet its debt obligations, after taking into account the company's operating expenditures. AGN and its consultants have based their analysis exclusively on two metrics of debt coverage:¹⁴⁸

- FFO to debt ratio: defined as FFO/debt; and to a lesser extent
- FFO interest cover: defined as (FFO + interest)/interest.

Of these two metrics, AGN and its consultants identify the FFO to debt ratio as the key metric.¹⁴⁹ Credit ratings agencies use these or similar metrics to quantify levels of financial risk as part of a broader assessment of creditworthiness.¹⁵⁰ However, AGN, Incenta and NAB's proposed approach to using these metrics for a notional benchmark entity is different to the way that ratings agencies employ them to assess actual companies. This is because, unlike an actual company, the notional benchmark entity has revenue allowances set in proportion to forecasts of efficient costs. In contrast, when assessing financial metrics for an actual company, credit ratings agencies base their assessment on actual costs, and projections of those costs. This reflects the reality that for actual companies, including service providers as assessed by the ratings agencies, there is no strict link between actual costs and revenues. The absence of this direct link creates a risk that revenue will not match costs. However, a notional benchmark entity has revenue set precisely to target its expected costs and the required return on equity. Therefore, to the extent that we have reasonably estimated these individual building block costs, the notional benchmark entity will be financeable.

Incenta and NAB have generated estimates of costs and revenue entirely within the notional benchmark assumptions of the post-tax revenue model (PTRM). For example, the assumed interest costs faced by the service provider is equal to the return on debt multiplied by the benchmark debt funded portion of the capital base and the assumed

¹⁴⁸ FFO means 'funds from operations'. Incenta has calculated this as Smooth revenue (including ancillary) – interest –opex – tax (gross). See: Incenta, Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics, June 2015, p. 15.

¹⁴⁹ AGN, Attachment 9.5—Response to draft decision: Financeability, January 2016, p. 3.

¹⁵⁰ See for example: Standard and Poor's, Criteria—Corporates—Utilities: Key credit factors for the regulated utilities industry, Nov. 2013; Moody's Investor Service, Rating Methodology: Regulated Electric and Gas Utilities, December 2013.

operating costs are equal to the opex allowance. This results in an unavoidable limitation where major drivers of the overall revenue allowance do not influence the estimated financial metrics.

Further, the two financial metrics that Incenta has included in its analysis are measures of risk relating to the capacity to meet AGN's debt obligations. Specifically, AGN defines the two metrics as:

- FFO to interest cover-the availability of cash flow to pay interest
- FFO to debt ratio—the availability of cash flow to repay the principal.

Unlike actual companies, to whom these metrics normally apply, regulated service providers receive a revenue allowance for benchmark efficient interest costs (the return on debt). This allowance also reflects a benchmark level of gearing, which is based on an assessment of observed gearing level amongst a sample of comparator companies.¹⁵¹ In the rate of return guideline and in subsequent decisions, we determined that the approach to estimating the return on debt should transition to an annually updated trailing average portfolio return on debt.¹⁵² Compared to the on-the-day approach, a trailing average approach is likely to result in a closer match between the return on debt allowance and the costs of debt faced by the benchmark efficient entity.

In addition, we will update our return on debt estimate annually to reflect prevailing costs of debt.¹⁵³ This means that the service provider's cash flows are likely to be protected from year-to-year volatility in prevailing costs of debt. Therefore, to the extent that our annual estimates reasonably reflect prevailing conditions in the market for debt, investors could reasonably expect a high likelihood that an efficient service provider would have sufficient cash flow to meet its interest costs. As AGN and Incenta have determined that the FFO to interest proposal meets Incenta's threshold for a BBB+ credit rating,¹⁵⁴ this suggests that the return on debt approach provides adequate cash flows to cover interest costs even during the period of transition.

Also unlike actual companies, the service providers receive an allowance for the return of capital (regulatory depreciation allowance) through which they recover the principal value of all efficient investments over time. As long as the approach to estimating regulatory depreciation is consistent over time, investors would reasonably expect that the benchmark efficient entity will receive adequate cash flows to repay principal amounts over the life of the assets. In contrast, an actual company faces substantially greater risks relating to the valuation of its assets.

