

# **Jemena Gas Networks (NSW) Ltd**

## **2015-20 Access Arrangement Information**

Appendix 9.10

Return on debt proposal

Public

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## ABBREVIATIONS

AA	Access Arrangement
AEMC	Australian Energy Market Commission
AER	Australian Energy Regulator's
BVAL	Bloomberg value service
CBA	Commonwealth Bank of Australia
FVC	Fair Value Curve
JEN	Jemena Electricity Networks
JGN	Jemena Gas Networks (NSW) Ltd
NER	National Electricity Rule
NGO	National Gas Objective
NGR	National Gas Rules
PTRM	Post-tax revenue model
QCA	Queensland Competition Authority
QTC	Queensland Treasury Corporation
RBA	Reserve Bank of Australia
RPP	Revenue and pricing principles
S&P	Standard and Poor's
STPIS	Service Target Performance Incentive Scheme
WACC	Weighted average cost of capital



## 1. SUMMARY

### 1.1 OBJECTIVE

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*The return on debt should promote the rate of return and national gas objectives*

1. The National Gas Rules (**NGR**) require that the return on debt for an access arrangement (**AA**) period be estimated such that it contributes to the achievement of the rate of return objective. The NGR also require that, when estimating the allowed rate of return (and therefore, the return on debt), regard is had to (among other things) relevant estimation methods, financial models, market data and other evidence.
2. Jemena Gas Networks (**JGN**) proposes estimating the return on debt for the next AA period using an approach that considers all relevant evidence, models and market data. JGN considers that its proposed approach provides for an estimate of the return on debt that is consistent with the rate of return objective.
3. JGN's proposed approach is also designed to produce outcomes that help achieve the national gas objective (**NGO**). The central objective of JGN's proposed approach is to produce estimates of the return on debt that are commensurate with the efficient financing costs of a benchmark entity facing a similar degree of risk as that which applies to JGN in respect of the provision of reference services. Thus, the proposed approach is designed to promote efficient investment in JGN's network for the long-term interests of consumers.

### 1.2 RECENT CHANGES IN THE PREVAILING RETURN ON DEBT

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*Lower return on debt requirements benefit both JGN and our customers*

4. The return on debt for the current AA period was estimated as the prevailing return on debt over a period just prior to the Australian Energy Regulator's (**AER's**) final decision on the AA (around mid-2010). Since that time, the required return on debt has fallen materially due to changes in prevailing market conditions.
5. The lower return on debt required by lenders is reflected in the lower return on debt being proposed by JGN for the next AA period. Ultimately, this benefits consumers in terms of lower tariffs and JGN in terms of lower financing costs.

### 1.3 PROPOSED APPROACH

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*There are three key elements to estimating the return on debt*

6. This appendix addresses three key elements of JGN's proposed approach to estimating the return on debt:
  - the credit rating and term of debt assumed for the benchmark efficient entity
  - the estimation or averaging periods used to estimate the return on debt over the next AA period, and
  - the data source(s) used to estimate the return on debt over the relevant averaging periods.

*Our proposal considers each of these, with a focus on ensuring that the allowed rate of return objective and NGO are promoted*

7. For each of the elements, JGN's proposes:
- **Credit rating and term.** JGN proposes using a 10-year term-to-maturity and a BBB credit rating for estimating the return on debt. The proposed term-to-maturity assumption is consistent with the AER's rate of return guideline (**the guideline**)—and reflects efficient financing practice.
  - **Averaging periods.** JGN proposes implementing the return on debt over future averaging periods using a 10-year trailing average and transitioning to it using the 'QTC transition method', consistent with the guideline.<sup>1</sup> JGN proposes the future measurement periods set out in appendix 9.2.
  - **Selection of data sources.** JGN proposes a four step method for selecting the appropriate data source in each future measurement period, consistent with the guideline:
    - i) **identify** relevant third party return on debt data series (e.g. Bloomberg fair value curve (**FVC**) or Bloomberg valuation service (**BVAL**), the Reserve Bank of Australia (**RBA**) or CBASpectrum)
    - ii) **estimate** the return on debt for each data series for that averaging period
    - iii) **identify** relevant bonds to compare each estimate against and their yields over the averaging period, and
    - iv) **select** the return on debt estimate (or combination of estimates) that best fits the sample of bonds identified in step (iii).

*We propose to depart from the rate of return guideline on some elements, but we have reasons for this*

8. JGN proposes departing from the guideline in respect of its credit rating assumption. As discussed in section 3.2, JGN considers that its proposed credit rating assumption better reflects the degree of risk that applies to JGN in respect of the provision of reference services.
9. JGN also proposes to depart from the guideline in respect of the process for nominating future averaging periods. The reasons for this departure are set out in section 4.2.2.

## 1.4 APPLYING THE PROPOSED APPROACH

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*Applying this approach, gives a return on debt estimate for our sample averaging period of 7.30 per cent*

10. Applying this proposed approach to JGN's sample averaging period (the 20 business days ending 12 February 2014 inclusive) gives a return on debt estimate of 7.30 per cent.
11. JGN will notify the AER of the return on debt resulting from application of the proposed method to the first actual estimation period (i.e. the period set out in appendix 9.2) once this period has passed, so that this can be reflected in the determination of tariffs for the next AA period.
12. The proposed method will then be applied in each of the subsequent averaging periods over the course of the AA period as per the updating mechanism that is codified in JGN's proposed AA.

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<sup>1</sup> Here, 'QTC transition method' refers to a method proposed by Queensland Treasury Corporation (**QTC**) for transitioning from the rate on the day approach to setting the return on debt to the trailing averaging approach set out in the guideline. This differs from the QTC extrapolation method discussed in section 5.3.3.1.



## 2. BACKGROUND AND FRAMEWORK

### 2.1 CONTEXT FOR ESTIMATING THE RETURN ON DEBT

*The return on debt compensates for costs of raising debt to fund efficient investment*

13. The role of the return on debt in the building block framework is to provide businesses with an allowance that is sufficient to provide debt-holders with a return commensurate with the credit risks that they face (e.g. default, downgrade, or credit spread).
14. Providing this allowance is necessary to ensure that the business:
  - can attract necessary capital to undertake efficient investment, consistent with the NGO,<sup>2</sup> and
  - has a reasonable opportunity to recover at least the efficient costs it incurs in providing reference services—including a return that is commensurate with the regulatory and commercial risks involved in providing those services, consistent with the revenue and pricing principles (RPP).<sup>3</sup>

*This role should drive how the return on debt is estimated so that efficient financing practices are promoted, consistent with the NGO*

15. Accordingly, the method for estimating the return on debt must be designed so as to meet these core objectives.
16. Moreover, the approach taken to estimating the return on debt may affect businesses' financing practices, either in terms of the timing of debt issuance and/or in terms of the type of debt issued, or in terms of the hedging undertaken. To the extent that there are such impacts, the return on debt estimation method should be designed to incentivise efficient financing practice, and minimise the risk of distorting financing or investment decisions.
17. In short, the design of the return on debt estimation method should be consistent with providing effective incentives to promote economic efficiency, consistent with the RPP.<sup>4</sup>

### 2.2 RECENT CHANGES IN THE PREVAILING RETURN ON DEBT

*The return on debt for the current AA period reflects the prevailing conditions during the last AA review*

18. The return on debt for the current AA period (10.02 per cent) was estimated as the prevailing return on debt over a period just prior to the AER's final decision on the AA. The period used was the 20 business days ending 6 May 2010.<sup>5</sup>

<sup>2</sup> NGL, s 23.

<sup>3</sup> NGL, s 24.

<sup>4</sup> NGL, s 24(2).

<sup>5</sup> AER, *Final Decision: Jemena Gas Networks Access arrangement proposal for the NSW gas networks - 1 July 2010 – 30 June 2015*, June 2010, section 5.3.

## 2 — BACKGROUND AND FRAMEWORK

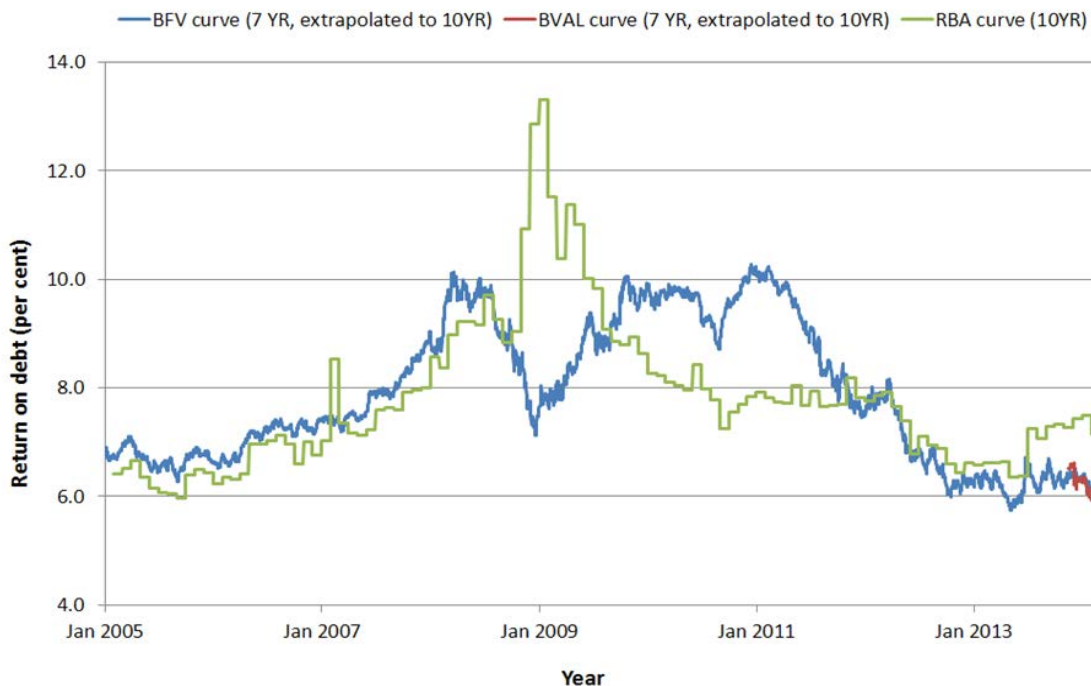
*Since then these conditions have changed, and required returns on debt have dropped*

19. Since that time, the required return on debt has fallen for a number of reasons, including:
- the required return on debt was relatively high at the time of the last AA review due to higher returns being sought by investors in the wake of the global financial crisis, and
  - reductions in the risk-free rate since the time of the last AA review linked to changes in financial market conditions.

*This benefits both us and our consumers*

20. The lower required returns on debt required by lenders are reflected in the lower return on debt being proposed by JGN for the next AA period (7.30 per cent for the sample averaging period). Ultimately, this benefits consumers in terms of lower tariffs.
21. By way of illustration, Figure 2–1 shows return on debt estimates over the past decade for 10-year BBB-rated debt, sourced from Bloomberg and the RBA. This indicates that at least on one measure (the Bloomberg fair value curve) the return on debt has recently fallen to its lowest level in a decade. This also shows that on either of the measures presented in Figure 2–1, the return on debt is significantly lower than at the time of JGN's last AA review (mid 2010).

**Figure 2–1: Return on debt estimates (10 year, BBB), 2005–2014**



Source: AER, *Return on debt: Choice of third party data service provider – Issues Paper*, April 2014, Figure 1.<sup>6</sup>

<sup>6</sup> As noted by the AER, for the purposes of this comparison, the Bloomberg data has been extrapolated from an underlying seven-year curve to a ten-year term by adding a fixed term spread of 30 basis points. The addition of a fixed spread represents a simplification for illustrative purposes, but the magnitude of this spread reflects that applied in recent AER decisions.

