INCENTA
Economic Consulting

Queensland Competition Authority

Aurizon Network: Review of benchmark credit rating and cost of debt

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Contents

1. Executive Summary

The Queensland Competition Authority (QCA or the Authority) has engaged Incenta Economic Consulting (Incenta) to undertake a review of the proposed credit rating and cost of debt for the regulatory cost of capital of the Aurizon Network.

Background

The Aurizon Network (formerly QR Network) Pty Ltd, is a subsidiary of Aurizon (formerly QR National) Limited. The current Aurizon Network access undertaking expired on 30 June 2013 (extended to 30 June 2014), and on 30 April 2013, Aurizon Network submitted a voluntary draft access undertaking (i.e. the 2013 DAU (UT4)) to the Authority for approval. The Aurizon Network's proposed indicative post-tax, nominal vanilla WACC range of 7.27 per cent to 8.18 per cent was based on a number of individual parameter ranges, including an indicative range of 6.22 per cent to 6.56 per cent for the cost of debt (as at 30 November, 2012).[1]

Application of the QCA method for determining the cost of debt

In its previous set of regulatory decisions, the Authority implemented a methodology for determining the efficient term of the risk-free rate and the debt premium, based on the advice of Dr Martin Lally.[2] The key implications of the advice of Lally are as follows:[3]

- A firm would issue debt with a term that is consistent with prudent financial management, and incur transaction costs associated with issuing this debt.

- Where the WACC is reset for regulatory purposes at the spot rate at the time of the price review, a rational regulated entity would use interest rate swaps to convert the base interest rate element of its cost of debt from the raw term to a term that matches the length of the regulatory period, which would ordinarily reduce its cost of debt. Transaction costs would be incurred to enter these swap contracts.

- Providing the market for credit default swaps is sufficiently deep, a rational regulated entity would use these derivative instruments to convert the margin component of its cost of debt from the raw term to the term matching the length of the regulatory period. Transaction costs would be incurred to buy and sell the required credit default swaps.

- The regulatory allowance for the cost of debt would include compensation to reflect the costs of the above approach.

Thus, if credit default swaps are available in the quantities required, the efficient cost of debt under this method would be a debt risk premium and base interest rate matching the term of the regulatory period, plus an allowance for three sets of transaction costs (debt issuance costs, the cost of entering into interest rate swaps and the cost of trading in credit default swaps). If credit default swaps are not

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1 Aurizon (30 April, 2013), *2013 Draft Access Undertaking – Volume 3: Maximum Allowable Reference Tariffs*, p.149.

2 Recent decisions in this set include: QCA (May, 2012), *Final Report: Sun Water Irrigation Price Review – 2012-17*; and QCA (April, 2013), *Seqwater Irrigation Price Review*.

3 Lally, M. (27 April, 2010), *The appropriate term for the risk free rate and the debt margin*.

available in the required quantities, then the efficient cost of debt under this method would be a debt risk premium consistent with the prudent term of debt issuance, plus a base interest rate that is consistent with the term of the regulatory period, plus an allowance for two sets of transaction costs (debt issuance costs and the cost of entering into interest rate swaps).

The Authority requested us to provide advice in relation to the key inputs necessary to apply the Lally methodology to estimate a benchmark cost of debt for Aurizon Network. We observe that this involves advising upon:

- the prudent term of debt issuance for an entity in the same position as Aurizon Network,
- whether credit default swaps are available in the required quantities for an entity in the same position as Aurizon Network to convert its debt risk premium into one that matches the term of the regulatory period,
- if the answer to the question above is "no", the debt risk premium for debt of the prudent term,
- the transaction cost associated with issuing corporate bonds,
- the transaction cost associated with entering into interest rate swap contracts, and
- if applicable, the transaction cost associated with trading in credit default swaps.

Application of the PwC research for deriving debt risk premiums and associated transaction costs

The Authority also engaged PricewaterhouseCoopers (PwC) to develop a cost of debt estimation methodology to estimate the debt risk premium and associated transaction costs for a range of different credit ratings and different terms of debt.[4] This was generic advice in that it was not focussed on any particular industry or regulated business. We have been asked to apply the methods that have been recommended to the Authority by PwC; however, we understand that the Authority has not yet formally considered PwC's advice.

Benchmark credit rating

Standard & Poor's has applied a BBB+ credit rating to Aurizon Network. We have estimated that based on Aurizon Network's submission to the Authority, and a range of cost of debt assumptions, the implied key credit rating metrics of Aurizon Network would result in Funds from operations (FFO)/Interest cover ranging from 3.2 to 3.4, and FFO/Debt ranging between 14 per cent and 14.2 per cent.

These metrics are strong for a BBB+ credit rating if the observed credit rating metrics for regulated energy businesses are taken as guidance. However, Standard & Poor's report considers Aurizon Network to require stronger credit metrics than an energy network service provider (NSP), and in this report we test scenarios that assume reduced forecast revenues relative to Aurizon Network's submission to the Authority. We find that the resulting metrics would still be likely to imply a BBB+ credit rating for Aurizon Network on a benchmark stand-alone basis, as the resulting metrics (FFO/Interest cover of close to 3 times, and FFO/Debt in the range of 12 per cent per cent) would be at the very top of the BBB+ range for a regulated energy NSP.

[4] PwC (June, 2013), *A cost of debt methodology for businesses regulated by the Queensland Competition Authority.*

Benchmark term of debt

From a first principles perspective we would expect that a regulated infrastructure business like Aurizon Network would issue debt for a longer period than its own regulatory period (4 years). Prudence would suggest that the re-financing task should be kept to relatively stable and manageable levels each year. That is, the maturity profile of the debt portfolio would be expected to be staggered, with a manageable amount of re-financing falling due each year, on average. To assess Aurizon Network's likely benchmark term of debt we have relied on the findings of PwC's recent study.[5]

PwC estimated the average term of debt at issuance for five listed Australian regulated energy infrastructure businesses as at 31 December, 2012 to be 10.2 years, with a median term of 9.2 years.[6] It concluded that a benchmark debt term of 10 years continues to be appropriate for Australian regulated energy businesses. As we consider these to exhibit many close characteristics to Aurizon Network, we therefore consider that a benchmark debt term of 10 years is also appropriate for Aurizon Network. This implies that, on average, approximately one tenth of the outstanding benchmark level of debt would be re-financed each year.

Benchmark debt margin

We found that credit default swaps are not available for the terms and quantities required. Under these circumstances, the Terms of Reference require us to estimate the benchmark debt margin for Aurizon Network (given a benchmark credit rating), for an efficient, benchmark term of debt.

Methodology applied to estimate the debt margin

To estimate the cost of debt we have followed the methodology set out in PwC's (2013) report for the Authority.[7] We collected Australian corporate bond data with remaining terms to maturity in excess of 1 year for the BBB, BBB+ and A- credit rating categories for fixed and floating rate debt and used the average (where possible) of the yield estimates reported by Bloomberg and UBS as the basic data set. We undertook the tests recommended by PwC for confirming the reliability of the basic data, which indicated that the yield data are not 'stale', and are a fair reflection of the opinions of the financial institutions that supply this data to Bloomberg on a daily basis.

Results of regression analysis

The PwC (2013) report recommended that reliance be placed on the results of an econometric analysis to estimate the debt risk premium for the required credit rating and term, alongside the use of the Bloomberg fair value curve (considered separately below).

PwC had undertaken relatively recent extensive tests of which functional form best fits the Australian corporate bond data, and so we have applied its recommended use of a linear functional form. Based on the available sample of 84 bonds, we found a predicted 10 year debt risk premium for BBB+ rated debt of 272 basis points.