¹⁵¹ AER, *Final rate of return guideline—Appendices*, December 2013, pp. 126–130.

¹⁵² AER, *Better regulation—Explanatory statement to the rate of return guideline*, December 2013, chapters 3, 7 and 8; AER, *Draft decision for AGN—Attachment 3: Rate of return*, pp. 13–14.

¹⁵³ See attachment 3 to this final decision.

¹⁵⁴ AGN, Access arrangement information, July 2015, p. 164.

In describing its approach to financeability, Ofgem observed that:¹⁵⁵

5.8. If both the allowed return and depreciation allowance are set appropriately, the notional company should be financeable.

5.9. The actual network company may not, however, be financeable even if these parameters have been set appropriately. This could be for a number of reasons, including that the company:

- Has chosen a significantly different financial structure;
- Is operating inefficiently; and / or
- Faces a mismatch in its cash flows, which means that its available revenues fall short of the necessary financing costs at a particular point in time, though not on average over time.

5.10. In each case, the issue is at least partially under the regulated company's control, and fully in the case of the first two.

5.11. In the third instance, sense checking the modelled cash flow ratios for the notional business would likely reveal that the ratios fell short of those required by rating agencies to support comfortable investment grade credit ratings in the short term but not on average over time. Given the negligible revenue risk faced by regulated networks and the limited cost risk, this should not raise financeability issues.

Overall, we are not persuaded that AGN's proposed approach is fit-for-purpose to describe the sufficiency of cash flows based on notional cash flows within a regulatory regime. Even to the extent that financial metrics vary over time and at times appear relatively low, it is not clear that this would deter investors such that it would compromise the financeability of the service provider. For this reason, it is similarly unclear that credit ratings agencies would perceive such changes in the default risk of a service provider to be material to justify a change in credit rating.

D.2.2 The calculation of FFO/debt in a building block revenue framework

Incenta and NAB submitted that the key credit metric is FFO to debt.¹⁵⁶ In this case, the numerator (FFO) is calculated as:¹⁵⁷

FFO (funds from operations) = Revenue – Opex – Interest – Tax (gross) (1)

But, in a building block revenue framework:

¹⁵⁵ Ofgem, *Regulating energy networks for the future: RPI-X@20—Current thinking working paper—Financeability*, May 2010, p. 10.

¹⁵⁶ AGN, Attachment 9.5—Response to draft decision: Financeability, January 2016, p. 3.

¹⁵⁷ Incenta, Using the profile of prices during an access arrangement period and return of capital to improve financial metrics, June 2015, p. 15.

Revenue = Return on equity + Return on debt (interest) + Depreciation + Opex + Tax (gross) – Gamma × Tax (gross) + Incentive payments (2)

So, moving (2) into (1):

FFO = Return on equity + Depreciation + Return on debt (interest) - Return on debt (interest) + Opex - Opex + Tax (gross) - Tax (gross) - Gamma × Tax (gross) + Incentives

This reduces to:

FFO = Return on equity + Depreciation - Gamma × Tax (gross) + Incentives (3)

Incentive payments are usually quite small and can be either positive or negative, so we can exclude them from consideration.

Then, we calculate the debt balance, which is the denominator of the FFO/debt metric:

Debt = Capital base × Gearing

So:

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FFO/debt = (Return on equity + Depreciation – Gamma × Tax (gross)) / Capital base × Gearing (4)
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Then, considering the components of equation (4):

- the return on equity allowance is directly proportional to the size of the capital base
- the depreciation allowance over the longer term is limited to the value of the capital base. Therefore, while it is possible to make a short term improvement to financial metrics through the depreciation allowance, it necessarily means a downward offset later that will worsen credit metrics. As a result, depreciation cannot make sustained changes to this financial metric. The use of depreciation to improve financial metrics results in an increased burden on current customers, and necessarily will worsen metrics in the future.
- other than the extent to which tax remaining lives differ from capital base remaining lives, tax is directly proportional to the return on equity, which is in turn directly proportional to the capital base.