## 2.3 RULE REQUIREMENTS

*The return on debt should contribute to the allowed rate of return objective, and reflect a number of factors*

22. The NGR require that the return on debt for a regulatory year be estimated such that it contributes to the achievement of the allowed rate of return objective.<sup>7</sup>
23. The NGR also require that in estimating the return on debt for a regulatory year, regard is had to four factors:<sup>8</sup>
  - the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective
  - the interrelationship between the return on equity and the return on debt
  - the incentives that the return on debt may provide in relation to capital expenditure over the AA period, including as to the timing of any capital expenditure, and
  - any impacts (including in relation to the costs of servicing debt across AA periods) on a benchmark efficient entity referred to in the allowed rate of return objective that could arise as a result of changing the method that is used to estimate the return on debt from one AA period to the next.

*The rules allow for the return on debt to update within period*

24. The NGR provide some flexibility as to how the return on debt is to be estimated for each year of an AA period. Sub-rule 87(9) states the method may result in either the return on debt being the same for each regulatory year in the AA period, or the return on debt being different between regulatory years.
25. Further, sub-rule 87(10) states that the method may be designed to reflect either the return that would be required if debt were raised at the time of the AER's decision on the AA (or shortly before), or the return that would have been required if debt had been raised over an historical period.

*If updated within period, then the resulting change should apply to total revenue via a formula*

26. Sub-rule 87(12) states that, if the chosen method results in the return on debt being different for different regulatory years in the AA period, then resulting changes to total revenue must be effected through the automatic application of a formula that is specified in the decision on the AA. The proposed formula for updating total revenue (if any) must be included in the AA information.<sup>9</sup>

*When estimating the return on debt there are other required considerations*

27. As noted in relation to the return on equity, the NGR further require that, in determining the allowed rate of return generally, one should consider:<sup>10</sup>
  - relevant estimation methods, financial models, market data and other evidence
  - the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt, and

<sup>7</sup> NGR, Rule 87(8).

<sup>8</sup> NGR, Rule 87(11).

<sup>9</sup> NGR, Rule 72(ga).

<sup>10</sup> NGR, Rule 87(5).

## 2 — BACKGROUND AND FRAMEWORK

- any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

### 2.4 AEMC GUIDANCE ON RELEVANT RULE REQUIREMENTS

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28. The above rule requirements were inserted by the Australian Energy Market Commission (**AEMC**) in November 2012.

*The rule changes were driven, in part, by concerns over how to estimate the return on debt*

29. The changes made in November 2012 were at least partly driven by a concern around lack of flexibility in the previous National Electricity Rule (**NER**) provisions and previous regulatory practice. The changes made to the NGR and NER were therefore designed to provide greater flexibility around estimation of the return on debt.
30. The AEMC appears to have intended that (with the rule change) there is scope to select the return on debt estimation method that best promotes the allowed rate of return objective, rather than constraining this to a particular method prescribed in the rules.
31. The AEMC noted in its final position paper on the rule change:<sup>11</sup>

*As with the draft rule, the Commission has not mandated any particular approach to estimating the return on debt in the final position rule. Instead, the final position rule sets out at a very broad level the characteristics of three approaches to estimating the return on debt that could reasonably be contemplated by a regulator...*

*The Commission intends the regulator (and the service provider in its regulatory proposal or access arrangement proposal) to have the discretion to propose an approach that it considers best meets the overall allowed rate of return objective. This discretion for the regulator includes the detail of any approach, such as the period over which a prevailing cost of debt is observed, the length of any historical averaging period, and the form of measurement of the observed financing costs. In all cases the regulator's judgement is to be exercised in such a way as to be consistent with the overall allowed rate of return objective.*

*Regulators should have wider consideration (and use) of methods, models and other evidence when estimating the return on debt*

32. More generally in relation to the rate of return, the AEMC clearly intended that regulators consider a range of methods, models and other evidence, so as to ensure the best estimate of the rate of return.<sup>12</sup>
33. The AEMC also clearly intended that the rate of return is determined at the time of each determination based on the best evidence available at that time.<sup>13</sup> While the guideline process provides some indication of the range of relevant models, data and other evidence that the AER may consider, this process clearly does not obviate the need to properly assess the appropriate approach to the return on debt at each determination.

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<sup>11</sup> AEMC, Final Position Paper: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, 15 November 2012, pp 69-70.

<sup>12</sup> AEMC, Rule Determination: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, November 2012, p 8.

<sup>13</sup> AEMC, Draft Rule Determinations: National Electricity Amendment (Economic Regulation of Network Service Providers) Rule 2012; National Gas Amendment (Price and Revenue Regulation of Gas Services) Rule 2012, August 2012, pp 49-50.

34. The AER appears to acknowledge this in its recent issues paper on the choice of third party data service provider where it observes that whether a particular curve best fits the available data may vary over time.<sup>14</sup>

## 2.5 FRAMEWORK FOR ESTIMATING THE RETURN ON DEBT

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35. The traditional regulatory approach to estimating the return on debt broadly involves three steps:
- **Step 1.** Identify relevant characteristics of debt issued by the benchmark efficient entity, in terms of credit rating and term of debt.
  - **Step 2.** Select a measurement period(s), over which the required return on debt with that credit rating and term is to be estimated.
  - **Step 3.** Select an appropriate data source(s) to estimate the required return on that form of debt, over the selected measurement period(s).
36. The remainder of this appendix sets out JGN's proposal in relation to each of these steps.

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<sup>14</sup> AER, *Issues Paper – Return on debt: Choice of third party data service provider*, April 2014, section 4.4.5.

### 3. BENCHMARK CREDIT RATING AND TERM

#### 3.1 AER POSITION IN THE RATE OF RETURN GUIDELINE

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*We agree with a 10 year term-to-maturity assumption*

37. In its guideline, the AER proposes using a term-to-maturity assumption of 10 years for estimating the return on debt—and we agree with this assumption.
38. The AER observed that this term-to-maturity assumption was consistent with incentives for infrastructure businesses to issue longer term debt where possible, and also consistent with observed financing practice among regulated businesses.<sup>15</sup>

*We do not, however, agree with the AER's credit rating assumption*

39. The AER proposes using a credit rating assumption of BBB+ for all energy network businesses in its guideline. We do not agree with this assumption.
40. The AER stated that it considered credit ratings for regulated businesses were likely to be relatively steady over time, and that it was not aware of any evidence suggesting that service providers' financial risk profiles had changed since the 2008/09 **WACC** review.<sup>16</sup> The AER also referred to empirical evidence which it said supported its proposed credit rating assumption.<sup>17</sup>
41. The AER proposed applying the same credit rating assumption for electricity and gas businesses on the basis that the risks faced by electricity and gas businesses are "sufficiently similar".<sup>18</sup> We do not agree with this either.

#### 3.2 JGN'S CONCERNS WITH THE AER'S POSITION ON CREDIT RATING

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42. JGN does not agree with the AER's position on the benchmark credit rating, as set out in the guideline.

##### 3.2.1 BENCHMARK CREDIT RATING ACROSS AUSTRALIAN GAS AND ELECTRICITY NETWORK BUSINESSES

*Credit ratings change over time, and have done so for energy networks generally over recent years—but this is not reflected in the guideline*

43. A BBB+ credit rating does not reflect the risks faced by energy networks generally. Fundamental changes to the way energy is sourced and consumed mean that the risks faced by debt (and equity) holders have increased—which was reflected in recent downgrades and warnings by ratings agencies.
44. The effect of increasing risk for energy networks on credit ratings is shown in analysis conducted by the AER and presented in the explanatory statement to its guideline. The AER's analysis of median credit ratings for

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<sup>15</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 147.

<sup>16</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, pp. 154-155.

<sup>17</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, pp. 156-157.

<sup>18</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 153.

Australian regulated energy networks over time (reproduced in Table 3–1 below) shows that as the time period for analysis becomes more recent, the median credit rating declines, from BBB+ to BBB.<sup>19</sup>

**Table 3–1: Median credit rating of Australian regulated energy networks, 2002-2013**

Time period	Median credit rating of Australian regulated energy networks
2002-2012	BBB+
2002-2013	BBB+, Negative watch
November 2013	BBB

45. A more detailed analysis of the AER’s benchmark set bears this out even more clearly. Analysing the benchmark set in each year since 2002, there is a clear downward trend in the median credit rating. As Table 3–2 below shows, while the median credit rating over the period 2002–2008 was mostly BBB+, the median rating for each of the last five years has been BBB.

**Table 3–2: Detailed analysis of AER benchmark set used for credit rating analysis**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
APT Pipelines	N/A	N/A	N/A	N/A	N/A	N/A	N/A	BBB	BBB	BBB	BBB	BBB
ATCO Gas	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	BBB	BBB	BBB
DBNGP Trust	N/A	N/A	BBB	BBB	BBB	BBB	BBB	BBB-	BBB-	BBB-	BBB-	BBB-
DUET Group	N/A	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-
ElectraNet Pty Ltd	BBB +	BBB +	BBB +	BBB +	BBB +	BBB +	BBB +	BBB	BBB	BBB	BBB	BBB
Energy Partnership (Gas)	N/A	BBB	BBB	BBB	BBB	BBB	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-
Envestra Ltd	BBB	BBB	BBB	BBB	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB-	BBB
ETSA Utilities	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-
Powercor Utilities	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-
SP AusNet Group	A	A	A	A	A	A	A-	A-	A-	A-	A-	BBB +
SPI (Australia) Assets	N/A	N/A	N/A	N/A	N/A	N/A	A-	A-	A-	A-	A-	BBB
The CitiPower Trust	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-
United Energy Dist.	A-	BBB	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Median</b>	<b>A-</b>	<b>BBB +</b>	<b>BBB +</b>	<b>BBB +</b>	<b>BBB +</b>	<b>BBB +</b>	<b>BBB + / A-</b>	<b>BBB</b>	<b>BBB</b>	<b>BBB</b>	<b>BBB</b>	<b>BBB</b>

Source: Bloomberg.

<sup>19</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 156.

46. This analysis does not support the AER's position on the benchmark credit rating for energy network businesses, as set out in the guideline. Rather, this analysis strongly supports a benchmark credit rating of BBB.

#### 3.2.2 BENCHMARK CREDIT RATING FOR GAS NETWORK BUSINESSES

47. Even if a BBB+ credit rating were considered reasonably reflective of the risks faced by energy networks generally (or on average), this does not imply that this credit rating should be used to determine the return on debt for all energy network businesses. To the extent that some businesses are more risk-exposed, a lower credit rating assumption may be more appropriate—and we consider this so for gas distribution networks in NSW, such as JGN.

#### *Gas distribution networks like JGN are more risk-exposed than other energy network businesses—and for good reasons*

48. Gas distribution network businesses such as JGN are generally more risk-exposed than electricity network businesses and gas transmission pipelines. This is for a number of reasons, including:
- **Demand risk.** Gas distribution businesses such as JGN are generally subject to price cap regulation and are therefore more exposed to demand risk, compared to electricity network businesses as many are subject to revenue cap regulation. In a recent discussion paper, the Queensland Competition Authority (QCA) noted that for regulated businesses the form of regulation that applies (including whether price or revenue cap applies) can significantly impact their exposure to risk. The QCA noted that theoretical and empirical research demonstrates that, under a variety of conditions, the form of regulation and ancillary mechanisms affect the regulated firm's revenues and costs, and exposure of revenues and costs to risk factors.<sup>20</sup>
  - **Sensitivity to other risk factors.** Demand for capacity on gas distribution networks is directly related to demand from end-users—which can fluctuate depending on various factors, including weather, the final delivered price of gas, and availability and price of substitute fuels. This is unlike capacity on gas transmission pipelines, which is often fully contracted and not subject to short-term fluctuations. Core Energy notes that the customer and demand forecasts it prepared for the next AA period are subject to a significant degree of uncertainty due the various factors that can influence demand for gas.<sup>21</sup> As noted above, gas distribution businesses are typically more exposed to demand fluctuations than many electricity businesses due to differences in the form of regulation (price cap vs revenue cap).
  - **Fuel of choice risk.** Gas in NSW, unlike electricity, is a fuel of choice—which means that consumers can (and do) switch away from using gas if wholesale prices are too high. Core Energy notes that there is evidence of substitution away from gas to alternative fuels in a number of applications, including:<sup>22</sup>
    - in relation to water heating, BIS Shrapnel data shows that solar hot water penetration in NSW has risen from four per cent in 2008 to 10 per cent in 2012—Core Energy notes that this affected growth of gas hot water penetration (which remained relatively flat over the same period), and
    - in relation to air conditioning, ABS data shows increased penetration of reverse cycle air conditioning units in NSW, from 27 per cent in 2005 to 33.7 per cent in 2011—over that same period gas heating declined from 27.4 per cent to 26.8 per cent penetration, indicating that consumers are likely to be switching towards reverse cycle units for heating rather than gas.