Results of the Bloomberg fair value curve with a 'paired' bonds' extrapolation

PwC also recommended that, particularly in relation to 10 year, BBB+ debt,[8] reference should be made to the Bloomberg FVC, which the Authority has done for almost a decade. PwC also

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5 PwC (June, 2013).
6 PwC (June, 2013), p.20.
7 PwC (June, 2013).
8 The specific reference to 10 year, BBB+ debt is because the widespread use of the Bloomberg fair value curve in the context of energy networks has led to extensive testing of the accuracy of the

recommended that the Bloomberg FVC be extrapolated where required to 10 years on the basis of the change in the debt risk premium for "pairs" of bonds issued by the same company (referred to in this report as the 'paired bonds' extrapolation method), which has recently been applied in several decisions by the AER. The Authority also referenced the 'paired bonds' analysis in its recent review of the South East Queensland irrigation price review.[9]

For the 20 day averaging period to 31 October, 2013, the Bloomberg 7 year BBB FVC debt risk premium was 223 basis points. The paired bonds extrapolation method then requires 9.4 basis points per annum to be added to convert this into a premium consistent with a 10 year term (this addition is derived as the average increase in the debt risk premium with term for three "pairs" of bonds), resulting in an estimate for the 10 year BBB+ debt risk premium of 251 basis points. The estimated debt risk premium from applying the econometric method was 272 basis points.

Comparison with Value Adviser Associates

The Authority requested us to review the methodology that has been applied by Aurizon Network's adviser, Value Advisor Associates (VAA),[10] to estimate the cost of debt. VAA provided three indicative estimates of the cost of debt (for the 20 day period ending with 20 November 2012), which were as follows:

- 6.42 per cent, which assumed 10 year fixed rate debt. This comprised a debt risk premium of 326 basis points and a risk free rate of 3.16 per cent. The debt risk premium, in turn, was calculated using the Bloomberg BBB fair value curve at 7 years, and adding 25 basis points to extrapolate this to 10 years. This figure excluded an allowance for debt raising transaction costs.

- 6.24 per cent, which was said to reflect the QCA method, and comprised a 5 year risk free rate,[11] 5 year debt risk premium and an allowance for debt raising transaction costs, interest rate swap costs and the transaction cost of entering into credit default swaps.

- 5.67 per cent, which assumed five year fixed rate debt, following IPART.

VAA contended that the first of these is most relevant, and the last is least relevant, and that arbitrage should cause the first two estimates to be the same.

We agree with VAA that its last estimate is irrelevant to the application of QCA's method, which has been discussed above. VAA's estimate of its debt risk premium under its first method is most relevant to the results presented in this report, and we observe that its debt risk premium of 326 basis points (and the 25 basis points extrapolation applied to the 7 year Bloomberg BBB figure between 7 and 10 years) are very close to the figures obtained in the PwC research report referred to earlier. The difference between this estimate and what we obtained would appear to be explained by movements in market rates since that time. We note that VAA has excluded debt raising transaction costs from its figure, which should be included.

Bloomberg BBB fair value curve (and associated extrapolations) for predicting a 10 year BBB+ debt risk premium.

9 QCA (April, 2013).

10 Value Adviser Associates (February, 2013), *Review of Debt Risk Premium and Market Risk Premium*, prepared for Aurizon, and authored by Dr. Steven Bishop and Professor R.R. Officer.

11 We note on a matter of detail that this should have been a 4 year term.

Turning to VAA's second estimate, there is nothing in the estimate presented that is directly relevant to applying QCA's method for deriving the debt risk premium.[12] We observe that VAA view that the estimate of the total cost of debt using this second method should be the same as what is estimated for standard fixed rate debt due to arbitrage considerations is a challenge to the analysis and conclusions of Dr Martin Lally, summarised earlier. Our observations are as follows.

- It would appear to be reasonably well accepted now that regulated utilities can use interest rate swaps to reduce their base interest rate in circumstances where there is certainty that the regulatory WACC will be set mechanistically in line with "spot" interest rates at a price review and that this will flow through directly into revenue.[13] It is difficult to see how arbitrage exists that can challenge this view – after all, the "benefit" deemed available from swaps is ascertained from traded instruments and market quotes for transaction costs, which presumably have already been disciplined by arbitrage opportunities.

- Whether credit default swaps can be used to reduce the effective term of the regulated utility's debt risk premium depends upon there being a sufficient market for these instruments, which we have concluded is not present. We do not agree that the difference in the debt risk premium between the term at which debt is issued (10 years under our and VAA's assumptions) and the term of the regulatory period will provide an estimate of the transaction cost of trading in credit default swaps.[14] Rather, the difference in these debt risk premiums is an estimate of the *benefit* that could be obtained through trading in credit default swaps, against which the transaction costs must be offset, *if* the market existed. However, our advice is that the market does not exist, and so this theoretical hedging benefit could not be achieved in practice.

We also challenge VAA's contention that there are no longer dated bonds with which to undertake an econometric estimate of the 10 year debt risk premium, as a number (including floating rate bonds converted to fixed rate equivalents) are included in the analysis in this report. Finally, we have questioned the appropriateness of the bonds that VAA has included in its 'paired bonds' analysis, as they contradict the approach that has been accepted by the AER in several recent decisions.

Comparison with Aurizon Network's submission

In submitting its cost of debt range to the Authority, Aurizon Network provided 'lower bound' and 'upper bound' estimates of 6.09 per cent and 6.43 per cent respectively for the cost of debt (exclusive of transaction costs). Its lower bound estimate of 6.09 per cent appears to be based on the VAA-

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12 That is, various transaction costs are presented, but these are the values that the QCA has previously presented, and that have been updated in this report. A five year debt risk premium is presented; however, this value is not relevant if credit default swaps cannot be used to alter the regulated business's debt risk premium (and, as a matter of detail, should be a premium for a 4 year term in any event).

13 For example, Jemena has argued that savings to the customer can be achieved through undertaking interest rate swaps: Jemena, (21 June, 2013), *Rate of Return Guidelines – Consultation Paper*, Submission from Jemena Limited to the Australian Energy Regulator, p. 22.

14 We observe that VAA has applied a method that has previously been used by other advisers to the QCA. We also note on a matter of detail that VAA used the difference in debt risk premiums between 7 and 10 years for this task, whereas consistency with the (in our view, erroneous) method that has been advised previously to the QCA would have required the use of the difference between debt risk premiums for 4 and 10 year terms.

estimated 'paired bonds' 7 to 10 year debt risk premium extrapolation of 24 basis points.[15] The upper bound estimate of 6.43 is not based on the VAA analysis, but applies the change in the debt risk premium between 7 and 10 years for AAA rated debt drawn from the latest period during which the Bloomberg AAA fair value curve extended to 10 years (the 20 days to 22 June, 2010). We make the following comments on Aurizon Network's cost of debt estimates:

- Whilst we agree with Aurizon Network that the Bloomberg FVC should be retained as a significant point of reference (as does the PwC (2013) report), we do not agree with AN's (and VAA's) criticisms of the 'paired bonds' analysis. Far from being subjected to the idiosyncratic features of bonds, the 'paired bonds' approach controls for these features by holding constant the issuer, and varying only the term to maturity;

- Aurizon Network's cost of debt estimates are for a 10 year term fixed yield, and are based on the 10 year risk free rate, which is not consistent with the Authority's preferred approach (i.e. the Lally methodology);

- Aurizon Network's estimated range for the cost of 10 year BBB+ fixed rate debt encompasses the range of estimates that the PwC (2013) report obtained for an almost identical averaging period (i.e. 6.32 per cent using the econometric approach and 6.39 using the extrapolated 'paired bonds' methodology);

- We do not agree with Aurizon Network's application of the last available debt risk premium reported by Bloomberg for the AAA credit rating band, as market conditions have changed significantly since 2010;[16]

- Aurizon Network's cost of debt estimates appear too low based on its intended methodology of applying the Bloomberg FVC extrapolation using the 7 year debt risk premium (which we estimate to be 3.01 per cent for Aurizon Network's averaging period). However, Aurizon Network proposes a 'low case' 10 year debt margin of 2.94 per cent, which is less than the Bloomberg 7 year debt margin; and

- Aurizon Network added 12.5 basis points for transaction costs, which reflects the Authority's approach to date.