This means that, holding other things constant, the following revenue inputs have no impact on the estimate of FFO/debt:

- the opex allowance
- the return on debt
- the tax allowance (except to the extent it interacts with the value of imputation credits).

As a result, the only way to increase the financial metrics over the medium to long term (relatively)¹⁵⁸ is to adjust these proportional relationships, by:

- increasing the estimated percentage return on equity
- reducing the value of imputation credits (gamma)
- increasing the benchmark gearing level.

D.2.3 Key factors that influence regulatory financial metrics the depreciation allowance

The regulatory depreciation allowance can be used to increase financial metrics within an access arrangement period. However, regulatory depreciation is NPV neutral. Therefore, using depreciation to generate a short term boost in financial metrics will necessarily result in a longer term downward impact on financial metrics over the period in which the accelerated depreciation is offset.

If long term input costs and demand were reliably predictable, the depreciation allowance could be used to smooth real prices through time. As discussed in appendix B, the academic literature on regulatory depreciation suggests that smooth real prices which properly reflect the market's required return on capital would be optimal for the welfare of consumers. However, input costs and demand are not reliably predictable. As a result, adjusting depreciation to target smooth real prices is difficult and can have problematic consequences for long term cash flow.

In its proposal, AGN has referred to Ofgem accelerating depreciation in past determinations. However, in evaluating its financeability approach, Ofgem observed that:

4.15. As noted above, we typically sense check our regulatory settlements against the financial ratios assumed by credit rating agencies to be consistent with comfortable investment grade credit ratings. Where modelled cash flow ratios have fallen short of those required during the price control period, we have tended to advance cash flows by tilting depreciation as set out above.

4.16. However, given the risk profile of regulated companies and the recent difficulties that credit rating agencies have had in anticipating financial distress, there is a real question as to whether this is necessary or appropriate.

4.17. The risk profile of regulated utilities is very different to that of unregulated companies. In particular, their revenues are secure in the long term and the scope for revenue (and cost) volatility is much more limited than for unregulated companies. Energy network companies also face less revenue volatility than some other regulated companies such as airports. We have, for example, removed revenue drivers that directly link revenues to throughput on the

¹⁵⁸ This is 'relatively', because under a straight-line depreciation approach or any close variant, the metrics will tend to improve naturally as the RAB decreases.

system but in other regulated sectors revenues are often still linked to measures of demand.

4.18. There may therefore be a rationale for placing less, or no, emphasis on short-term cash flow ratios and the levels assumed by the ratings agencies and either ignoring ratios or considering a set of ratios that more accurately captures the particular features of energy networks and considering the level of these over the long term rather than a five-year price control period.

4.19. The argument against this, which companies have already raised, is that the premium that the financial markets may demand to fund companies that are cash flow negative for a number of years may be higher, to the possible detriment of consumers. This is an empirical issue, which we will investigate.

Further, in its report on financeability to Ofgem, CEPA stated that:¹⁵⁹

Even when NPV neutral approaches are adopted there may be unintended consequences – for example, the most recent electricity distribution determination saw an increase in the proportion of assets that are subject to accelerated depreciation in part because the previous acceleration exacerbated the perceived cash-flow constraints as the capex programme grows. Further, when long lived assets are affected, as is the case with accelerated depreciation, there is a real possibility of significant inter-generational equity issues arising. Existing consumers are paying higher prices and future consumers, in say 20 to 40 years, are paying lower prices than would otherwise have been the case. While these sort of price adjustments over a five or 10 year period may be expected to have a relatively small inter-generational impact, over this longer period a more significant impact can be expected.

We are not satisfied AGN's proposal to accelerate depreciation in order to increase its financial metrics in the short term satisfies the depreciation criteria in the NGR. Further, we are not satisfied that AGN or Incenta have demonstrated that our final decision without either proposed adjustment (a higher rate of return or accelerated depreciation) is likely to result in a credit rating downgrade for the benchmark efficient entity. Even if AGN established this likelihood, we are not persuaded that this issue should be resolved through the depreciation allowance, or that the proposed adjustments would be in the long term interests of consumers.