<sup>20</sup> QCA, *Discussion Paper: Risk and the Form of Regulation*, November 2012, p vi.

<sup>21</sup> Core Energy, *Demand and Customer Forecasts – Jemena Gas Networks NSW Gas Access Arrangement 2015-2020*, April 2014, p. 10, appendix 5.1

<sup>22</sup> Core Energy, *Demand and Customer Forecasts – Jemena Gas Networks NSW Gas Access Arrangement 2015-2020*, April 2014, p. 34, appendix 5.1



- **Wholesale price risk.** Gas wholesale prices are expected to rise over the near and medium term, raising demand (and therefore cash flow) uncertainty for gas network businesses. This is principally due to the linking of domestic and international markets, and the associated alignment of domestic prices with international market prices. For example, the Grattan Institute forecasts increases in the wholesale domestic gas price of more than 80 per cent nationally over the next several years.<sup>23</sup> The potential for significant increases in wholesale gas prices further increases the degree of uncertainty around future demand on gas distribution networks. As gas is considered a fuel of choice, these wholesale price increases are likely to lead to further substitution away from gas to alternative fuels in many applications, thus reducing demand on gas distribution networks. There is therefore considerable uncertainty around future returns for investors (both debt and equity holders) in gas distribution network infrastructure.
  - **Supply shortfall risk.** There is also potential for gas supply shortfalls in NSW over the next AA period, particularly if production in Queensland and South Australia is prioritised for export.<sup>24</sup> The potential gas supply shortfalls similarly increases the degree of uncertainty around future demand on gas distribution networks.
49. For all of these reasons, we expect that gas distribution businesses such as JGN would be relatively more risk-exposed over the next regulatory period than other energy network businesses—which means that the benchmark credit rating for gas distribution businesses should be lower.

*This higher risk exposure is confirmed by looking at empirical credit rating data*

50. For instance, this high risk exposure is illustrated by careful analysis of the sample of energy network businesses used by the AER in the guideline.
51. Table 3–3 shows that among these businesses, those with a greater focus on electricity distribution and transmission generally have higher credit ratings, compared to mixed gas/electricity businesses and businesses focused solely on gas distribution or transmission. While the median credit rating for electricity businesses in this sample is A-, the median credit rating for gas businesses and “mixed businesses” is BBB.

**Table 3–3: Credit ratings for Australian energy network businesses, by business type**

Business	Credit rating
<b>Electricity distribution/transmission</b>	
Citipower	A-
Powercor Australia	A-
SA Power Networks (formerly ETSA Utilities)	A-
ElectraNet	BBB
United Energy Distribution	N/A
<b>Mixed electricity and gas</b>	
SPI Assets	BBB
SP AusNet Group	BBB+
DUET Group	BBB-

<sup>23</sup> Tony Wood and Lucy Carter (Grattan Institute), *Getting gas right: Australia’s energy challenge*, June 2013, p. 9.

<sup>24</sup> The potential for gas supply shortages has been noted by AEMO. See: AEMO, *Gas Statement of Opportunities for eastern and south-eastern Australia* 2013, p. iv.

See also: P Simshauser, T Nelson, *Solving for ‘x’ – the New South Wales Gas Supply Cliff*, Working Paper No. 40, February 2014.

## 3 — BENCHMARK CREDIT RATING AND TERM

Business	Credit rating
<b>Gas</b>	
ATCO Gas	BBB
Envestra Ltd	BBB
APT Pipelines	BBB
DPNGP Trust	BBB-
Energy Partnership (Gas) Pty Ltd	BBB-

52. The above analysis does not support the view of the AER that all regulated energy businesses are likely to face a similar degree of risk.<sup>25</sup> On the contrary, this analysis suggests that gas businesses on average have lower credit ratings assigned to them, reflecting greater risk associated with the supply of gas network services.

*As such, it would be wrong to use a higher credit rating for JGN as doing so would lead to insufficient compensation for risk in the return on debt estimate, making it harder to attract capital for efficient investment*

53. JGN considers that BBB is the most appropriate credit rating assumption when estimating the return on debt for its next AA period. This rating better reflects the degree of risk faced by JGN in the supply of reference services.
54. Using a credit rating higher than BBB would lead to JGN not being adequately compensated for the efficient financing costs of a benchmark efficient entity facing a similar degree of risk as that which applies in respect of the supply of reference services. In short, JGN would be inadequately compensated for efficient financing costs, creating a risk that JGN cannot attract capital required to undertake the efficient investment outlined in chapter 6 of the AA information.

### 3.3 JEMENA'S PROPOSED APPROACH

55. For the reasons set out above, JGN proposes estimating the return on debt for the next AA period by reference to the yield on corporate bonds with:
- a 10-year term to maturity, and
  - a BBB credit rating.
56. This approach is designed to ensure that the return on debt reflects efficient financing costs of a benchmark efficient entity facing a similar degree of risk as that which applies in respect of the supply of reference services.

<sup>25</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 154.

## 4. AVERAGING PERIODS

### 4.1 AER POSITION IN THE RATE OF RETURN GUIDELINE

#### 4.1.1 TRAILING AVERAGE APPROACH

*The AER proposes a 10-year trailing average, which implies that the benchmark efficient entity issues debt evenly over time*

57. In its guideline, the AER proposes using a ‘trailing average portfolio approach’ to estimate the return on debt.<sup>26</sup> This implies estimating the average return that debt investors in a benchmark efficient entity would require if it raised debt over an historical period prior to the commencement of a regulatory year in the regulatory control period.

*The AER also proposes that the return on debt updates each year within the AA period*

58. Use of the trailing average portfolio approach implies the return on debt may be different for each regulatory year of an AA period. For each regulatory year, the return on debt is estimated as an average of returns on debt estimated for historical averaging periods, with this average potentially updated each year.
59. The AER proposes in the guideline to update the return on debt estimate each year within the AA period by updating the trailing average. The AER proposes that for the purposes of this annual update, the return on debt for the next regulatory year be estimated using an averaging period of 10 or more consecutive days as close as practical to the commencement of that regulatory year.<sup>27</sup>
60. The AER also proposes that equal weights be applied to all elements of the trailing average.<sup>28</sup>

#### 4.1.2 TRANSITIONAL ARRANGEMENTS

*The AER proposes the QTC transition over a 10-year period*

61. The AER proposes transitioning to the trailing average portfolio approach using the ‘QTC transition method’.
62. This method is described by QTC as follows:<sup>29</sup>

*Under... the moving average approach, the prevailing rate during the next rate reset period will apply for the first year. In the second year, the first year rate will in effect have a 90 per cent weighting, absent any increases in debt which affect the weighting, and that weighting will diminish by 10 per cent each year. Based on a ten year averaging period and quarterly observations, this is equivalent to setting the initial forty observations in the moving average to equal the average prevailing rate during the next rate reset period.*

63. Under the QTC transition method, where the trailing average is applied to a network service provider for the first time, the return on debt in first year is simply set equal to the ‘prevailing’ return on debt—i.e. the return on debt

<sup>26</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 96.

<sup>27</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 126.

<sup>28</sup> AER, *Better Regulation Explanatory Statement: Rate of Return Guideline*, December 2013, p. 96.

<sup>29</sup> QTC, *Moving average approach - detailed design issues: Supplementary submission to the economic regulation of network service providers rule change process*, 8 June 2012, p. 2.

estimated over a period shortly before the commencement of that year. Over later years, the trailing average is progressively phased in, with the prevailing rate as at the commencement of the first year being given progressively less weight as the phase-in occurs.

### 4.2 JGN'S PROPOSED APPROACH

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#### 4.2.1 ADOPTION OF TRAILING AVERAGE APPROACH

*We favour a hybrid portfolio approach, but are comfortable with the trailing average approach set out in the guideline so long as it is flexible enough to deal with smaller networks like JGN*

64. JGN previously argued for using a 'hybrid portfolio approach', and noted that using a trailing average approach may have negative consequences for smaller network service providers and their customers.<sup>30</sup> JGN noted that businesses like JGN and Jemena Electricity Networks (**JEN**) with smaller debt portfolios cannot issue debt evenly over the trailing average period (or use swaps effectively to mimic this) as is assumed under the trailing average approach—which means that imposing a trailing average on these smaller businesses may have unintended consequences in terms of their financing practice and incentives for efficient investment.<sup>31</sup>
65. JGN also argued that a transition, like the QTC transition method, is needed to implement any change from the current rate on the day approach to either a hybrid portfolio or trailing average portfolio approach.<sup>32</sup>
66. JGN still considers that a hybrid portfolio approach better reflects efficient financing practice for a benchmark efficient entity with a similar degree of risk as that which applies to JGN in the provision of reference services. However, for the purposes of estimating the return on debt for the next AA period, JGN adopts the trailing average approach and transition set out in the guideline, provided that this approach is applied properly and results in reasonable estimates of the return on debt for the benchmark efficient entity.

#### 4.2.2 AVERAGING PERIODS

*We propose our first averaging period in appendix 9.2, with subsequent averaging periods to be nominated in accordance with the proposed AA*

67. When implementing the trailing average approach over the next AA period, JGN proposes the averaging period set out in appendix 9.2 for the first year of this period and will nominate averaging periods for subsequent years, as per the process set out in the proposed AA.

*We propose a departure from the guideline on proposing the subsequent averaging periods*

68. JGN notes that this proposed approach to selecting averaging periods is a departure from the guideline. The guideline indicates that averaging periods should be specified prior to the commencement of the regulatory

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<sup>30</sup> In this context, a "hybrid" return on debt benchmark is based on the assumption that the benchmark efficient network service provider issues fixed rate debt over time, and that debt is first swapped into floating rate debt of the same term, and then, just before the start of each regulatory period, swapped into floating rate debt for the term of that regulatory period. This approach is discussed further detail in Jemena's submission to the rate of return guideline consultation paper (Jemena, *Rate of Return Guidelines – Consultation Paper: Submission from Jemena Limited to the Australian Energy Regulator*, 21 June 2013).

<sup>31</sup> Jemena, *Rate of Return Guidelines – Consultation Paper: Submission from Jemena Limited to the Australian Energy Regulator*, 21 June 2013.

<sup>32</sup> Jemena, *Rate of Return Guidelines – Consultation Paper: Submission from Jemena Limited to the Australian Energy Regulator*, 21 June 2013, p 32.

control period, and that an averaging period must be specified in advance for each regulatory year within a regulatory control period.<sup>33</sup>

*But we have good reasons for our proposed departure, including that this better promotes efficient debt management practices without harming consumers*

69. JGN proposes a different approach to that set out in the guideline for two key reasons:

- **Debt management flexibility.** Our approach gives greater flexibility to align the timing of future averaging periods with expected (and required) debt management practices in the proposed averaging period. The later this period is set, the better informed we (or a benchmark entity in our circumstances) will be about these expected practices and therefore the appropriate timing of the averaging period to align with these practices. If the averaging period is set too early (e.g. five years in advance in the extreme), then we risk setting a period that no longer aligns with our debt management needs when it comes to pass—and therefore that period may no longer promote efficient debt management practices.