Benchmark transaction costs

Under the cost of debt methodology being applied by the Authority, there are potentially three transaction costs that require estimation:

- Debt issuing transaction costs (corporate bonds);

- Interest rate swap costs that are required to convert 10 year debt to a 4 year equivalent; and

15 Aurizon (30 April, 2013), pp. 132 and 149.

16 Putting aside our disagreement with the use of the defunct AAA FVC yields, we also have a concern about the quantum that Aurizon Network has applied. We find the last reported AAA debt risk premium (averaged over 20 days) between 7 and 10 years was 44 basis points, which when added to the 7 year Bloomberg BBB debt risk premium of 3.01 per cent would imply a cost of debt of 6.6 per cent.

- If applicable, credit default swap transaction costs.

Our investigations showed that 10 year credit default swaps are not available in the Australian market in the volumes that would be required based on the size of Aurizon Network's $2.7 billion benchmark debt level. Therefore, we have determined benchmark estimates for only the first two components.

Debt issuing transaction cost allowance

The Authority has traditionally applied a debt issuing transaction cost allowance of 12.5 basis points regardless of the size of the business and its level of debt. The Authority recently commissioned PwC to undertake a benchmarking analysis of debt issuing transaction costs, which have two major components:

- Arrangement/placement fees (arrangement fees) that are paid to investment banks to compensate them for their management of the debt-raising process. PwC found these fees to be 8.5 basis points per annum based on data for Australian corporate bond issues in the US (where data are made public in prospectuses); and

- Other costs associated with the debt-raising process, including items such as lawyers' fees and credit rating agency fees, which PwC obtained through interviews with legal firms, banks and credit rating agencies.

The methodology estimates the benchmark debt issuance cost based on the number of standard sized (benchmarked) bond issues that would be required to re-finance the current debt component of the Regulated Asset Base (RAB). PwC found the standard size of bond issue to be $250 million, which implies that approximately 11 standard sized debt issues would be required to re-finance $2.7 billion in debt (i.e. assuming 55 per cent of Aurizon Network's RAB of $4.9 billion).[17] Based on the benchmark values reported by PwC, Aurizon Network's benchmark debt issuance transaction cost is 9.9 basis points per annum. This compares to the 12.5 basis points the Authority has applied in the past, and which has been proposed by Aurizon Network.

Interest rate swap transaction cost allowance

To estimate the swap transaction costs required to swap the base interest rate component of a BBB+ rated fixed rate 10 year bond yield into a 4 year fixed rate yield, we engaged Evans & Peck as a sub-contractor to Incenta. Evans & Peck has previously undertaken similar assignments directly for the Authority in relation to the South East Queensland water and waste water businesses.[18] Evans & Peck obtained a market quotation of 11.3 basis points to undertake the two swap transactions required. In June 2013 energy distributor Jemena obtained quotes in the market ranging from 7.9 basis points to 9.4 basis points for swapping the base interest rate component of BBB+ debt from 10 to 5 years.[19]

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17 It should be noted that Aurizon Network's benchmark gearing for regulatory purposes for UT4 is the subject of a separate consultancy and, as such, has not yet been considered by the Authority.

18 Evans & Peck (4 February, 2013), *Queensland Competition Authority: SEQ Retail Water Price Review.*

19 Jemena, (21 June, 2013), *Rate of Return Guidelines – Consultation Paper*, Submission from Jemena Limited to the Australian Energy Regulator, p. 22.

Estimate of Aurizon Network's total cost of debt

Table 1.1 summarises the components of the benchmark cost of debt for Aurizon Network estimated by Incenta, and sums these to derive the total cost of debt. Two estimates are presented, comprising the two methods of estimating the 10 year BBB+ debt risk premium (i.e., an econometric approach and the use extrapolated Bloomberg BBB fair value curve).

Table 1.1: Total cost of debt estimates for Aurizon Network (20 business days to 31 October, 2013), per cent

Row		Econometric methodology	Extrapolated Bloomberg
1	Risk free rate (4 year CGS)	3.211	3.211
2	10 year Debt Risk Premium	2.720	2.513
3	Debt-raising transaction costs	0.099	0.099
4	Interest rate swap costs	0.113	0.113
5	Total cost of debt	6.14	5.94

Source: Estimates based on Bloomberg, Evans & Peck and Incenta analysis. Note: Total cost of debt calculated as (5)=(1)+(2)+(4)

Applying PwC's methodology, and using the econometric debt risk premium estimation, we obtain a 6.14 per cent total cost of debt estimate for the averaging period covering the 20 business days to 31 October, 2013. This estimate is 20 basis points higher than the 5.94 basis points estimate obtained by applying the extrapolated Bloomberg (paired bonds) methodology. During the month of December, 2012, close to the time that VAA provided its estimate of the cost of debt, the PwC (2013) report found that the econometric estimation methodology provided an estimate that was slightly lower than the extrapolated Bloomberg methodology (respectively 318 basis points versus 325 basis points), and that for the last two years there has been a relatively close correspondence between the estimates of these two methodologies. The differential for the current averaging period is larger than what was observed in the PwC (2013) report (21 basis points against 7 basis points), and on this occasion the extrapolated Bloomberg value is lower.

We note that Aurizon Network recently issued its inaugural BBB+ rated domestic bond, which has a term of 7 years to maturity and has raised $525 million. The pricing of this bond in the market implied a spread to the Commonwealth Government Securities of 217 basis points, which was identical to the debt risk premium predicted by the Bloomberg 7 year BBB fair value curve for that term on 24 October, 2013.

2. Terms of Reference and outline

2.1 Terms of reference

2.1.1 Background

The Aurizon Network (formerly QR Network) Pty Ltd, is a subsidiary of Aurizon (formerly QR National) Limited, a vertically integrated rail company which was sold by the Queensland Government in November 2011. The current Aurizon Network access undertaking expires on 30 June 2013 (extended to 30 June 2014), and on 30 April 2013, Aurizon Network submitted a voluntary draft access undertaking (i.e. the 2013 DAU (UT4)) to the Authority for approval. The Aurizon Network's proposed indicative post-tax, nominal vanilla WACC range was based on a number of individual parameter ranges, including a cost of debt range (inclusive of transaction costs) of 6.22 per cent to 6.56 per cent.[20]

In recent regulatory decisions, the QCA has applied a methodology for determining the efficient term of debt and the appropriate cost of debt, based on the advice of Dr Martin Lally.[21] This methodology involved:

1. Using a term for the risk-free rate within the regulatory cost of equity that matches the term of the regulatory cycle (i.e. five years or closest) and applying the current rate (i.e. the rate closest to the time of the decision, averaged over a short period);

2. Using a term for the risk-free rate within the regulatory cost of debt that matches the term of the regulatory cycle (i.e. five years or closest) and applying the current rate (same comment); and

3. Using a term for the debt premium within the cost of debt that matches the term of the efficient term of debt issuance and applying the current rate, where specifically:

    a. If the efficient term of debt issuance (T) is equal to the term of the regulatory cycle (i.e. T = 5 years), then the regulatory cost of debt comprises the five-year risk-free rate, the five-year debt premium, and the annualised cost of five-yearly debt issues; or

    b. If the efficient term of debt issuance (T) is greater than the term of the regulatory cycle (i.e. T > 5 years), then the regulatory cost of debt comprises:

        (i) The five-year risk-free rate, the five-year debt premium, the annualised cost of T-yearly debt issues, and the transaction cost allowances for interest rate and credit default swap contracts, if credit default swaps are available; or

[20] Aurizon (30 April, 2013), p.149.
[21] Lally, M. (27 April, 2010), *The appropriate term for the risk free rate and the debt margin*.

(ii) The five-year risk-free rate, the *T*-year debt premium, the annualised cost of *T*-yearly debt issues, and the transaction cost allowances for interest rate swap contracts if credit default swaps are *not* available.

4. Allowing the regulated cost of debt to include compensation to reflect the costs of the above approach.

In broad terms, the Authority requires the consultant to provide advice in relation to the key inputs necessary to apply the above method to estimate a benchmark cost of debt for Aurizon Network. The specific tasks sought are described in more detail next.