In particular, we are not satisfied that AGN or its consultants addressed the potential implications of reduced depreciation cash-flow availability resulting from accelerated depreciation in the short term. Under AGN's proposed approach:

 If the risk free rate (and therefore the return on equity) is unlikely to increase in the future—as Incenta has assumed—and if we accelerate depreciation, this will result in lower future depreciation revenue combined with a lower rate of return. This would exacerbate any weakness in financial metrics in future periods.

¹⁵⁹ CEPA, *RPI-X* @20: Providing financeability in a future regulatory framework, May 2010, p. i–ii.
- If the risk free rate (and therefore the return on equity) does increase in the future, then any potential financeability issues evidenced by low financial metrics are likely to improve without ad-hoc revenue interventions. Importantly, as we update the return on debt annually, these higher rates of return would progressively be reflected in allowances as they arise.
- Importantly, due to its NPV neutrality, depreciation can only be used to manipulate financial metrics in the short term. It could not sustainably offset any impact on the financial metrics if the approach to estimating the allowed return on capital is different to the return on capital required by investors. In contrast, AGN has proposed to adjust the depreciation allowance on the basis it considers the AER's rate of return will not result in sufficient cash flows to maintain a BBB+ credit rating. Therefore, even if we accepted that the financial metrics robustly demonstrated a likely credit rating outcome, we would not be satisfied that AGN's proposed to accelerated depreciation is fit-for-purpose to address the issues AGN proposes to resolve. Further, for the reasons set out in attachment 3, we remain satisfied that our approach to estimating rate of return will achieve the allowed rate of return objective.

D.2.4 Key factors that influence regulatory financial metrics sensitivity to the return on equity

Of the revenue inputs which influence regulatory financial metrics over the medium to long term, the return on equity is the most important.¹⁶⁰ This is because the rate of return, multiplied by the capital base, typically accounts for at least 50 per cent of revenue. The rate of return on equity is weighted at 40 per cent in forming the overall rate of return, based on the benchmark level of gearing.¹⁶¹ Compared to the impact of the other factors, the return on equity has the largest impact on funds from operations and therefore on the estimated financial metrics. As a consequence, AGN's proposed approach to the use of financial metrics serves primarily as an indirect test on the return on equity.

As a result of this sensitivity to the return on equity, estimated regulatory financial metrics will vary over time in response to market movements. In periods where the risk free rate (and hence the required return on equity) is relatively lower than historical levels, the cash flows arising from the rate of return allowance will appear relatively low and will perform relatively less well compared to fixed credit metric benchmarks. In this situation, financial metrics assessed in isolation might suggest that the service provider is at risk of a credit rating downgrade despite the estimated regulatory rate of return properly reflecting expected returns.

¹⁶⁰ The benchmark proportion of gearing is also an important input, but this is based on a benchmark observed sector average and has historically been less contentious in our decisions. As a result, the benchmark level of gearing is not a critical lever in determining relative metrics over time.

¹⁶¹ AER, *Final rate of return guideline—Appendices*, December 2013, pp. 126–130.

We have assessed and described in extensive detail our approach to estimating the return on equity.¹⁶² It has been consulted on widely in development of the rate of return guideline, and further through subsequent decisions. Recently, our approach was appealed to the Australian Competition Tribunal, who upheld the approach.¹⁶³ For the reasons set out in the rate of return attachment, we remain satisfied that our estimated return on equity will contribute to achievement of the allowed rate of return objective. In contrast, we consider AGN's assessment of financial metrics serves primarily as an indirect test on the return on equity. Having regard to the extensive consultation and analysis employed in developing the guideline approach, we are therefore not satisfied that AGN's approach to financial metrics should be given substantial weight.

D.2.5 Key factors that influence regulatory financial metrics benchmarks for assessing financial metrics

In order to assess the impact of financial metrics on likely credit ratings, it is necessary to:

- 1. Calculate a financial metric estimate for the company to be assessed
- 2. Compare this against a matrix of 'threshold' financial metrics for particular credit ratings.