This flexibility is particularly relevant for small firms like JGN because we—or a benchmark entity in our circumstances—cannot effectively issue debt evenly over time to mimic the trailing average benchmark. That is, it is impractical and costly for us to issue 10 per cent of our debt each year and to do so during an averaging period that is nominated far in advance, especially as our financing needs change. Instead, we must combine both debt issuing and hedging strategies to mimic<sup>34</sup> the trailing average benchmark as best we can—and to do this effectively we need flexibility to nominate averaging periods at a time closer to the start of those periods so that we can incorporate changes in:

- *market conditions*—including changes in market sentiment and the products available for efficient debt management, and
- *our debt refinancing and new issue requirements*—including due to changes in capital expenditure needs or early refinancing requirements set by rating agencies such as Standard and Poor's (S&P).<sup>35</sup>

For businesses like JGN, there is considerable uncertainty around when refinancing will need to occur. Although the maturity of existing debt is known now—subject to any early call options, put options, or options to convert being exercised on it—the exact timing of refinancing is subject to market conditions around the time of maturity, and certain requirements of credit rating agencies. In order to maintain an investment grade credit rating with S&P and other rating agencies, issuers are usually required to refinance debt at least three months before it matures. However, in practice, the actual refinancing typically falls somewhere between three and six months before depending on market conditions; namely whether there is sufficient market interest to buy longer term debt. Pre-empting this interest is difficult because market sentiment can change, which was particularly evident during the GFC and subsequent European debt crises.

<sup>33</sup> AER, *Better Regulation: Rate of Return Guideline*, December 2013, pp. 21–22.

<sup>34</sup> Here, it is important to note that hedging is not perfect. It is not possible for us to completely align our actual debt costs with the trailing average using the hedging instruments (i.e. products) currently available. Although we can use interest rate swaps and similar instruments to align the risk-free rate to some degree, we cannot do the same with the debt risk premium. Therefore, using hedging instruments leaves us with some misalignment.

<sup>35</sup> For further discussion of early refinancing requirements see Incenta, *Debt raising transaction costs – Jemena*, June 2014, appendix 7.8.

Given this uncertainty around when refinancing will need to occur over the course of the next AA period, it would be imprudent to ‘lock in’ averaging periods. Doing so is likely to lead to a misalignment of averaging periods with efficient debt management practice to the extent that market conditions or refinancing requirements change. This in turn may lead to inefficient debt management practice by businesses if they seek to undertake refinancing in accordance with averaging periods that are locked in five years in advance, and which do not reflect changes in market conditions or refinancing requirements over the course of the next AA period (e.g. businesses may undertake refinancing earlier than would be efficient, in order to align with the averaging period that was locked in five years prior).

Moreover, the reason that businesses are given an opportunity to nominate future averaging periods is so that they can align their actual debt costs with the return on debt allowance by managing their borrowing and hedging arrangements around the averaging periods.<sup>36</sup> It is good practice to do this as it reduces exposure to interest rate risk, which would otherwise arise if actual debt costs and the return on debt allowance were misaligned. By retaining flexibility to nominate the averaging period later (as per our proposed approach), we—and a benchmark entity in our circumstances—can better give effect to this alignment and therefore better promote efficient debt management practices.

- **Reduce risk of averaging periods becoming known.** Our approach also reduces the risk that a future averaging period becomes known to third parties by reducing the time between when it is set and when it applies. This is a relevant concern for regulated networks like JGN that rely on the period remaining confidential until after it is passed to get best execution of debt issues and hedging transactions. If the period becomes known to third parties, then they could use this information to work against JGN’s and our customers’ interests.

70. In short, JGN’s proposed approach is principally directed at minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective.<sup>37</sup> JGN is concerned that if averaging periods are locked in too far in advance, there is a risk of misalignment between the averaging period that is locked in and the period over which a benchmark efficient entity would refinance its debt (and therefore misalignment between the return on debt that is estimated using the locked in averaging period, and the return on debt of a benchmark efficient entity).
71. If there is a misalignment between the return on debt that is estimated and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective, this is unlikely to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers.
72. Therefore, JGN considers that its proposed approach to nomination of averaging periods—which allows for better alignment of averaging periods with efficient financing practice—better promotes the NGO and is more consistent with the RPP.<sup>38</sup>

### *Prior nomination of all averaging periods is not required by the NGR*

73. While the AER expresses a desire in its guideline that averaging periods are specified prior to the commencement of a regulatory control period, there is no requirement to do so under the NGR. As discussed in section 6.2, the NGR requirement for a formula for updating total revenue each year does not imply that all elements of the annual return on debt calculation must be specified or mechanised prior to commencement of the AA period. All that is required under the NGR is that, if the return on debt is to be estimated using a

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<sup>36</sup> See, for instance, AER, *Final decision: APA GasNet*, March 2013, Part 3, p. 45.

<sup>37</sup> This is a relevant consideration under rule 87(11) of the NGR.

<sup>38</sup> The NGO is to promote efficient investment in, and efficient operation and use of, natural gas services for the long term interests of consumers of natural gas with respect to price, quality, safety, reliability and security of supply of natural gas (NGL, s 23). The RPP further state that a service provider should be provided with effective incentives in order to promote economic efficiency with respect to reference services the service provider provides, and that the economic efficiency that should be promoted includes efficient investment in, or in connection with, a pipeline with which the service provider provides reference services (NGL, s 24(3)).



methodology that results in the return on debt (and consequently the allowed rate of return) being, or potentially being, different for different regulatory years in the next AA period, then a *resulting change to the service provider's total revenue* must be effected through the automatic application of a formula that is specified in the decision on the AA for that AA period.<sup>39</sup>

74. Certainly, the NGR do not require that the periods over which the 'spot rate' return on debt is calculated in future years be pre-determined—a process for calculating the return on debt and updating total revenue can still be 'automatic' without it being pre-determined when the process will occur (i.e. if the process is automatic, the trigger can be pulled on this process at any time).
75. Under JGN's proposal, it is not necessary that all future averaging periods are nominated prior to the start of the next AA period for the return on debt calculation for each year to be specified so that any resulting change to total revenue occurs through the automatic application of a formula. The averaging period simply determines when one input into the calculation of the updated return on debt (i.e. the prevailing rate for the relevant year) is estimated. Since this period will be nominated in advance of it occurring, and will need to take place sufficiently ahead of the resulting change to total revenue needing to occur, there is no reason why the proposed nomination process would prevent updating of total revenue through automatic application of a formula.
76. That said, we understand the AER's desire for a return on debt updating process that applies as formulaically and mechanistically as possible so that calculations are undertaken within a relatively short timeframe. Therefore, JGN's proposed approach seeks to balance the need for a mechanistic approach to updating the return on debt with our need for debt management flexibility, and that assumed for the benchmark entity.
77. JGN also recognises that—as the return on debt update will be an important input into the variation of reference tariffs within the AA period—there needs to be adequate AER oversight of the updating process. The NGR require that the AER is given adequate oversight or powers of approval over reference tariff variation matters.<sup>40</sup> Our proposed AA therefore gives the AER oversight and powers of approval at various stages of the updating process, including in relation to the identification of averaging periods. These powers of oversight are very similar to those frequently included in AAs for AER review and oversight of cost pass throughs and other matters relevant to variation of reference tariffs.<sup>41</sup>
78. To ensure the return on debt is updated mechanistically and to give the AER adequate powers of oversight and approval (as required under the NGR), JGN proposes a process for nominating and approving averaging periods which is set out in our proposed AA. As discussed in section 6.2, JGN's proposed process for updating the return on debt (codified in the proposed AA) gives enough time for review and approval of averaging periods by the AER in advance of updating return on debt and automatically updating the total revenue and tariffs.

*Proposed process does not give rise to any ability for gaming*

79. Finally, our proposed averaging period nomination process does not give rise to any greater ability for 'gaming'—and therefore does not harm consumers. Since averaging periods must be nominated well in advance of their occurrence, there is no greater ability to 'game' the nomination of averaging periods under JGN's approach, compared to the approach set out in the guideline or approach applied in previous regulatory decisions (where the averaging period is typically nominated by businesses in their regulatory proposals).

<sup>39</sup> NGR, rule 87(12).

<sup>40</sup> NGR, sub-rule 97(4).

<sup>41</sup> For example: *Approved Access Arrangement for Envestra's Victorian Gas Distribution System 2013 – 2017*, April 2013, clause 4.6.2.

## 5. DATA SOURCES

### 5.1 RELEVANT METHODS, DATA AND OTHER EVIDENCE

#### 5.1.1 AVAILABLE METHODS AND DATA SOURCES FOR ESTIMATING THE RETURN ON DEBT

*There are several methods and data sources available*

80. The methods, data and other evidence relevant to estimating the return on debt over any given period, for a given benchmark credit rating and term of debt include:

- **Independent third party data series.** A number of data series, providing yield estimates for given credit ratings and term-to-maturity, have been developed by independent third parties, including:
  - CBA Spectrum BBB+ fair value curve (not available since September 2010)
  - Bloomberg BBB fair value curve (recently ceased publication)
  - Bloomberg BBB BVAL fair value curve (recently started publication), and
  - RBA aggregate measures of Australian corporate bond yields (recently started publication), which include a measure of yields on 10-year BBB corporate debt.
- **Extrapolations of independent third party data series.** Where third party data series do not provide estimates for a particular benchmark credit rating and term of debt, these data series can be extrapolated using a variety of methods (e.g. extrapolations of the Bloomberg 7-year BBB fair value curve estimates, to derive 10-year BBB yield estimates). Section 5.3.3 further discusses our proposed approach to extrapolation.
- **Alternative yield estimation methods.** Some alternative methods have been developed for estimating bond yields for given credit rating and term-to-maturity characteristics. Most recently, the Nelson-Siegel method has been proposed by some service providers.<sup>42</sup>

*Each has strengths and weaknesses, which should be considered when estimating the return on debt*

81. Each of the available methods and data sources potentially has strengths and weaknesses, as set out in Table 5–1.

**Table 5–1: Strengths and weakness of data sources and methods**

Factor	Third party data series	Alternative methods	Description
Independent from regulatory process	Strength	Weakness	<p>A strength of independent third party data sources in this context is that they are provided on a commercial basis for the use of market practitioners and are developed separately from the regulatory process.</p> <p>This means that the exercise of any judgement in the construction of yield estimates is carried out by market experts based on the market data and other information available to them, and that the exercise of such judgement is entirely independent of the regulatory process.</p>

<sup>42</sup> See, for example: United Energy and Multinet Gas, *Submission to the AER's Draft Rate of return Guideline (August 2013)*, 15 October 2013.



Factor	Third party data series	Alternative methods	Description
Relevant to benchmark firm	Weakness	Strength	<p>A potential weakness of some independent third party data sources is that they may not capture all information that is relevant to estimating the return on debt for the benchmark efficient entity.</p> <p>This is a potential drawback of the independence of these third party data providers—because their estimates are not derived for the regulatory process, they may not be constructed in a way that perfectly aligns with regulatory objectives.</p> <p>In particular, because the yield estimates provided by these sources reflect trades on already issued debt (i.e. the secondary market), they may not be a good proxy for yields on new debt (i.e. the primary market). Some experts consider that yields in the secondary market may be downwardly biased when compared to trades in the primary market, because of the premium attached to new debt issues.<sup>43</sup> This would imply that an upward adjustment (i.e. a new issue premium) should be made to the yield estimates produced by sources that reflect trades in the secondary market, when estimating the return on debt for the benchmark efficient entity.</p> <p>If this downward bias is confirmed, then JGN proposes adjusting the yields from third party data providers to offset the bias.</p>
Transparency of approach	Potential weakness	Strength	A further weakness of some independent third party data sources is that they are not transparent as to how they derive yield estimates.
Customisation of approach	Weakness	Strength	An advantage of alternative yield estimation methods is that the method can be transparent, and can be designed in a way that aligns directly with regulatory objectives.
Discretion when implementing	Strength	Weakness	An associated weakness of alternative yield estimation methods is that any exercise of discretion in the design of the method may not be exercised independently of the regulatory process.