2.1.2 Scope of works

The Authority requires the consultant to undertake five principal tasks, which involve determining:

(a) The benchmark credit rating associated with the benchmark capital structure (the latter benchmark is the subject of a separate consultancy);

(b) An efficient term of debt for a business with a benchmark capital structure, benchmark credit rating, and regulated asset base consistent with those of Aurizon Network based on analysis of relevant comparator firms and appropriate adjustment for the impact on risk of the regulatory arrangements;

(c) The benchmark debt premium (that is, cost of debt less the risk-free rate), where the total cost of debt is based on the benchmark capital structure, benchmark credit rating, efficient term of debt (the latter determined in Task B) and appropriate adjustment for the impact on risk of the regulatory arrangements;

(d) An allowance for annualised debt issuance costs associated with normal, periodic debt-raising (consistent with the relevant, regulatory benchmarks); and

(e) Transaction cost allowances for the regulated firm to enter into interest rate and credit default swap contracts (the latter, if applicable) for debt hedging purposes.

The specific sub-tasks that the Authority requires for these three tasks are set out in detail in the task descriptions below. With respect to each sub-task, we have outlined our proposed methodological approach.

Task A: Benchmark Credit Rating

The task for this component of the review is to determine a benchmark credit rating for Aurizon Network that would be consistent with the benchmark capital structure (already informed by a separate consultancy), taking into account comparator firms, appropriate adjustment for the impact of the regulatory arrangements and other relevant evidence on risk. Aurizon Network has proposed a benchmark credit rating of BBB+, which is the same as the benchmark credit rating that was adopted in the previous undertaking (UT3).

Task B: Efficient Term of Debt

The Authority has recognised in previous decisions that the need to manage refinancing risk may require debt to be issued with a term that exceeds the regulatory period, with a benchmark term of debt of *T* years being applied, where *T* is the efficient term of debt. Accordingly, the Authority's current methodology requires the consultant to first determine an efficient term (*T*) for estimating the

regulatory cost of debt based on empirical evidence, with reference to relevant comparator firms and appropriate adjustment for the impact of the regulatory arrangements on risk.

Task C: Benchmark Debt Margin

Aurizon Network has proposed an indicative debt premium estimate range of 2.94-3.28% over the 20 day period ending 30 November 2012. Estimates from this range represent a decrease from the estimate of 4.63% applied as the debt premium in UT3 (where the latter estimate includes allowances for swap transaction costs), albeit which we observe has also coincided with a material change in market conditions.

The Authority has requested us to estimate the debt margin based on a 20-day averaging period up to 31 October 2013.

Aurizon Network has proposed an indicative debt premium range based on:

(a) the 10-year cost of debt;

(b) BBB-rated debt; and

(c) Bloomberg fair value estimates.

With the technical support of its consultants, Aurizon Network has calculated the lower bound of the debt premium at 2.94 per cent, based on the current undertaking's use of the Bloomberg AAA fair value curve to extrapolate the BBB curve beyond its current extremity of 7 years and the upper bound at 3.28 per cent, based on its consultant's application of a 'matched pairs' approach.

Task D: Estimate of Debt-Issuing Transaction Cost Allowance

Aurizon Network has proposed an estimate for annualised debt-issuing costs of 0.125% per annum. Aurizon Network has noted that the proposed estimate is consistent with the QCA's past practice and, as a result, it has not sought to change its estimate for this allowance.

This task, therefore, is to undertake an assessment of an appropriate allowance for annualised debt issuance costs based on the new PWC cost of debt estimation methodology and consistent with the Lally methodology, where the relevant allowance is compensation for *T*-yearly debt issues.

Task E: Estimate of Swap Contract Transaction Cost Allowance

The Authority requires the consultant to provide estimates of both interest rate and credit default swap transaction costs for matching the term of the *T*-year debt to the term of the regulatory cycle.[22] Specifically the Authority has requested us to:

(a) estimate the transaction costs for the firm to implement interest rate swap contracts to convert the interest rate component of the cost of *T*-year debt to five–year debt; and

(b) if data on credit default swaps is available, to estimate the transaction costs for the firm to implement credit default swap contracts to convert the credit component of the *T*-year cost of debt to five years; if data is unavailable, we are required to provide the Authority with a *T*-year debt margin.

2.2 Outline of Report

The remainder of this report is structured as follows:

[22] Lally (2010).

- Chapter 3 assesses the benchmark credit rating and benchmark term of debt that should be applied in estimating the debt risk premium for Aurizon Network. We determine that a BBB+ credit rating and a 10 year term of debt are appropriate benchmarks.

- In Chapter 4 we estimate the benchmark BBB+ 10 year debt risk premium based on PwC's econometric approach, and the Bloomberg 'paired bonds' extrapolation approach that has been used in several recent AER decisions. We also compare the results with those that have been obtained by Aurizon Network and its cost of debt advisor, Value Advisor Associates (VAA).

- Chapter 5 presents estimates of the benchmark transaction costs associated with the Authority's approach to cost of debt estimation. These are the debt raising transaction costs, and the interest rate swap costs associated with swapping the margin component of the 10 year term debt to a term aligning with the regulatory period (4 years).

- Finally, in Chapter 6 we combine the debt risk premium estimates and all the transaction costs, and present two estimates of the total cost of debt based on the PwC econometric regression approach, and the Bloomberg 'paired bonds' extrapolation approach.

3. Benchmark credit rating and term of debt

3.1 Introduction

In this chapter we consider the benchmark credit rating and benchmark term of debt for Aurizon Network. In deriving its WACC for Aurizon Network, the Authority needs to make assumptions about the benchmark credit rating and term of debt issuance, so that a benchmark cost of debt can be estimated. By adopting benchmark values rather than actuals, the Authority is providing Aurizon Network with incentives to improve its performance relative to the benchmarks. Aurizon Network's submission to the Authority assumed a BBB+ credit rating.

In our view the ideal methodology for assessing the benchmark credit rating of Aurizon Network is to undertake the 'best comparators' approach, which looks at the credit rating metrics that are indicated by the best comparator. While there are no close comparators for Aurizon Network, we consider that the best comparator group is regulated energy networks, as discussed in section 2.3.

In this chapter we first consider the actual credit rating that has recently been assigned to Aurizon Network by the credit rating agencies. We assess the benchmark term of debt by relying on the empirical analysis of debt terms at issuance contained in the recent PwC (2013) report.

3.2 Aurizon Network's actual credit rating

On 15 May, 2013, Standard & Poor's assigned a stand-alone credit rating of BBB+/Stable/- to Aurizon Network Pty Ltd, which was based on an assessment that its business risk position is 'strong' and its financial position is 'intermediate'.[23] The 'strong' business risk position assessed by Standard & Poor's is based on the following features:[24]

- Regulated, monopolistic, below-rail operator serving all major Queensland coal producers;
- Supportive regulatory regime, thereby mitigating volume and counterparty risks; and
- Exposure to on-going competitiveness of Queensland coal in global markets.

The 'intermediate' financial risk position is based on:

- Leveraged capital structure;
- Moderate cash flow coverage that is not expected to materially improve in the near term; and
- Strong track record of delivering large capital-expenditure projects on time and budget.

The two key ratios that Standard & Poor's applies in assessing credit ratings are:

- *Funds From Operations/Interest cover (FFO/Interest):* FFO is measured by the firm's cash flow (revenue less operating expenses) after interest and cash taxes paid, but before working capital. When expressed as a ratio to interest, the amount of interest paid is added back to the numerator.

[23] Moody's has applied an equivalent credit rating of Baa1.
[24] Standard & Poor's (15 May, 2013), *Ratings Direct – Aurizon Network Pty Ltd*, p.2.

- *Funds From Operations/Debt (FFO/Debt):* This is the ratio of available cash after interest and taxes to the quantum of debt.