AGN and its consultants have proposed to undertake step 2 by sourcing these threshold values from general commentary in credit opinions specific to AGN.¹⁶⁴ We consider the following:

- As these thresholds come from credit opinions specific to AGN, it appears that they
 are likely to reflect the credit ratings agencies' judgements about factors specific to
 AGN in its actual circumstances. This might include factors such as AGN's
 willingness to adopt countermeasures to preserve its credit rating in a low interest
 rate environment. Therefore, it is not clear that these financial metric thresholds
 can be generalised to a benchmark efficient entity.
- We are not persuaded that the thresholds as discussed in the credit opinions are intended to be 'bright line' thresholds. Both S&P and Moody's emphasise the role of judgement in undertaking their credit ratings. Further, the nine per cent threshold that Incenta has adopted as its threshold is ambiguous. We discuss this in confidential appendix E.

We are not satisfied that AGN and Incenta have taken account of relevant accompanying commentary in the credit opinions from which its thresholds are sourced. This commentary appears to be relevant to the weight that credit ratings

¹⁶² See attachment 3 to this final decision.

¹⁶³ Australian Competition Tribunal, Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, 26 February 2016, paragraphs 632–814.

¹⁶⁴ Incenta, Using the Profile of Prices During an Access Arrangement Period and Return of Capital to Improve Financial Metrics, June 2015, pp. 2–3.

agencies would give variations in financial metrics in a low interest rate environment. We have discussed this in greater detail in confidential appendix E.

D.3 The impact of regulatory transparency and predictability on credit ratings

We have determined AGN's rate of return in line with the approach set out in the rate of return guideline, finalised in 2013.¹⁶⁵ This approach was established through extensive consultation with the sector, and has been consulted on further in recent decisions. Similarly, our depreciation approach has been consistent between access arrangements and over time. We are satisfied that our approaches to estimating these individual revenue items are transparent and predictable. In contrast, we consider that ad-hoc revenue adjustments in response to changes in the return on equity will create greater uncertainty amongst investors. Holding all else constant, we expect that greater uncertainty would increase the long term costs of financing unless these revenue interventions are assumed to be asymmetrical in favour of the service provider.

This conclusion is supported by CEPA, who advised both Ofgem and IPART in establishing their approaches to financeability. CEPA submitted that:¹⁶⁶

Regulation which is expected to mimic the operation of competitive markets has adopted an approach to financeability which places a major cost on today's consumers. In the energy sectors this has led to inter-generational equity concerns since the solution to financeability has been to halve the economic life of assets for depreciation in electricity distribution and transmission and to expense 50 percent of a significant capex programme in gas distribution. In a competitive market when funding is required for projects with strong business cases but additional debt would breach financial ratios there would be a call on equity investors. There is no reason why this approach cannot happen in the regulated sectors and has been used recently by Ofwat (and to an extent Ofgem at TCPR4).

If there are concerns about the credibility of the regulatory system which would lead to a higher cost of finance there are additional actions that can be taken to strengthen regulatory commitment. Given that a strong regime with a significant track record exists it is difficult to believe that insufficient commitment is perceived by the markets, but if that is the case Ofgem can take appropriate actions.

What is key is ensuring that the building blocks which ensure that the commitment to long-term financial capital maintenance is delivered are estimated appropriately.

¹⁶⁵ AER, *Final decision—Rate of return guideline*, December 2013.

¹⁶⁶ CEPA, RPI-X @20: Providing financeability in a future regulatory framework, May 2010, p. viii

We consider that the rules framework and our rate of return guideline provide a high degree of certainty and transparency regarding our approach to setting building block revenue allowances. Further, the value of AGN's assets is protected within the capital base, and a return on capital for assets within the capital base is set periodically under a well-established regulatory regime. This allows AGN to expect to generate a benchmark rate of return on the capital base, and also to recover the initial value of its investments over time through a stable and predictable regulatory depreciation allowance.