*One should consider all available and relevant data series when estimating the return on debt—and our proposed approach does this*

- 82. We consider it important to estimate the return on debt using an approach that properly considers all available data series, and their respective strengths and weaknesses. The AEMC amended the NER and NGR for precisely this reason—to allow regulators to consider a range of relevant information in order that the method that was likely to provide the best estimate could be adopted. We cannot assume that any one data series will be superior (or inferior) to all others in all circumstances.
- 83. As discussed below, JGN’s proposed approach involves using the data source that transparently and objectively provides the best estimate of the return on debt for the benchmark efficient entity at any point in time. JGN’s proposed approach does not presuppose the superiority (or inferiority) any particular data source. Rather, we propose that for each averaging period that the return on debt needs to be estimated, there is a pre-defined mechanistic process for selecting the data source that provides the best estimate at that time.

<sup>43</sup> For example: Professor Ehud I. Ronn and Associate Professor Robert S. Goldberg, *Research into the New Issue Premium, and the Applicability of that Research to the Australian Corporate Bond Market: A submission prepared for United Energy and Multinet Gas in response to the draft rate of return guideline of the Australian Energy Regulator*, October 2013.

The research by Professors Ronn and Goldberg based on the US bond market finds that, using 1,487 new corporate-bond issues, there was evidence of a New Issue Premium (“NIP”) in the US investment-grade corporate bond market, of the order of 10 per cent of the credit spread in excess of Treasury rates. Professors Ronn and Goldberg state that a study of Australian corporate bond issuance would likely reveal a new issue premium similar to what was found in the US, with the premium related to the factors identified in the US—spread level, market volatility, trend of spread history and tenor.

### 5.1.2 AVAILABLE DATA FOR SELECTING BETWEEN ESTIMATION METHODS / DATA SOURCES

*Testing available methods and data sources against relevant market evidence ensures that the return on debt reflects that evidence*

84. JGN proposes that, for each period that an estimate of the return on debt is needed, the available methods and data sources are tested against relevant market evidence. The purpose of this testing is to identify the data source or method that gives the best estimate of the return on debt for the benchmark efficient entity at any point in time (i.e. over a given averaging period).

*Yields on traded bonds are the most relevant evidence for this testing*

85. The most relevant market evidence for this purpose is information on yields for traded bonds with characteristics that are similar to the benchmark form of debt (e.g. in terms of their maturity and credit rating). This information can be sourced from data providers such as Bloomberg and UBS.

*Some choices are needed when selecting a sample of traded bonds*

86. In selecting a sample of bonds to test the available data sources and methods, there is necessarily a trade-off between the sample size and proximity of bonds in the sample to the relevant benchmark. As there is only a limited number of traded bonds with characteristics that closely reflect the benchmark, in order to increase the sample size, bonds with characteristics that are less aligned with the benchmark may need to be included.
87. In defining the relevant sample of bonds, the following issues need to be considered:
- whether to only include bonds with the benchmark credit rating (i.e. BBB), or extend the sample to include a wider credit rating band
  - whether to only include bonds denominated in Australian dollars, or extend the sample to include bonds denominated in other currencies
  - whether to only include fixed rate bonds, or extend the sample to also include floating rate bonds
  - whether to only include bonds with yields from multiple data sources, and
  - whether to include bonds with embedded options.

*Using a wide sample of bonds is consistent with recent Tribunal decisions*

88. JGN's approach is to define the relevant sample of bonds in a relatively broad way, so as to ensure an adequate sample size for testing the available methods and data sources. As discussed further below, this means:
- including bonds in a credit rating band, from BBB+ to BBB-
  - including bonds denominated in AUD, USD, EUR or GBP, and
  - including fixed and floating rate bonds, bonds that may have yields from only one data source (or multiple data sources) and bonds with embedded options or other 'non-standard features'.
89. This is consistent with the approach taken by the Tribunal in *ActewAGL* and *Jemena Gas Networks (No 5)*.<sup>44</sup> In those cases, the Tribunal sought to ensure that the sample of bonds used to test available methods and data

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<sup>44</sup> *Application by ActewAGL Distribution* [2010] ACompT 4; *Application by Jemena Gas Networks (NSW) Ltd (No 5)* [2011] ACompT 10.

sources was sufficiently large. In *ActewAGL* in particular, the Tribunal was critical of the approach taken by the AER, which relied on too small a sample of bonds around the relevant term to maturity. In that case the Tribunal stated:<sup>45</sup>

*In the Tribunal's view, it is not reasonable to decide which of three non-linear curves best fits a set of data that consists of only five points, especially when those points cover little more than half of the range of the independent variable, namely the term to maturity. The AER is seeking to select a curve on the basis of how close the observed yields lie to the curves, closeness being measured by the weighted sum of squared differences. There is not sufficient information to conclude that because the shape and position of a curve up to six years provides a better fit, the same curve will provide a better estimate for greater terms to maturity.*

90. To ensure a large enough sample was used, the Tribunal considered evidence of yields on bonds within a broad credit rating band, including both fixed and floating rate bonds, bonds that may have yields from only one data source (or multiple data sources) and bonds with 'non-standard features'.<sup>46</sup>

## 5.2 AER POSITION ON RELEVANT DATA SOURCES IN THE RATE OF RETURN GUIDELINE

91. In its guideline, the AER proposes using published yields from an independent third party data service provider.<sup>47</sup>

*The AER favours third party data services because of their advantages over alternative methods*

92. The AER considered that using independent third party data services held certain advantages over alternative yield estimation methodologies, such as the Nelson-Siegel method. The AER noted that third party data sources are provided on a commercial basis for use by market practitioners and are independent from the regulatory process.<sup>48</sup>
93. Further, using an independent third party is likely to reduce the scope for debate around debt instrument selection issues and curve fitting methodologies, and thus is better suited to automatic updating (as proposed by the AER when applying the trailing average approach).
94. The AER explained its position in its explanatory statement to the guideline as follows:<sup>49</sup>

*At this time, we propose to use a third party data service provider as the source of an estimate of the benchmark return on debt. We consider that this method has the following advantages:*

- *It is independent expert advice.*
- *It can be implemented in the context of automatically updating a trailing average of the return on debt as required by the NER/NGL.*

*We have previously expressed a preference for using an independent third party data service provider, where the method for estimating the return on debt is transparent. However, other*

<sup>45</sup> Application by ActewAGL Distribution [2010] ACompT 4, [39].

<sup>46</sup> Application by Jemena Gas Networks (NSW) Ltd (No 5) [2011] ACompT 10, [55], [57].

<sup>47</sup> AER, *Better Regulation: Rate of Return Guideline*, December 2013, p. 21.

<sup>48</sup> AER, *Explanatory Statement: Draft Rate of Return Guideline*, December 2013, pp. 98-99.

<sup>49</sup> AER, *Better Regulation: Explanatory Statement: Rate of Return Guideline*, December 2013, pp. 126-127.

*factors—such as differences in debt selection criteria—would also need to be considered in assessing which of the competing data providers to adopt in a determination. We consider that an assessment of the relative merits of a data service provider is consistent with the allowed rate of return objective and recognises 'the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the allowed rate of return objective'.*

*The AER has not stated a preference for a given data service at this stage*

95. The AER does not indicate a preference for any particular data service in its guideline, nor does it indicate how to choose between alternative data services where more than one is available.
96. The AER has subsequently published an issues paper seeking stakeholders' views on these issues.<sup>50</sup> Although this consultation is a positive step, we cannot rely on it to clarify the AER's preference at this stage due to its late timing.

### 5.3 JGN'S PROPOSED APPROACH TO SELECTING DATA SOURCES

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#### 5.3.1 USE OF INDEPENDENT THIRD PARTY DATA SERIES

*Our proposed approach uses third party data service to estimate the return on debt*

97. JGN proposes using published yields from an independent third party data service provider to estimate the return on debt for each of the averaging periods, consistent with the guideline.

*Any approach should recognise that each has strengths and weaknesses, and that these may change over time*

98. As noted above, independent third party data services can have some weaknesses relative to other sources. For instance, because the yield estimates provided by these sources reflect trades on already issued debt (i.e. the secondary market) they may underestimate yields on new debt. Further, a potential weakness of some independent third party data sources is that they are not transparent as to how they derive yield estimates.
99. On balance, however, JGN agrees with the AER that the strengths of using third party data services are likely to outweigh their weaknesses at the current time. JGN therefore proposes using the approach set out in the AER's guideline of using published yields from an independent third party data service provider to estimate the return on debt.<sup>51</sup>

*In some cases, the third party data may need extrapolation*

100. For clarity, this approach may involve relying on extrapolations of independent third party data series. Where a third party data series does not provide yield estimates at the relevant term-to-maturity, an extrapolated or interpolated yield may be used.
101. JGN understands that this approach is consistent with the intent of the guideline.<sup>52</sup>

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<sup>50</sup> AER, *Return on debt: Choice of third party data service provider – Issues Paper*, April 2014.

<sup>51</sup> AER, *Better Regulation: Rate of Return Guideline*, December 2013, p. 21.

<sup>52</sup> The explanatory statement to the guideline notes that the AER's practice was to use the BBB seven year Bloomberg fair value curve, extrapolated to a 10 year maturity. The AER also noted that, at that time, the Bloomberg fair value curve was the only independent third party data provider (AER, *Better Regulation: Explanatory Statement: Rate of Return Guideline*, December 2013, pp. 126-128).

5.3.2 APPROACH TO SELECTING A THIRD PARTY DATA SERIES, WHERE MULTIPLE SERIES ARE AVAILABLE

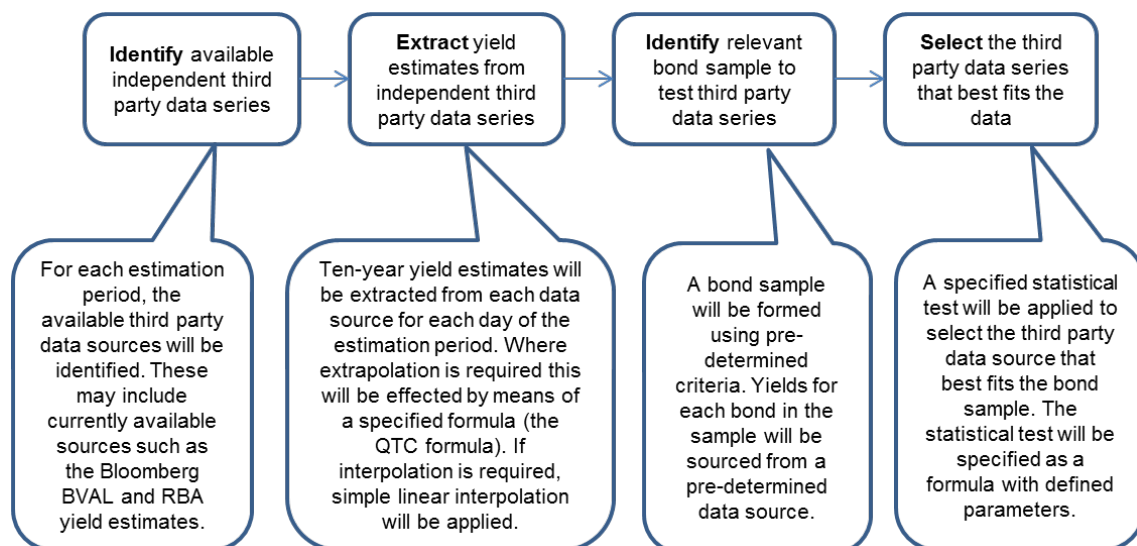
*The available third party data series and the reliability of those series changes over time—and so we cannot select one now that will always give the best estimate of the return on debt over future averaging periods*

- 102. JGN notes that at any point in time that an estimate of the return on debt is needed, there may be more than one available third party data series. At the current time, there are two series available (e.g. RBA and Bloomberg).
- 103. We must, therefore, establish a process for choosing between data sources. The objective of this process is to select the data source that provides the best estimate of the return on debt for the benchmark efficient entity at any point in time (i.e. for a given averaging period).