Standard & Poor's notes that the credit rating of BBB+ is based on a number of assumptions, including:[25]

- Regulatory determination for UT4 WACC at about 7 per cent;
- EBITDA margin gradually transitioning from low 60s to high 60s upon the commissioning of the Wiggins Island expansion project in fiscal 2015; and
- Cumulative capital expenditure of about A$1.3 billion to $1.4 billion over the next four years.

The credit metrics assumed by Standard & Poor's, based on its own forecasts, are FFO/Interest cover ranging from 3.3x to 3.9x, and FFO/Debt ranging from 15 per cent to 19 per cent.[26] Importantly, Standard & Poor's has qualified its rating of BBB+ as follows:[27]

> Our 'BBB+' corporate credit rating on Aurizon Network is constrained by the corporate credit rating on the company's parent Aurizon Holdings Ltd, given our view that, if required, Aurizon Network's cash flows could be redirected to support its parent's creditworthiness, and also given there are no structural protections to prevent Aurizon from doing so.

Hence, even if Aurizon Network were to improve its forecast credit metrics, Standard & Poor's would not raise its credit rating above BBB+ (or whatever the credit rating of its parent, Aurizon Holdings Limited was at the time). However, with the current set of expected metrics, S&P considers that in the event that Aurizon Network was a stand-alone company, it should be assigned a BBB+ credit rating.

3.3 Benchmark credit rating

A benchmark credit rating of Aurizon Network should be reflective of the default risk characteristics of the regulated business on a stand-alone basis, without reference to its parent company. In that case it is necessary to assess the credit metrics of the 'best comparator' for the benchmark business, which in this case is a large regulated below-rail export coal operator. Unfortunately, similar below-rail networks do not exist for Aurizon Network. As a result, it is necessary to rely on comparators that are as close as possible in terms of the relevant risks for benchmarking a credit rating.

Our analysis shows that Standard & Poor's considers Aurizon Network to require stronger credit metrics than an energy network service provider (NSP), but that even a 10 per cent reduction in forecast revenues would be likely to still imply a BBB+ credit rating for Aurizon Network on a benchmark stand-alone basis.

3.3.1 Forecast credit metrics of Aurizon Network

Ideally, it would be possible to assess the implied credit metrics of Aurizon Network over the coming regulatory period relative to the credit metrics criteria established by Standard & Poor's. However, the

[25] Standard & Poor's (15 May, 2013), p.3.
[26] Standard & Poor's (15 May, 2013), p.3.
[27] Standard & Poor's (15 May, 2013), p.2.

Authority's forecast credit metrics of Aurizon Network are not available at this time, and it is not straight forward to interpret the credit metrics that Standard & Poor's would apply to a benchmark firm with the characteristics of Aurizon Network.

Standard & Poor's considers that Aurizon Network is subject to a 'supportive regulatory framework administered by the Queensland Competition Authority, which includes a revenue cap that insulates Aurizon Network from exposure to coal volume fluctuations,' and has a strong capability to deliver capital expenditure projects on time and on budget.[28] While the movement between regulatory periods could introduce some fluctuation in cash flows, Standard & Poor's does not consider this to be a material risk given the consistency of approach shown by the Authority. However, Standard & Poor's considers that:[29]

> Aurizon Network's business risk profile will likely remain constrained by the company's exposure to the Queensland coal market and its continued competitiveness against other global seaborne coal producers. Unlike other regulated business in Australia – such as transmission or distribution energy networks – Aurizon Network has a narrow customer base and its long-term prospects are ultimately subject to global supply and demand drivers.

In other words, Standard & Poor's appears to consider that Aurizon Network is subject to greater fundamental credit risk exposure than the regulated energy networks. The gearing benchmark applied to Aurizon Network is 55 per cent, which is an assumption based on the benchmark previously applied. This gearing is below the benchmark 60 per cent benchmark gearing applied to regulated energy businesses, which would provide some compensation for its narrower customer base, and its exposure to the global competitiveness of the Queensland export coal industry.

In Table 3.1 we have estimated the credit metrics implied in Aurizon Network's submission to the Authority, which indicate an average FFO/Interest cover of 3.19, and an average FFO/Debt of 14 per cent for 2013-14. The estimates are based on applying 55 per cent gearing, and applying the higher cost of debt assumption (6.56 per cent) in Aurizon Network's range. We have also estimated several 'low case' scenarios that apply the 5.94 per cent cost of debt estimated in this report by following the extrapolated Bloomberg methodology, and assumed falls of 5 to 15 per cent in forecast revenues.[30] Most of these scenarios would result in weaker credit metrics: an average FFO/Interest cover of 3.27 to 2.82 and an FFO/Debt ratio of 13.1 per cent to 10.5 per cent.

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28 Standard & Poor's (15 May, 2013), p. 4.

29 Standard & Poor's (15 May, 2013), p. 4.

30 A range of reductions in revenues (5 per cent to 15 per cent) has been chosen to test what impact such falls would have on the credit metrics, and whether this would be expected to put pressure on the BBB+ stand-alone credit rating.

Table 3.1: Forecast credit metrics based on the Aurizon Network submission (55 per cent gearing)

	2013-14	2014-15	2015-16	2016-17	Average
Aurizon Network Submission: Cost of debt (Aurizon) = 6.56% (Aurizon Network 'high case')					
FFO/Interest	3.19	3.16	3.20	3.22	3.19
FFO/Debt	14.1%	12.9%	14.4%	14.6%	14.0%
Low Case Scenarios: Cost of debt (Extrapolated Bloomberg FVC methodology) = 5.94%					
a) 5% lower revenue					
FFO/Interest	3.26	3.24	3.28	3.30	3.27
FFO/Debt	13.2%	12.1%	13.5%	13.7%	13.1%
b) 10% lower revenue					
FFO/Interest	3.03	3.01	3.06	3.07	3.04
FFO/Debt	11.8%	10.9%	12.2%	12.3%	11.8%
c) 15% lower revenue					
FFO/Interest	2.80	2.79	2.83	2.84	2.82
FFO/Debt	10.5%	9.7%	10.9%	11.0%	10.5%

Source Aurizon Network, Incenta analysis

In its recent credit rating report on Aurizon Network, Standard & Poor's considered three 'peer comparators,' although it acknowledged the difficulty of selecting appropriate peers 'largely because of the business model and environments in which [Aurizon Network] operates.' While noting a similar business model to Brookfield WA Rail Pty Ltd, Standard & Poor's also considered APT Pipelines and DBNGP Trust to be suitable peers. In Table 3.2, which includes the peers considered by Standard & Poor's, we find that Aurizon's forecast credit metrics are similar to the BBB rated Brookfield WA Rail (Brookfield) metrics, and are much stronger than the BBB rated APT Pipelines. Brookfield has the same BBB credit rating as APT Pifpelines despite stronger metrics, which is likely to reflect the more secure cash flow position of APT Pipelines. A significant portion of APT Pipelines revenue is subject to economic regulation, and it has long term contracts with its customers.

Table 3.2: Credit rating comparison with Standard & Poor's Aurizon Network peers

	Aurizon submission	Aurizon (-5%)	Aurizon (-10%)	Aurizon (-15%)	Brookfield WA Rail	APT Pipelines	DBNGP Trust
Credit rating					BBB	BBB	BBB-
FFO/Interest (avg.)	3.19	3.27	3.04	2.82	3.2	2.3	1.6
FFO/Debt (avg.)	14.0%	13.1%	11.8%	10.5%	14.0%	9.9%	6.0%

Source: Standard & Poor's (15 May, 2013), p. 6, and Incenta.

While Brookfield is also subject to regulation by the Economic Regulation Authority (ERA) in Western Australia, this is in the form of a ceiling for negotiations, and it is subject to more cyclical cash flows owing to the fact that it carries general cargo and grain, and is not subject to a revenue cap arrangement, as Aurizon Network is.