In line with these observations, the credit rating agency Moody's observed that, regarding the factor, 'regulatory environment and asset ownership model' (Factor 1):¹⁶⁷

[M]any networks are shown as outliers for Factor 1 principally reflecting the high quality regulatory regimes where they operate, which reduces overall business risk. Such regulatory frameworks tend to be well established, provide timely cost recovery and have de-coupling mechanisms that limit volume risk. This means that scores for these sub-factors can often be "Aaa" or "Aa" while issuers themselves are rated in the "A" or "Baa" range. This applies particularly to networks in developed countries with strong regulation, e.g. AusNet Services and Powercor Australia LLC (regulated in Australia by the AER)

In contrast, we consider that AGN's proposed approach is likely to contribute to ad-hoc revenue adjustments which introduce risk into longer term cash flows. We have discussed the implications of accelerated depreciation for risks to long term customer welfare in appendix A. In addition, we are not satisfied that AGN has identified a clear or transparent mechanism to set the benchmark thresholds for its financeability analysis.

To this end, we are not satisfied that AGN's approach can be predictably or transparently applied as proposed. Further, we consider this approach is likely to result in ad-hoc revenue adjustments that are likely to introduce risks into the long term path of cash flows and customer welfare. In contrast, we consider that our rate of return guideline and predictable application of it results in substantial transparency and predictability. Further, we are satisfied that there is evidence to support a conclusion that this transparency and predictability reduces risk, which in turn should reduce the long term costs of finance.

D.4 Other supporting evidence

Overall, we are not satisfied that AGN, Incenta or NAB have demonstrated that the financeability of the benchmark efficient entity is at risk. In particular, the approach proposed by Incenta does not address in detail the context for why regulatory financial metrics may be relatively lower in current market circumstances. Financeability analysis is complex, and the regulators that have adopted financeability tests (Ofgem and IPART) have specified differing approaches to resolve these issues. Neither AGN

¹⁶⁷ Moody's Investors Service, Rating methodology: Regulated electric and gas networks, 25 November 2014, p. 34.

nor Incenta appear to have engaged with the advantages and disadvantages of the alternative models.

Even if we were to adopt a policy of targeting financial metrics through revenue allowances, we are not persuaded by AGN or Incenta's analysis. AGN and its consultants focussed their analysis on a single key financial metric, where credit ratings rely substantially on qualitative analysis of a company and the environment in which it operates. Both S&P and Moody's assess factors including.¹⁶⁸

- the risk relating to the country and sector in which the firm operates.
- the company's competitive position
- the transparency and predictability of the regulatory regime
- the ability and willingness of the company's management to respond efficiently to changes in revenue forecasts.

Financial metrics, while important, form only a part of this analysis. While credit ratings agencies set out methodologies for their credit ratings with varying degrees of transparency, S&P and Moody's both recognise the role of expert judgement in reaching their ratings decisions.¹⁶⁹ It is therefore difficult for any third party that is not a credit ratings agency to definitively apply or replicate any of the agencies' methodologies. For this reason, we are not satisfied that financial metrics should be considered in isolation.

The remainder of this section addresses complementary sources of evidence, including:

- actual credit ratings
- RAB multiples
- actual gearing.

Actual credit ratings

AGN's proposal submitted that, unless the AER adopts its proposed approach to the return on capital, the benchmark entity is likely to have its credit rating downgraded. For the reasons set out in this attachment, we are not persuaded by its evidence in support of this proposal. In addition, we are not satisfied that AGN has supported its financial metric analysis with other evidence or cross checks.

For example, neither AGN nor its consultants have provided evidence to suggest that privately owned service providers individually or in aggregate have experienced credit rating downgrades or have materially reduced their gearing in response to the AER's rate of return guideline approach or subsequent regulatory decisions. Similarly, AGN

¹⁶⁸ Moody's, *Rating methodology- Regulated gas and electric utilities*, December 2013, p. 6, S&P ratings criteria

¹⁶⁹ For example: Moody's, *Rating methodology- Regulated gas and electric utilities*, December 2013, pp. 1–2.

has not provided evidence to indicate that either it or the benchmark entity has reduced its gearing in response to the lower interest rate environment. As identified by CEPA, in a competitive market where investment was planned but financial ratios were at risk of being breached we would expect to see a call on equity investors, and commensurately a reduction in gearing. As we have consistently adopted a regulatory depreciation approach, and have adopted the guideline approach in rate of return decisions since 2013, we would expect that both credit agencies and service providers have already formed a view about whether service providers will be able to manage their financeability under our approach.