*We propose a four-step method for automatically selecting between available third party data series and then updating the return on debt*

- 104. JGN proposes a four step method to estimating the return on debt for a given averaging period:
  1. **identify** available independent third party data series
  2. **extract** estimates of the return on debt for the averaging period using each of the available independent third party data series
  3. **identify** the sample of relevant bonds to compare each estimate against and their yields over the averaging period
  4. **select** the return on debt estimate (or combination of estimates) that best fits the sample of bonds identified in step three.
- 105. Figure 5–1 illustrates and explains this four-step method further.

**Figure 5–1: Proposed approach to selecting third party data series**



Therefore, we understand that where the AER referred to its proposed use of “a third party data service provider”, this included potential use of an extrapolated third party data series, such as an extrapolation of the Bloomberg fair value curve.

*We propose applying this method to the first and subsequent averaging periods*

106. JGN proposes applying this method to the first averaging period (nominated in appendix 9.2) and in each subsequent period that will be used to update the return on debt for later years of the AA period.
107. JGN will notify the AER of its calculation of the return on debt for the first averaging period once this period has passed. For each of the subsequent periods, this method will apply to calculate annual return on debt observations used to update the return on debt for each year of the AA period, as per the relevant provisions of the proposed AA (which we discuss further in section 6.1).

*Our proposed four step method can apply automatically within period, once codified within the AA*

108. The proposed method is described in further detail in Table 5–2. As described in section 6.1, each step of the proposed method has been codified in JGN’s proposed AA, so that it can be applied mechanistically to calculate annual return on debt observations that will be used to update the return on debt for later years of the AA period.
109. The table identifies those parts of the proposed AA where each step in the method is codified.

**Table 5–2: Description of proposed method for selecting best estimate of the return on debt**

Step	Description of method	AA reference
1. Identify available independent third party data series	<p>For each period over which the return on debt is to be estimated, the available independent third party data sources will be identified.</p> <p>These will at least include the Bloomberg BBB BVAL yields and the RBA aggregate measures of Australian BBB corporate bond yields, to the extent that each of these sources provides yield information for corporate bonds in the BBB credit rating band up to at least a seven year term to maturity, for at least one day during the nominated averaging period.</p> <p>The available data series may also include series that are not currently available, but which may become available in future. Therefore the relevant set of independent third party data sources is defined to include any other sources of published yield information for corporate bonds (besides those referred to above) that are well recognised and used by market practitioners, and which provide yield information for corporate bonds in the BBB credit rating band up to at least a seven year term to maturity for at least one day during the nominated averaging period.</p>	5.2(c)(iii)

Step	Description of method	AA reference
2. Extract estimates of the return on debt for the estimation period, using each of the available independent third party data series	<p>For each of the available independent third party data series with relevant data available during the estimation period, data is sourced on the average yield for the BBB credit rating band at each available maturity up to ten years for each day during the nominated averaging period for which data is provided.</p> <p>Where the independent third party data series provides this information for all maturities up to and including ten years for all days during the estimation period, this can be sourced directly from the data source.</p> <p>However, where the third party source does not provide data on average yields for the BBB credit rating band at a ten year term to maturity (as is the case currently with the Bloomberg BBB fair value curve and BVAL yields), an estimate of the ten year yield will be determined by extrapolation. As discussed in section 5.3.3, JGN proposes that, should extrapolation be required, the QTC extrapolation method be used, because this method can be applied formulaically.</p> <p>Further, where a data source does not provide yield information for all business days in the estimation period, interpolation may be required to provide yields for all business days (is currently required for the RBA source). JGN's proposed approach to interpolation is set out in section 5.3.3.</p>	5.2(c)(iv)
3. Identify the sample of relevant bonds to compare each estimate against and their yields over the averaging period	<p>A bond sample is to be formed for each estimation period, comprising bonds which have the following characteristics:</p> <ul style="list-style-type: none"> <li>• be issued by entities domiciled in Australia</li> <li>• be issued in Australian dollars, United States dollars, Euros and British pounds</li> <li>• be issued by corporations in any industry, excluding governments or government bodies, and</li> <li>• have a credit rating from Standard &amp; Poors of BBB-, BBB or BBB+ on the final day of the averaging period.</li> </ul> <p>This bond sample may include bonds that are:</p> <ul style="list-style-type: none"> <li>• of any issue size</li> <li>• of any coupon type (including fixed and floating rate bonds), and</li> <li>• with or without embedded options (including but not limited to call options, put options and options to convert).</li> </ul> <p>Yield data for each bond in the bond sample is to be sourced from Bloomberg by collecting data for each bond using the BVAL pricing source for each day of the averaging period. For bonds with embedded options, option adjusted spreads are sourced, and converted to option adjusted yields by adding to these spreads interest rate swaps interpolated to the maturity of the bond.</p> <p>For bonds issued in United States dollars, Euros or British pounds, yields will be converted to Australian dollar equivalents using a conventional method.</p>	5.2(c)(i) 5.2(c)(ii)



Step	Description of method	AA reference
4. Select the return on debt estimate that best fits the sample of bonds	<p>The best estimate of the return on debt for the relevant estimation period will be identified as the independent third party yield estimate that best fits the bond sample. The best fitting yield estimate will be the one with the lowest sum of weighted squared differences to the bond sample.</p> <p>The sum of weighted squared differences for each independent third party data source will be calculated in the following way:</p> <ul style="list-style-type: none"> <li>for each bond in the relevant bond sample, a yield for each of the independent third party yield curves at the bond's average time to maturity will be calculated using linear interpolation</li> <li>for each bond in the relevant bond sample, the squared difference between the observed yield of the bond and the yield of each of the independent third party interpolated yield curves at the same maturity will be calculated</li> <li>the squared difference for each bond in the relevant bond sample will be weighted using a Gaussian kernel with a mean of 10 years and a standard deviation of 1.5 years—the purpose of using a Gaussian kernel weighting is to give greater weight to observations that are close to the benchmark term to maturity (10 years)</li> <li>for each Independent Third Party Data Source, the sum of the weighted squared differences across all the bonds in the relevant bond sample will be calculated.</li> </ul> <p>Clearly, where there is only one independent third party data source available, this would be chosen as the data source to estimate the return on debt. However, where more than one data source is available it is necessary to apply this test in order to identify the data source that provides for the best estimate.</p>	5.2(c)(v) 5.2(c)(vi)

### 5.3.3 APPROACH TO EXTRAPOLATION AND INTERPOLATION

#### 5.3.3.1 Extrapolation

##### *Extrapolation should reflect observed changes in market yields*

110. If a third party source does not provide data on average yields for the BBB credit rating band at a ten year term to maturity (as is the case currently with the Bloomberg BBB fair value curve and BVAL yield curve), then we must determine an estimate of the ten year yield using extrapolation.
111. Where extrapolation is needed, JGN considers that, as a general principle, the extrapolation method should be based on observed changes in market yields over the relevant maturities.

##### *Several extrapolation methods available, but need one that can apply automatically*

112. There are several extrapolation methods available to measure increases in market yields, but these vary in their accuracy and in how easy they are to automate.
113. In recent decisions the AER used paired bonds method for this purpose.<sup>53</sup> JGN considers that this is a reasonably accurate method of extrapolation, and should therefore be used where it is practical to do so.

<sup>53</sup> AER, *Determination – Advanced Metering Infrastructure – 2014 revised charges*, 31 October 2013, p. 21; and AER, *Final decision – SP AusNet Transmission determination 2014–15 to 2016–17*, p. 23.



114. The challenge now, however, is that the paired bond method requires one to decide what bond pairs to use to measure the changes in market yields over the relevant maturities—and therefore is much harder to automate than some of the other methods. Of course, this is not a problem if there is a decision making framework, such as during an AA review determination. However, it is a problem if the method needs to apply automatically within a regulatory period, as is the case when the trailing average approach applies within period.
115. Given this, JGN proposes using an extrapolation method other than paired bonds.

*QTC extrapolation method is the best of these alternative methods*

116. Even when applying a method automatically, it should produce accurate estimates of the changes in market yields between relevant maturities to ensure that the resulting return on debt estimate is commensurate with efficient financing costs, as required by the rules.<sup>54</sup>
117. QTC has developed a method that can apply automatically to extrapolate yield estimates from seven to ten years (**QTC extrapolation method**).<sup>55</sup> The QTC extrapolation method is based on the same principles as the paired bond approach, but uses data from QTC's credit margin survey to establish a formulaic relationship between seven and ten-year credit margins.
118. Incenta test this and other methods against various benchmarks over the last decade and find that the QTC extrapolation method performs best. Incenta then advise that the QTC extrapolation method is likely to produce the best estimate of the change in market yields between relevant maturities when applied automatically within a regulatory period.
119. Based on this advice, JGN proposes using the QTC extrapolation method to extrapolate Bloomberg BBB fair value curve and BVAL yields from seven to 10 years. The QTC extrapolation method is detailed in Incenta's report (appendix 9.11) and codified in clause five of JGN's proposed AA.<sup>56</sup>

### 5.3.3.2 Interpolation

120. Where a data source does not provide yield information for all business days in the estimation period, interpolation may be required to provide yields for all business days (as is currently required for the RBA source).
121. JGN proposes to apply the following approach to interpolate where needed:
1. **Extract data.** Extract from the relevant data source the two yield estimates that fall immediately before and after the relevant averaging period and any yield estimates that fall within that period.
  2. **Count days.** Calculate the number of business days between each of the consecutive yield estimates extracted from the data source. Divide the change in yield between any two consecutive estimates by the number of business days to determine the daily yield increment (or decrement) between those estimates.
  3. **Use days to interpolate data.** Calculate the yield estimate for each target day over the averaging period using the yields extracted in step (1), the daily yield increment (or decrement) calculated in step (2) that applies to that day, and the number of business days between the date of estimates provided by the data source and the target date.

<sup>54</sup> NGR, Rule 87(3).

<sup>55</sup> Queensland Treasury Corporation, *Submission to the Draft Rate of Return Guideline – Attachment A: An alternative extrapolation method to estimate the 10-year BBB+ corporate yield*, 11 October 2013.

<sup>56</sup> Incenta, *Methodology for extrapolation of the debt risk premium*, June 2014, appendix 9.11.

122. This is a standard approach to interpolation, similar to that used for interpolation of CGS yields for the purposes of estimating the risk-free rate. This proposed approach is demonstrated in JGN's rate of return model, appendix 9.1.

### 5.3.4 ADVANTAGES OF JGN'S PROPOSED APPROACH

123. JGN considers that its proposed approach is consistent with the requirements of the NGR and NGL in relation to estimation of the return on debt and the rate of return more generally.

*Our approach seeks to select the best estimate at the time of each averaging period*

124. JGN's proposed approach is designed to obtain the best estimate of the return on debt in each of the relevant measurement periods. This is done by using a method for selecting the best estimate at any point in time from available independent third party data series.