As Standard & Poor's considers regulated energy NSPs to require weaker credit rating metrics than Aurizon Network for a BBB+ credit rating, we have reviewed the credit metrics that are applied to energy NSPs. This should provide an approximate lower bound to the metrics that would be required

by Aurizon Network for a BBB+ credit rating. In a recent submission to the Australian Energy Regulator (AER), Kanangra Ratings Advisory Services (Kanangra) analysed recent credit ratings for Australian energy network service providers (NSPs), and concluded that the range of observed ratings could be mapped to their credit metrics as shown in Table 3.3 below. We have reviewed the analysis undertaken by Kangara, and consider that it provides a reasonable reflection of Standard & Poor's policy with respect to energy NSPs.

Table 3.3 Summarised financial metric limits from Standard & Poor's for a regulated energy business risk profile

Credit Rating	FFO Interest Cover	FFO/Debt
A-	3.0-3.5x	15%-16%
BBB+	2.5-3.0x	12%-15%
BBB	1.9-2.5x	8%-11%
BBB-	1.7-1.9x	5%-8%

Source: Kanangra (June, 2013), p. 24, based on various Standard & Poor's credit rating reports for energy NSPs.

As Standard & Poor's requires stronger credit metrics for Aurizon Network than it requires for regulated energy network service providers (NSPs), the range of metrics shown for a BBB+ credit rating in Table 3.3 above (i.e. FFO/Interest cover of 3 times, and FFO/Debt of 15 per cent) may be viewed as the approximate bottom of the range of credit metrics that would be appropriate for Aurizon Network. We saw in Table 3.1 that even with reductions in revenue relative to Aurizon Network's submission to the Authority, the credit metrics would be at the top of the BBB+ range for an energy NSP, and therefore still likely to imply a BBB+ credit rating for Aurizon Network.

3.4 Benchmark term of debt

The PwC (2013) report, which has not yet been considered by the Authority, included a comprehensive discussion on the benchmark term of debt for a regulated infrastructure business, noting that the term of debt that is optimal for a particular firm will depend on the capacity of that firm to issue long term debt, and the cost of long term debt compared to short term debt relative to the extent of refinancing risk. A firm's capacity to issue long term debt will be influenced by the certainty of long term cash flows and the level of gearing that it adopts.

PwC's analysis of the average debt term at issuance that is currently observed for 5 regulated energy transmission / distribution businesses, led it to recommend that the benchmark term of debt (T) be set at 10 years. As shown in Table 3.4, which is taken from PwC's Table 2.6, the evidence indicates an average term that is close to 10 years at the present time (i.e. an average term at issuance of 10.2 years).[31] Whilst the median value of 9.3 years was below the recommended benchmark of 10 years, PwC considered that 10 years should be adopted as the benchmark term for regulated energy businesses since:

- The recent experience of the global financial crisis reduced the average term at issuance for a time as it was not possible to re-finance maturing debt at longer terms;

[31] PwC (March, 2013), p.20.

- Similarly regulated UK firms adopt a term of debt at issuance of more than 20 years, which indicates a preference for reducing re-financing risk; and

- There is some evidence that recent issues of debt by Australian energy NSPs have been increasing the weighted term of debt at issuance.

Table 3.4: Australian network infrastructure – weighted average term of debt at issuance (31 December, 2012)

Company	Industry	Total debt issued (AUD millions)	Date	Weighted average term at issuance (actual debt)	
				2007[b]	2012[a]
APA Group	Gas	4,192	31 Dec. 12		9.8
DUET	Elect./Gas	5,200	31 Dec. 12		7.4
Envestra Limited	Elect./Gas	1,248	31 Dec. 12	14.4	16.3
Spark Infrastructure	Elect.	4,700	31 Dec. 12	10.4-10.8	9.3
SP AusNet	Elect./Gas	4,716	30 Sep 12	7.3	8.3
Average					10.2
Median					9.3

Source: Bloomberg, Loan Connector, annual reports. Notes: a) Assumes unaccounted for bank debt issued at 3 year term, b) AER (2009)

As we consider that Aurizon Network will face very similar re-financing risk issues as regulated energy networks, we have therefore adopted a benchmark term of 10 years.

3.5 Conclusion

Our conclusions on the benchmark credit rating and term of debt that are appropriate for Aurizon Network are as follows:

- *A benchmark credit rating of BBB+ is appropriate.* Standard & Poor's has applied a BBB+ credit rating to Aurizon Network on a stand-alone basis. Standard & Poor's report considers that the credit rating metrics required by Aurizon Network to achieve a BBB+ credit rating are stronger than those for regulated energy NSPs. Under the assumptions contained in Aurizon Network's submission for UT4, we estimate that the FFO/Interest cover would be approximately 3.2, and the FFO/Debt is expected to be approximately 14 per cent. We find that even if the revenues forecast in Aurizon Network's submission for UT4 reduced by 5 to 15 per cent, the resulting weaker credit metrics would still be at the very top of the range that Standard & Poor's requires for a BBB+ credit rating for an energy NSP, and therefore should still be likely to enable Aurizon Network to achieve a BBB+ credit rating.

- *A benchmark term of debt at issuance of 10 years is appropriate.* Our conclusion on the benchmark term of debt at issuance is based on the recent findings of the PwC (2013) report undertaken for the Authority. Although based on data for listed regulated energy infrastructure firms, we consider this to be the best available evidence on the benchmark term that should be applied to a regulated below-rail export coal infrastructure business. While Aurizon has recently

issued its first BBB+ rated bond at a 7 year term, we do not consider that this is sufficient evidence for a 7 year benchmark term should be adopted. This bond has been issued at the very start of Aurizon's bond issuance program, and we would expect to see longer term bonds issued in the future in order to reduce refinancing risk. We would expect to see future longer term debt issues that could potentially include international bond issues.[32]

[32] Investment analysts also note that given the long term nature of Aurizon Network's assets (i.e. its 96 year lease concession), it appears sensible to raise long term debt specifically against the regulated asset base. See J P Morgan, (13 May, 2013), *Aurizon Holdings Limited: Scenarios around a possible separation*.

4. Benchmark debt risk premium

4.1 Framework for the analysis

As noted above, in its recent study for the Authority, PwC set out a method for estimating the cost of debt. That method includes the following features:

Selection of a sample of bonds

- *Bonds vs bank debt* – It was concluded that domestic bonds should be considered as the proxy for all debt in the benchmark firm's portfolio (which in fact includes domestic and international bonds as well as bank debt), as bond data are more transparent and up-to date (i.e. there is a secondary market), and this is likely to make very little difference to the final cost of debt estimate.

- *Domestic vs international data* – Examination of the yield data for international bond issues by Australian firms (converted to domestic equivalent yields) indicated that its inclusion, and the calculation of a portfolio yield, did not materially influence the estimated cost of debt.

- *Nature of the benchmark entity/bond* –The benchmark entity whose bonds would be considered for analysis would have the following characteristics:

  – Australian issuance by an Australian entity,

  – investment grade credit rating by Standard and Poors[33],

  – the issuing entity is not a financial entity,

  – the corporate bond is senior (i.e. not subordinated),

  – standard corporate bonds without special features such as call options attached,

  – a term to maturity greater than one year, and

  – yields reported by either Bloomberg or UBS.

Cost of debt methodology

The methodology recommended in the PwC report included the following steps:

1. Assemble Australian corporate bond data with remaining terms to maturity in excess of 1 year for all credit rating categories using the average (where possible), of Bloomberg and UBS data for fixed and floating rate debt.
2. Test for potential staleness of the bond yield data using the Quandt-Andrews break point test for the 6 months prior to the averaging period.

[33] Investment grade refers to a credit rating of BBB- and above.