While a single service provider may not reflect the benchmark efficient entity, we consider it is reasonable to consider ratings across the sector to evaluate the impact of our guidelines and decisions. We are not persuaded that either of the credit rating reports provided to us by AGN support this conclusion. In contrast, since publication of the rate of return guideline:

- AGN's parent company (Envestra) had its credit rating upgraded to BBB+ on 11 August 2014¹⁷⁰
- United Energy (DUET Group) has maintained a credit rating of BBB from 2008 which remains current and with stable outlook as at the 2015 annual report (September 2015)¹⁷¹
- Multinet Gas (DUET Group) has maintained a credit rating of BBB– from 2008 which remains current and with stable outlook as at the 2015 annual report (September 2015)¹⁷²
- SP AusNet Group (owners of AusNet Services) maintained a credit rating of A– (or A3 in the Moody's scale) as at June 2015¹⁷³ which was consistent with the ratings from 2008 to 2012 and 2014 to 2015.¹⁷⁴

More generally, in the Kanangra report submitted by the ENA in June 2013, prevailing credit ratings across the sector ranged from BBB– to A– (S&P) or Baa3 to A3 (Moody's) amongst the different service providers or parent groups.¹⁷⁵ However, Kanangra observed that there had been 'very little movement in the ratings of the

¹⁷⁰ Envestra, 2014 annual report, p. 8.

Kanangra ratings advisory services, Credit ratings for regulated energy network services businesses, June 2013, pp. 24–25; DUET, 2013 annual report, September 2013, p. 10; DUET, 2014 annual report, September 2014, p. 15; DUET, 2015 annual report, September 2015, p. 16.

Kanangra ratings advisory services, Credit ratings for regulated energy network services businesses, June 2013, pp. 24–25; DUET, 2013 annual report, September 2013, p. 13; DUET, 2014 annual report, September 2014, p. 17; DUET, 2015 annual report, September 2015, p. 19.

¹⁷³ SP AusNet, 2015 annual report, June 2015, p. 32; SP AusNet, 2014 annual report, June 2014, p. 36

¹⁷⁴ Kanangra ratings advisory services, Credit ratings for regulated energy network services businesses, June 2013, pp. 24–25

¹⁷⁵ Kanangra ratings advisory services, Credit ratings for regulated energy network services businesses, June 2013, pp. 24–25.

NSPs since 2008'.¹⁷⁶ This analysis addressed the five year period prior to publication of the rate of return guideline.

We are aware of no service providers or ownership groups whose credit ratings have been downgraded since publication of the rate of return guideline. Further, the privately owned service providers have collectively maintained stable credit ratings over a period spanning the GFC, where interest rates were historically high, to 2015, where interest rates were substantially below recent averages. Further, we note that this range of credit ratings (between BBB– and A–) occurred despite the previous rules regime which specified the models and formulae to estimate the return on capital. This means that the approach to estimating the return on capital was largely consistent between service providers. Since this time, we have consistently adopted the rate of return guideline approach, which:

- updates annually to reflect the changing return on debt portfolio, therefore providing even greater protection for both investors and customers in response to changing interest rates
- transitions from a starting point of the return on debt and equity that is either consistent (the on the day approach for the first year return on debt estimate) or similar (use of the Sharpe-Lintner CAPM as the foundation model for the return on equity) to those used in the preceding access arrangement periods over which credit ratings were stable across the sector.

This suggests that the stable underlying approach used to estimate regulatory revenue may be a more significant influence on the benchmark efficient entity's credit rating than interest rates and by extension financial metrics. Further, it does not support AGN's submission that the AER's approach is likely to result in a credit rating downgrade for the benchmark efficient entity, evidenced only by third party analysis of financial metrics.