125. As noted by the AER, whether a particular curve best fits the available data may vary over time.<sup>57</sup> It is therefore necessary to use a method that is designed to identify the best fitting curve at any point to ensure that the best estimate of the return on debt is being obtained.

*Our approach reflects good regulatory practice*

126. The method for selecting the best estimate at any point in time was designed in accordance with good regulatory practice, and relevant guidance from past Tribunal cases. In particular, the method is designed to select the best estimate from available independent third party data series based on a relatively broad sample of bond yield information.
127. Previous decisions of the Tribunal emphasised the importance of having a robust method for choosing between independent third party data sources, particularly where there may be a significant divergence between the estimates produced by alternative sources.<sup>58</sup>

*Our approach applies automatically during the AA period*

128. Importantly, the method was also designed so that the return on debt can be updated mechanistically throughout the AA period, with consequential changes to total revenue being given effect through the automatic application of a formula. This process for updating the return on debt and total revenue over the course of the AA period is described below in detail in section 6.2.

### 5.3.5 APPLICATION OF JGN'S PROPOSED APPROACH TO A SAMPLE AVERAGING PERIOD

129. The proposed method for selecting third party data series has been applied to a sample averaging period of the 20 business days ending 12 February 2014 (inclusive).

*We found only two third party data series were available during sample period*

130. Over the sample period, there were only two independent third party data series that provided yield information for corporate bonds in the BBB credit rating band up to at least a seven year term to maturity, for at least one day during the nominated averaging period. These were:

- the Bloomberg BBB fair value curve, and

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<sup>57</sup> AER, *Issues Paper – Return on debt: Choice of third party data service provider*, April 2014, section 4.4.5.

<sup>58</sup> *Application by ActewAGL Distribution* [2010] ACompT 4, [23].

- the RBA aggregate measures of Australian BBB corporate bond yields.
131. For each of these series data was sourced on the average yield for the BBB credit rating band at each available maturity up to ten years, for each day during the sample period that data was provided. For the RBA measures, as they are currently only provided on a monthly basis, linear interpolation across business days was used to calculate the yield on a daily basis (using the approach described in section 5.3.3.2 ).
132. For the Bloomberg BBB yield measures, as they are currently only provided out to seven years, extrapolation was required to calculate the yield out to ten years. For the purposes of estimating the return on debt for the sample averaging period, the extrapolation was based on the 'paired bond' method, which is the method that the AER and service providers have applied in several recent review processes. However, as discussed above, JGN does not propose applying the paired bond method to calculate the return on debt for later years of the AA period. Rather, we propose applying a more formulaic approach based on the QTC extrapolation method.

*We identified 138 relevant bonds to test the data series against over the sample period*

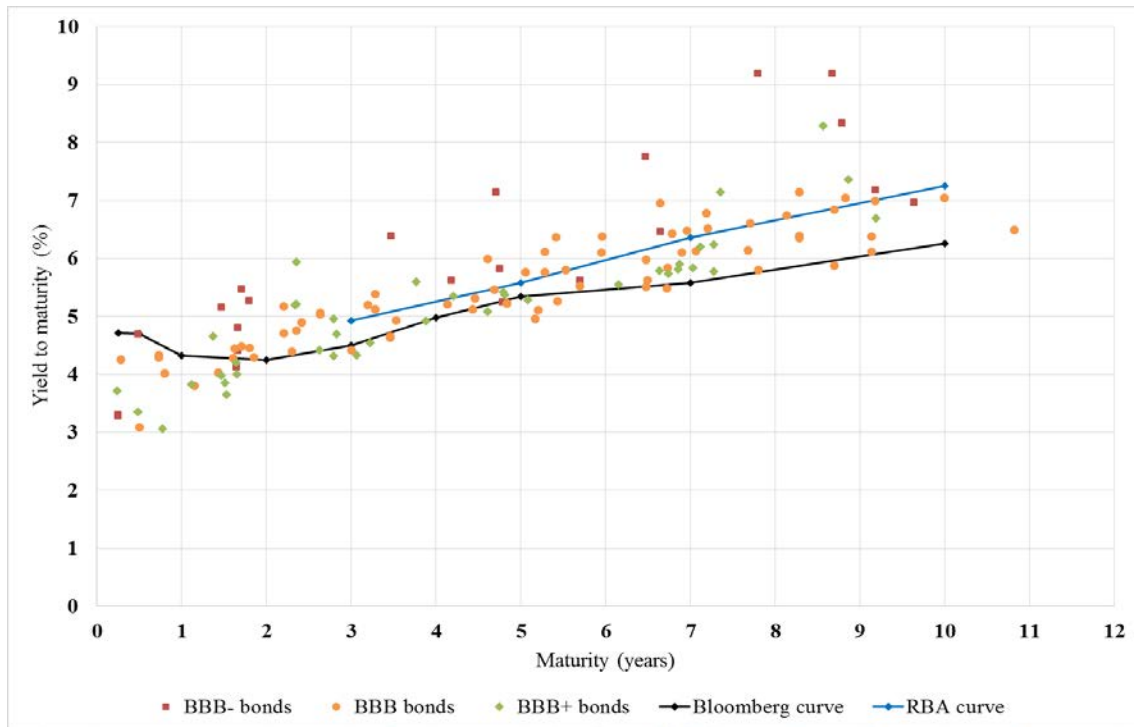
133. The relevant bond sample was compiled by applying the criteria set out in Table 5–2. This involved the following steps:
- **Step one.** The Bloomberg terminal search function was applied, with the following search criteria or specifications:
    - country of incorporation for the company which issued the bond is Australia (criteria)
    - currency of issue in Australian dollars, United States dollars, Euro or British pounds (criteria)
    - no government bonds are included (checked box option)
    - no duplicate bonds are included (checked box option), and
    - bonds which were active during the 20 business days to 12 February 2014 (inclusive) are included (criteria).
  - **Step two.** Bond-specific and parent company credit ratings were sourced from Standard & Poor's for each bond on each day of the averaging period. The bond-specific credit rating was used, except where a bond did not have a bond-specific credit rating on a certain day, in which case the parent company credit rating was used.
  - **Step three.** Only bonds that met the initial search criteria and specifications, and which had a credit rating from Standard & Poor's of BBB-, BBB or BBB+ on the final day of the averaging period, were included in the final sample.
134. The final sample of bonds for the sample period included 138 bonds. Out of the 138 bonds, 23 bonds are rated BBB-, 73 bonds are rated BBB and 42 bonds are rated BBB+. Further, 69 of the bonds are issued in AUD, 55 bonds in USD, eight bonds in EUR and six bonds in GBP.

*We sourced yields for each bond in the sample and compared the data series against these*

135. We sourced yield data for each bond in the bond sample from Bloomberg, using the BVAL pricing source for each day of the averaging period. For bonds with embedded options, option adjusted spreads were sourced and converted to yields by adding the interpolated interest swap yield.
136. The issue amount for each bond was downloaded from Bloomberg in local currency and converted to AUD using the exchange rate at the date of issue (exchange rate information was also sourced from Bloomberg). Maturity dates were also sourced from Bloomberg, and used to calculate the number of years to maturity for each bond.

137. Figure 5–2 below shows the Bloomberg BBB fair value curve and RBA BBB curve plotted against the relevant bond sample, for the sample estimation period.

**Figure 5–2: Bloomberg BBB fair value curve and RBA BBB curve plotted against the relevant bond sample, for the sample estimation period**



Source: Bloomberg and the RBA.

138. The sum of the weighted squared differences was calculated across all the 138 bonds in the sample. The results of this calculation are presented in in Table 5–3 below.

**Table 5–3: Results of data source section method for the sample estimation period**

Independent third party data source	Sum of weighted squared differences
Bloomberg BBB fair value curve	1.56
RBA aggregate measures of Australian BBB corporate bond yields	0.69

*Over the sample averaging period the RBA BBB yield curve best fits the sample of bonds*

139. As can be seen, over the sample estimation period, the RBA BBB yield curve has a lower sum of weighted squared differences to the bond sample. This is also consistent with Figure 6–1, which shows that the RBA curve sits within the bond sample. Therefore, under JGN’s proposed method for selecting between independent third party data sources, the 10 year RBA BBB yield estimate would be selected for that period, and would be used to estimate the return on debt.
140. Over the sample estimation period, the average annualised 10 year yield estimate from the RBA curve is 7.30 per cent, as shown in JGN’s rate of return model (appendix 9.1).

## 6. IMPLEMENTATION

### 6.1 RETURN ON DEBT FOR THE FIRST YEAR OF THE AA PERIOD

141. Under the transition approach set out by the AER in the guideline the return on debt for the first year of the AA period is to be based on the estimated prevailing rate of return on debt for that year (similar to the 'on the day' approach).<sup>59</sup>
142. JGN proposes an averaging period for the purposes of estimating the prevailing rate of return on debt for the first year in appendix 9.2. JGN will notify the AER of the return on debt resulting from applying its proposed estimation method (as set out in section 5.3) to this period once it has passed so that this can be reflected in the AER's determination of tariffs for the first year of the next AA period.

### 6.2 PROCESS FOR UPDATING THE RETURN ON DEBT

#### 6.2.1 JGN'S PROPOSED UPDATING PROCESS

143. Under the trailing average approach, the return on debt must be updated for later years of the AA period—and there will need to be consequential changes to JGN's total revenue allowance and tariffs for those later years.
144. This will involve four key steps:
1. **Averaging period.** An averaging period is identified for the purpose of calculating a 'spot rate' return on debt for the relevant year.
  2. **Spot rate.** A 'spot rate' return on debt for the relevant year is estimated. The 'spot rate' for a given year is referred to in the proposed AA as the 'annual return on debt observation'. This is not the return on debt used to update total revenue and tariffs for that year—rather, it is one parameter in the calculation of the updated return on debt (see step three below).
  3. **Trailing averaging.** The trailing average will be updated to derive the updated return on debt figure to apply for the relevant year. This is the return on debt used to update total revenue and tariffs for that year. The updated trailing average return on debt is a function of the 'spot rate' estimated in step two for that year, and the spot rates for previous years.
  4. **Revenue and tariffs.** Total revenue and tariffs will be updated using the updated return on debt figure from step three.
145. Each of these steps (or processes) is discussed below.

#### *Step one: nomination of future averaging periods using the process set out in the proposed AA*

146. In order to calculate the 'spot rate' return on debt for later years of the AA period, JGN's proposed method for selecting an appropriate data source (described in section 5.3 above) will apply to each of the subsequent averaging periods. For this purpose, JGN will nominate averaging periods for each of the later years in accordance with the process set out in the proposed AA.

<sup>59</sup> AER, *Better Regulation: Rate of Return Guideline*, December 2013, p. 20.