3. Where possible, i.e. if there are sufficient observations, for the major credit ratings estimate the relationship between the debt risk premium and term based on alternative functional forms (linear, exponential, cubic, power, logarithmic) using the credit ratings around the central credit rating in order to maximise observations. For example, a regression estimating the BBB curve would use the available BBB-, BBB and BBB+ observations.
4. Test whether the weighting of different credit rating observations (and their term to maturity distribution) is likely to reflect the credit rating function being estimated.
5. Using the Schwartz Information Criterion test, assess which functional form is most efficient during the averaging period and over the longer term (e.g. the last 2 years) with daily overlapping regressions (i.e. adding an observation for the next day and dropping off the last day).
6. Make a judgement about which functional form has performed well on average and in the current period (we found that the linear functional form performs relatively well, preserves degrees of freedom in econometric analysis and is simple to apply and understand).
7. If finer credit rating bands are required between those directly estimated by econometric analysis, they can be interpolated for each year.
8. If the AA and AAA credit rating categories have too few observations to enable econometric analysis, their distance from the A curve should be determined by the average difference between the respective individual bond observations from the A curve.
9. PwC also recommended that where possible (but particularly where the target is a 10 year BBB+ debt risk premium in view of the extensive testing in relation to energy networks), reference should be made to the Bloomberg FVC, and that extrapolations of the Bloomberg FVC be undertaken using the 'paired bonds' analysis approach.

We have undertaken steps 1 to 4, and 7 to 9, as the PwC report undertook extensive tests of the functional form issue relatively recently, recommending a linear function form be used (i.e. steps 5 and 6). We have therefore adopted the linear functional form. With respect to step 1, since we had concluded that a benchmark credit rating of BBB+ should be applied, we needed to assemble a sample of BBB, BBB+ and A- bonds. In the next section we discuss the results of applying this methodology.

4.2 Estimates of the debt risk premium

4.2.1 Econometric analysis

The sample of bonds

Some key characteristics of the bonds that have been included in the sample based on the inclusion criteria are displayed in Table 4.1 below. The sample size is 84 bonds for the averaging period covering the 20 business days to 31 October, 2013, 14 more than the PwC study, whose averaging period was the 20 days to 28 November, 2012. The average term to maturity has also lengthened from an average of 3.88 years, to 4.23 years, in the 11 months separating the two studies, reflecting the fact that terms at issuance have been rising in the BBB and BBB+ credit rating bands.

Table 4.1: Sample sizes and average remaining terms to maturity of domestic bonds available for econometric analysis – PwC study vs current study

Credit rating band	PwC report		Current report	
	Number of bonds	Ave. term to maturity (years)	Number of bonds	Ave. term to maturity (years)
BBB	27	3.95	32	4.09
BBB+	11	4.54	18	5.54
A-	32	3.75	34	3.68
Total	70	3.88	84	4.23

Source: Bloomberg and UBS

The PwC report also adopted the approach of weighting of the pooled sample of BBB, BBB+ and A- rated bonds to see if it fairly reflects an average BBB+ credit rating. Table 4.2 shows that the average credit rating of the pooled sample was 1.98, which means that it was almost precisely equal to an average BBB+ weighting (which has a score of 2).

Table 4.2: Average credit rating of the sample of bonds

Credit rating	Number of bonds	Credit rating score
BBB	32	3
BBB+	18	2
A-	34	1
Weighted average credit rating score		1.98

Source: Bloomberg and UBS

Testing the quality of the bond data

The two key issues of concern in relation to quality are:

- Whether the Bloomberg bond yield data provide a reasonable reflection of the underlying bond yield opinions that are submitted daily by a group of financial institutions; and
- That these bond yield opinions are not 'stale'.

Bloomberg yields are reflective of the market

The PwC report recently tested the Bloomberg data, and found that it was providing a reasonable reflection of the underlying bank feed data. That is, the Bloomberg yields (BGNs) were on average relatively close to the median of the bank feeds. This finding adds confirmation to a number of studies that have shown the Bloomberg yield data to be market reflective since late 2009. It was previously found that for a short period during the global financial crisis, the Bloomberg yields were systematically below the yields quoted by the financial institutions in the market (i.e. they were not market reflective).[34]

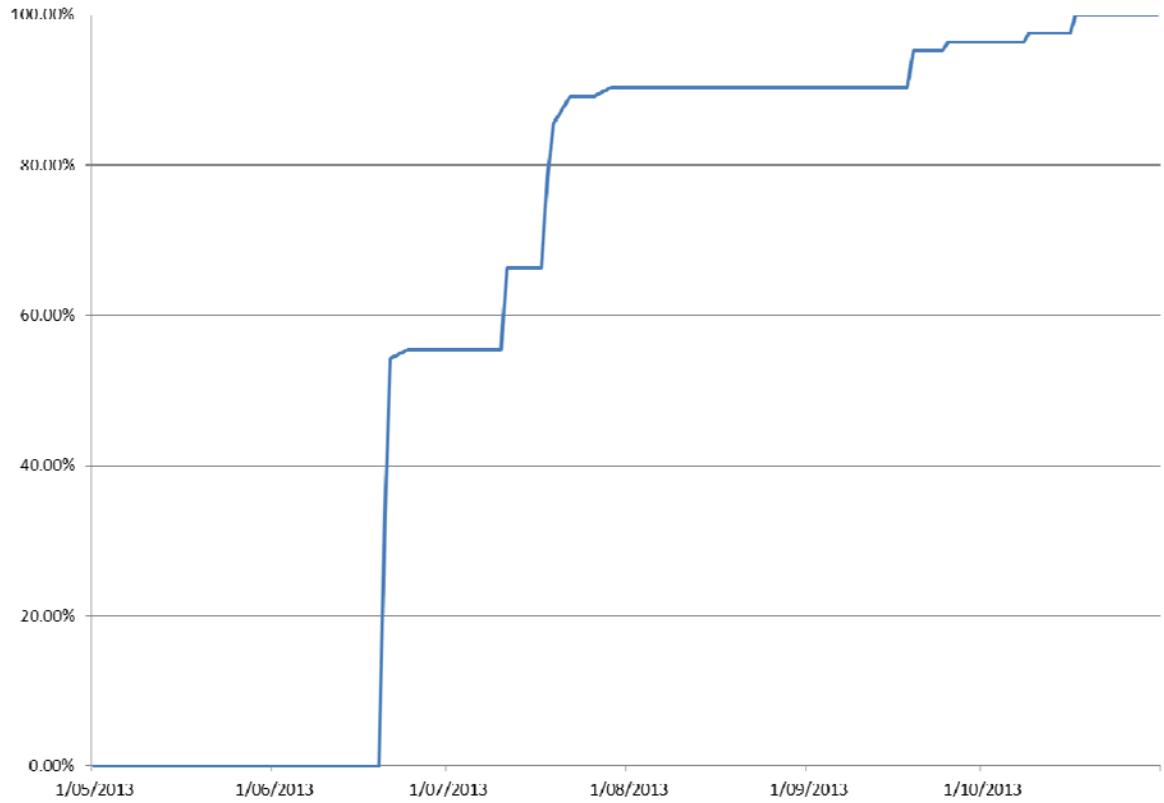
[34] See PwC (November, 2009), *Victorian Distribution Businesses – Methodology to Estimate the Debt Risk Premium.*

UBS yields are not 'stale'

Corporate bonds are traded relatively rarely, although the financial institutions' opinions about bond yields are influenced by actual trades and new issue yields of similar bonds, as well as other market information. However, until there is some information that changes the market's opinion about a bond's expected trading yield the 'bank feed' yields are set to track a benchmark index. If there is a material shift in a bond's yield, it may be expected that this has been caused by a reassessment of the bond based on some new information. Therefore, the second test that the PwC report applied was the Quandt-Andrews breakpoint test, which was applied to a six month period leading up to the averaging period used to estimate a cost of debt.

Applying the PwC methodology, we conclude that there is no reason to believe that the UBS data would not provide a reasonable indication of current bond market conditions. Since 100 per cent of the tested bonds were shown to have had a structural break in the previous 6 months. This provides evidence that adjustments were made to the pricing of these bonds relative to benchmark levels. Of the test sample of 84 UBS bonds, all but one had the requisite minimum number of consecutive observations to apply the Quandt-Andrews breakpoint test.