RAB multiples

Another option to test investor perceptions of cash flow sufficiency and long term regulatory commitment is to consider RAB (regulatory asset base) multiples.¹⁷⁷ A RAB multiple is a comparison of the market value (i.e. the sale price or cumulative share value) of a service provider with the asset value (i.e. the regulatory asset base). As Grant Samuel has previously explained, listed infrastructure entities should theoretically trade at, and be acquired at, 1.0 times the RAB.¹⁷⁸

However, in practice, trading and acquisition RAB multiples for the privately owned network service providers in Australia have been consistently above 1, in some cases

Kanangra ratings advisory services, Credit ratings for regulated energy network services businesses, June 2013,
 p. 25.

¹⁷⁷ We refer to these as RAB multiples by convention. However, the regulatory asset base is a term defined in the NER. The capital base is the equivalent asset valuation under the NGR.

¹⁷⁸ Grant Samuel, *Expert report: Babcock and Brown Infrastructure*, October 2009, p. 77.

substantially above 1.¹⁷⁹ More recently, TransGrid was privatised at an estimated RAB multiple of 1.6.¹⁸⁰ Conversely, if investors perceived insufficient cash flows or a lack of long term regulatory commitment, we would expect that RAB multiples would be below 1, holding other things constant.

However, we recognise that these valuations can reflect a wide range of factors, including but not limited to:

- That the overall regulatory rate of return exceeds the market's required return.
- That the buyer expects to:
 - achieve greater efficiency gains that result in actual operational and capital expenditure below the amount allowed by the regulator
 - increase the service provider's revenues by encouraging demand for regulated services
 - benefit from a more efficient tax structure or higher gearing levels than the benchmark assumptions adopted by the regulator, and growth options
 - o achieve higher returns if regulation is relaxed.¹⁸¹

Due to the complex range of factors involved in these valuations we are not satisfied that they should be used to review the sufficiency of individual revenue inputs, such as the return on equity. Further, we consider that the RAB multiples for a single entity or a small number of entities would be sensitive to the particular characteristics of that entity, and therefore may not reflect the benchmark efficient entity. However, these concerns can be mitigated by considering RAB multiples across a wide range of service providers, and as a test of the market's perceptions of regulatory commitment and overall revenue sufficiency. In this respect, RAB multiples may serve as a complimentary 'sense check' on financial metrics because:

- They are not affected by the shortcomings of AGN's proposed approach, and therefore should better reflect the overall cash flow sufficiency of the decision. In particular, AGN's proposed approach is highly sensitive to only a few of the cost inputs.
- RAB multiples reflect other important factors relevant to a credit rating which financial metrics do not capture. In particular, CEPA observed the significance of long term regulatory commitment in improving predictability and therefore lowering the long term cost of finance. Investors' perceptions of long term regulatory commitment are likely to be captured in a RAB multiple. In contrast, a financial metric test in isolation relies on a narrow assessment of a small number of input costs with no regard to these broader factors.

¹⁷⁹ AER, *Final decision for Envestra Victoria*—Appendices, March 2013, pp. 58–62.

¹⁸⁰ Frontier Economics, *Response to submissions on the relevance of the TransGrid sale*, February 2016, p. 6.

¹⁸¹ Grant Samuel & Associates Pty Limited, *Financial Services Guide and Independent Expert Report in relation to the Recapitalisation and Restructure of Babcock and Brown Infrastructure*, 9 October 2009, p. 77.

• The benchmark for comparison (a RAB multiple of 1) should be constant and transparent over time, where the benchmarks for FFO/debt and FFO/interest would be expected to vary in response to variations in the market's expected returns.

Overall, we consider the observed RAB multiples that we are aware of do not support a conclusion that investors perceive inadequate support or cash flow sufficiency from regulatory decisions across the electricity and gas service providers. We recognise that this analysis is complex and consider more work is necessary before any conclusions can be reached giving substantial weight to RAB multiples. However, we are satisfied that RAB multiples amongst other sources of evidence can contribute to a sense check of long term regulatory cash flow sufficiency. In contrast, neither AGN nor its consultants have sought to undertake any such sense checks on their analysis of financial metrics.