147. The proposed process for identifying averaging periods for later years involves:
- JGN **nominating** an averaging period of at least 10 consecutive business days, falling entirely within the financial year immediately prior to the financial year that it is to be used to calculate the annual return on debt observation
  - JGN **notifying** the AER of its nomination at least 50 business days prior to the start of the financial year in which the averaging period is to occur, and
  - the AER **reviewing** JGN's nomination, and notifying JGN as to whether it agrees to the nominated averaging period—the AER must notify JGN as to whether it agrees to the nominated averaging period within 20 business days of receiving JGN's notification.
148. For example, under JGN's proposed process, the averaging period to be used for calculation of the annual return on debt observation for the third year of the AA period (financial year 2017/18) would need to fall entirely within the second year of the AA period (financial year 2016/17) and JGN would need to nominate this period at least 50 business days prior to the start of the second year (i.e. around mid-April 2016).
- Step two: apply the selection method automatically to each future averaging to estimate the spot return on debt*
149. JGN's proposed method for selecting between independent third party data series to derive a return on debt estimate for each averaging period is codified in the proposed AA. Under the proposed AA, this method would apply in each estimation period to identify the "Best Fit Independent Data Source" for that period, which would then be used to calculate the annual return on debt observation (clause 5.2. of the proposed AA).
150. The proposed AA codifies the method of calculating the annual return on debt observation in a high level of detail, including:
- detailed criteria for compilation of a bond sample for each averaging period
  - specification of a statistical test to apply to determine which of the available independent data sources best fits the bond sample of that averaging period, and
  - formulae for extrapolating yield estimates produced by independent data sources, if needed.
151. This method is specified in as much detail as possible in the proposed AA, so that it can apply mechanistically to determine an annual return on debt observation for each year of the AA period.
152. The proposed AA also sets out a process for calculating the annual return on debt observation using the proposed method, and reviewing this calculation by the AER. This process involves:
- JGN **notifying** the AER of its calculation of the annual return on debt observation for each financial year of the AA period (other than the first year) within 20 business days of that year commencing (the averaging period having fallen in the previous year), and
  - the AER **reviewing** JGN's calculation of the annual return on debt observation, and either approving it or substituting its own calculation—the AER must do this within 40 business days, subject to this time limit being extended by no more than 50 business days.
153. Once again taking the example of the annual return on debt observation for the third year of the AA period (financial year 2017/18), JGN must notify the AER of its calculated annual return on debt observation for that year within 20 business days of the year commencing (i.e. by late July 2017).
154. As the averaging period would fall entirely within 2016/17, this should allow enough time for JGN to calculate the annual return on debt observation and to notify the AER of this calculation. The AER then has 40 business

days to review the calculation (i.e. until around late September 2017, subject to the time line being extended by the AER).

*Step three: update the trailing average using the current and previous spot return on debt estimates*

155. Once the annual return on debt observation is calculated, this is used to update the trailing average return on debt for the relevant year (step three above, codified in clause 5.1 of the proposed AA). This results in the return on debt (and consequently the allowed rate of return) potentially being different in each year of the AA period, as is allowed for under the NGR.<sup>60</sup>
156. Updating of the trailing average can occur by simply applying the formulae specified in clause 5.1 of the proposed AA once the annual return on debt observation is calculated for the relevant year. The formulae that JGN proposes using for this purpose are consistent with the guideline,<sup>61</sup> and are reproduced in Box 6–1.

**Box 6–1: Trailing average formulae to be used to update the return on debt**

Financial Year 2015/16:  $kd_{2015-16} = R_{2015-16}$

Financial Year 2016/17:  $kd_{2016-17} = (0.9 \times R_{2015-16}) + (0.1 \times R_{2016-17})$

Financial Year 2017/18:  $kd_{2017-18} = (0.8 \times R_{2015-16}) + (0.1 \times R_{2016-17}) + (0.1 \times R_{2017-18})$

Financial Year 2018/19:  $kd_{2018-19} = (0.7 \times R_{2015-16}) + (0.1 \times R_{2016-17}) + (0.1 \times R_{2017-18}) + (0.1 \times R_{2018-19})$

Financial Year 2019/20:  $kd_{2019-20} = (0.6 \times R_{2015-16}) + (0.1 \times R_{2016-17}) + (0.1 \times R_{2017-18}) + (0.1 \times R_{2018-19}) + (0.1 \times R_{2019-20})$

where:

- $kd_t$  is the return on debt for Financial Year  $t$  of the Access Arrangement Period;
- $R_{2015-16}$  is the annual return on debt observation for Financial Year 2015/16 (calculated to be 7.30% for the placeholder period, to be updated for the actual averaging period, as set out in Appendix 9.2); and
- $R_t$  is the annual return on debt observation for each Financial Year  $t$  of the Access Arrangement Period (other than Financial Year 2015-16), calculated in accordance with the method specified in section 5 above, which is codified in clause 5 of the Proposed AA.

*Step four: reflect the updated trailing average automatically using the process set out in the proposed AA*

157. As is required under the NGR, any resulting change to JGN's total revenue resulting from differences in the return on debt between regulatory years (step four above) is effected through automatically applying a formula,<sup>62</sup> which is embedded in JGN's revenue forecast model (appendix 12.1). The formula embedded in this model is used to update JGN's total revenue and recalculate X factors for later years of the AA period.
158. The proposed method of updating X factors is consistent with the method recently proposed by the AER in its informal consultation on adjustments to the electricity post-tax revenue model (**PTRM**) to implement the guideline.<sup>63</sup>

<sup>60</sup> NGR, sub-rule 87(9)(b).

<sup>61</sup> AER, *Better Regulation: Rate of Return Guideline*, December 2013, pp. 19–20.

<sup>62</sup> NGR, sub-rule 87(12).

<sup>63</sup> See, for instance, Email from Kenny Yap to Anton Murashev and Robert McMillan, *Request for feedback - Jemena - example PTRM that implements the new RoR guideline*, 29 May 2014.



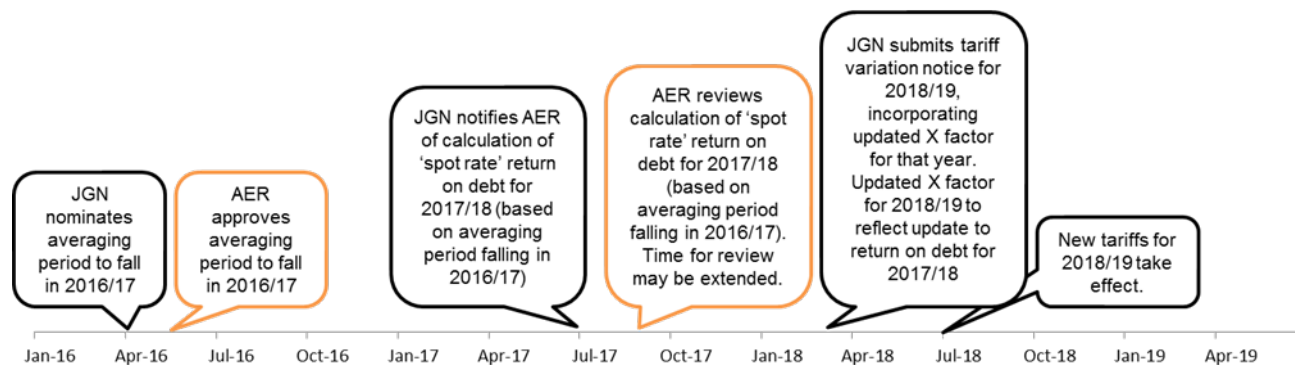
## 6 — IMPLEMENTATION

159. Importantly, updating of X factors is lagged by one year so that JGN has enough time to calculate the ‘spot rate’ return on debt for the relevant year and the AER has enough time to review of this calculation before tariffs are updated. Under our proposal, once the return on debt is updated for a particular year, this is used to update the X factor for the following year. For example, once the return on debt for 2017/18 is updated, it is used to update the X factor for 2018/19 as part of the tariff variation process for that year.
160. This type of lag is often used in translating adjustments to cost building blocks into revenue and tariff adjustments—for example under the service target performance incentive scheme (**STPIS**) applying to electricity distribution businesses there is a lag between the end of the performance year for the scheme and the start of the regulatory year for pricing purposes, which is designed to allow time to incorporate performance outcomes under the STPIS into annual pricing arrangements.<sup>64</sup>
161. Due to the lagging of the X factor update, a true-up is needed for the return on debt for the final year of the next AA period (financial year 2019/20). Our proposed true-up process is set out in clause 5.9 of the proposed AA.

### *Illustration of the proposed process*

162. Figure 6–1 illustrates how our proposed updating process would operate to update the return on debt for one year of the next AA period, and subsequently update total revenue and tariffs. The year chosen for illustrative purposes is the third year of the next AA period (financial year 2017/18).
163. This illustration shows how the lagging of tariff adjustments allows time for calculating (by JGN) and verifying (by the AER) the updated return on debt ahead of the tariff variation process.

**Figure 6–1: Illustration of proposed process for updating the return on debt and making consequential changes to total revenue and tariffs**



### 6.2.2 AUTOMATIC APPLICATION OF THE PROPOSED PROCESS

#### *The proposed steps (or processes) comply with the NGR*

164. JGN considers that its proposed process for updating the return on debt and total revenue complies with the relevant requirements of the NGR.

<sup>64</sup> AER, *Final decision: Electricity distribution network service providers service target performance incentive scheme*, June 2008, section 6.9.



165. The NGR requires that, if the return on debt is estimated using a method that results in the return on debt (and consequently the allowed rate of return) being, or potentially being, different for different regulatory years in the AA period, then:<sup>65</sup>

*a resulting change to the service provider's total revenue must be effected through the automatic application of a formula that is specified in the decision on the access arrangement for that access arrangement period.*

166. JGN's proposed method for estimating the return on debt does result in the return on debt (and consequently the allowed rate of return) being, or potentially being, different for different regulatory years in the next AA period. JGN therefore proposed using a formula for implementing changes in total revenue, resulting from there being a different return on debt in each year. This formula is embedded in JGN's forecast revenue model (appendix 12.1).
167. Although not strictly necessary under the NGR, JGN also proposes applying formulae to update the return on debt for each year of the next AA period. These are the trailing average formulae that are set out in clause 5.1 of the proposed AA (and reproduced above).
168. JGN also proposed a highly formulaic process for determining annual return on debt observations, which are inputs into the trailing average formulae. Again, it is not strictly necessary under the NGR that the process for calculating these annual return on debt observations is effected through automatic application of a formula. However, JGN recognises the practical need to have this process applied as formulaically as possible so that JGN can calculate these observations and the AER can review them within a relatively short timeframe.
169. The NGR requirement for "automatic application of a formula" only applies to the resulting change in total revenue that may need to occur where a methodology is used that potentially results in the return on debt being different between regulatory years. Under this provision, it is the resulting total revenue update that needs to be effected by automatic application of formula, not the calculation of the return on debt. In terms of the process described in section 6.2.1, this means that only step four needs to be effected by automatic application of a formula, and not the preceding steps.
170. However, as matter of practicality, JGN also proposes applying formulaic processes for each of the other steps in its updating process (i.e. not just step four). As noted above, step three is to be effected by formulae that are set out in the proposed AA (and reproduced above), and step two is also to be effected by means of a highly formulaic process that is codified in the proposed AA. Step one (identification of the period for execution of step two) is to be effected by a mechanistic process that occurs well in advance of the subsequent steps needing to take place.

*The AER is given oversight annual return on debt updating*

171. JGN also recognises that, as the return on debt update will be an important input into the variation of reference tariffs within the AA period, there needs to be adequate AER oversight of the updating process. The NGR require that the AER is given adequate oversight or powers of approval over reference tariff variation matters.<sup>66</sup>
172. The proposed AA therefore gives the AER oversight and powers of approval at various stages of the updating process, including in relation to identifying averaging periods, calculating annual return on debt observations, and approving resulting variations to reference tariffs. These powers of oversight are very similar to those

<sup>65</sup> NGR, sub-rule 87(12).

<sup>66</sup> NGR, sub-rule 97(4).

frequently included in AAs for AER review and oversight of cost pass throughs and other matters relevant to variation of reference tariffs.<sup>67</sup>

*The proposed processes are clear and formulaic while promoting the rate of return objective*

173. In summary, JGN has sought to design a process that can be clearly and formulaically specified in its AA, but which is also flexible enough to deliver the best estimate of the return on debt in each estimation period. By providing an appropriate balance between specificity and flexibility, JGN considers that its proposed method best contributes to achievement of the rate of return objective.

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<sup>67</sup> For example: *Approved Access Arrangement for Envestra's Victorian Gas Distribution System 2013 – 2017*, April 2013, clause 4.6.2.