Figure 3.1: Relative staleness of bond yields – Percentage of UBS data passing the Quandt Andrews breakpoint test (6 months to October, 2013)



Source: UBS data, Incenta analysis

Results of the econometric analysis

Table 4.3 below summarises the results of the linear regression analysis. Using all 84 observations results in a 10 year BBB+ debt risk premium estimate of 272 basis points for the 20 business days ending 31 October, 2013. The annual increment in respect to term was found to be 14 basis points, and this result was highly statistically significantly different from zero (as indicated by a T-statistic of 6.052, which means that there is less than a 1 per cent chance that the result was due to chance). There are 4 DBCT bonds in the sample, and there has been some controversy in the past about whether DBCT bonds, which used to be 'credit wrapped' AAA rated bonds prior to the global financial crisis, are reflective of BBB+ debt. As shown in the second row of Table 4.3, we undertook a sensitivity test, which excluded the 4 DBCT bonds, and found that this resulted in a 10 basis point difference to the estimate of the debt risk premium (i.e. a predicted 10 year BBB+ debt risk premium of 262 basis points).

Table 4.3: Summary of regression results, debt risk premium – 20 days to 31 October, 2013

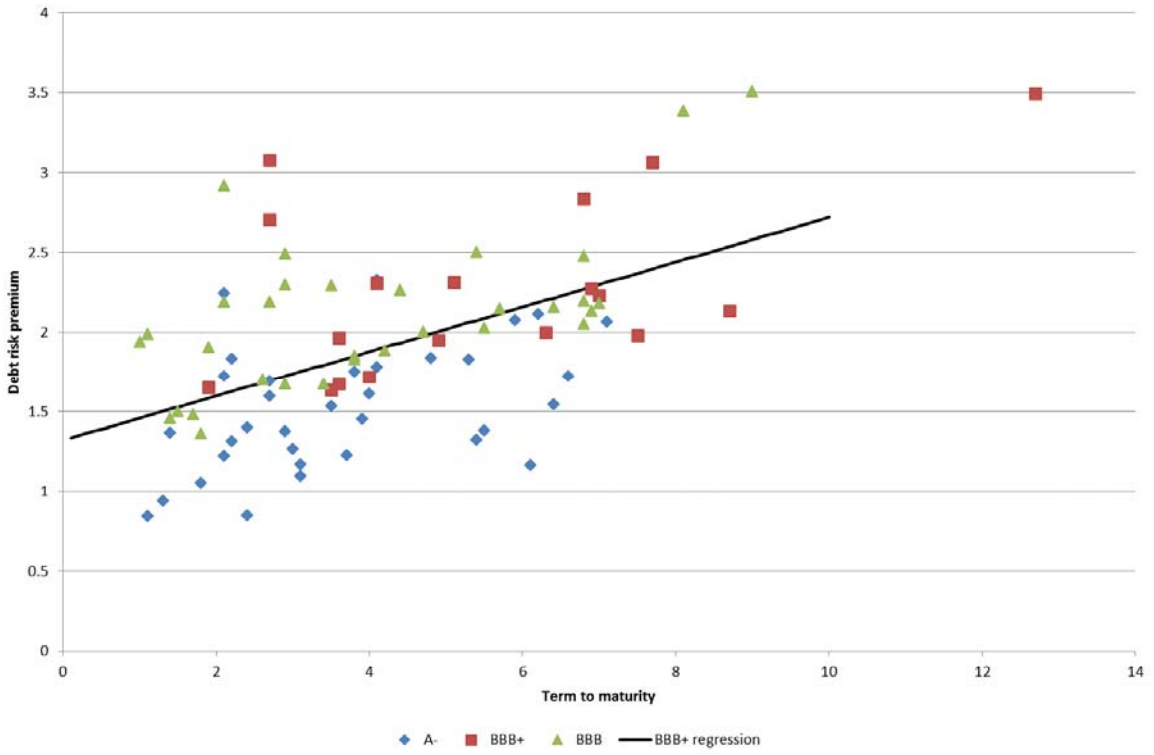
Sample	Observations	Intercept	T-stat	Term	T-stat	Adjusted R^2	10 year DRP estimate
All	84	1.319	11.927	0.140	6.052	0.300	272 bp
Exclude DBCT	80	1.349	11.693	0.127	5.018	0.232	262 bp

Source: Bloomberg and UBS data, Incenta analysis

A visual representation of the data is provided in Figure 4.2, which shows the individual observations for the three credit rating bands of the pooled sample, and the estimated regression line. As expected, the debt risk premiums of the vast majority of the BBB bonds are found to lie above the regression line, while the debt risk premiums of the majority of A- bonds are found to lie below the regression line. BBB+ bonds are found on both sides of the regression line, however we note that Standard & Poor's has recently announced that owing to a review of its credit rating criteria, and as a result SP AusNet is on 'CreditWatch with positive implications'.[35] This may mean that SP AusNet will in future be restored to the A- credit rating it had prior to the purchase of a 19.9 per cent state by State Grid Corporation of China. It may also mean that the SP AusNet bonds included in our regression sample have continued to be priced in the market as A- (or close to A-) credits since the credit rating downgrade in May this year.

[35] SP AusNet (27 November, 2013), *Standard & Poor's Credit Rating Update*, ASX & SGX-ST Release.

Figure 4.2: Debt risk premium – simple domestic portfolio (pooled data) approach (20 days to 31 October, 2013)



Source: Bloomberg and UBS

4.2.2 Bloomberg extrapolated fair value curve

The PwC report recommended that as well as the econometric estimate, when the target is a 10 year BBB+ debt risk premium in particular, regard should also be had to the 7 year Bloomberg BBB fair value curve extrapolated to 10 years using the 'paired bonds' technique. It should be noted that the Bloomberg BBB fair value curve includes both BBB and BBB+ rated bonds, and has generally been considered by regulators to be reflective of the BBB+ curve. For this reason it has been accepted by many regulators as the BBB+ curve.

The PwC recommendation was to limit the sample of paired bonds that are used to extrapolate the Bloomberg fair value curve from 7 years to 10 years to those where:

- the paired bonds are part of the wider sample used in the econometric analysis;
- the longer dated bond has a term to maturity that is close to 10 years;
- the shorter dated bond has a term that is closest to the shorter term that is of concern (i.e. closest to 7 years); and
- the match is between a pair of fixed coupon bonds, or a pair of floating rate bonds.

Four matched pairs of bonds were found to satisfy these selection criteria, 2 A- rated pairs of bonds (CBA Property Fund and GPT), a BBB rated pair of bonds (Sydney Airport), and a pair of BBB+ rated bonds (SPAusNet). Table 4.4 displays the yields and debt risk premiums of these bonds, which average to an indicated annual debt risk premium increment of 9.4 basis points. Applying this annual increment to the 3 year gap between Bloomberg's 7 year BBB debt risk premium of 223 basis points derives an estimated extrapolated 10 year BBB+ debt risk premium of 270 basis points (i.e. 223bp + (3 x 9.4bp)). This is 21 basis points lower than the 272 basis points debt risk premium that we estimated using the econometric methodology.

Table 4.4: Debt risk premium – 'paired bonds' extrapolation of 7 year Bloomberg DRP (20 days to 31 October, 2013)

Bond issues	Term of short bond (years)	Term of long bond (years)	DRP of short bond (bp)	DRP of long bond (bp)	Basis points per annum (bppa)
CBA Property Fund	6.15	9.16	211	227	5
GPT	5.27	8.83	183	205	6
SP AusNet	7.46	8.70	198	214	13
Sydney Airport	8.09	8.98	339	351	14
			Basis points per annum average		9.4
			3 times bppa		28.2
			Bloomberg BBB 7 year DRP		223
			'Paired bonds' extrapolated DRP		251

Source: Bloomberg, UBS and Incenta analysis

4.3 Comparison with Aurizon Network's submission

4.3.1 Comment on the cost of debt approach applied by Value Adviser Associates

The Authority requested us to review the methodology that has been applied by Aurizon Network's adviser, Value Advisor Associates (VAA), to estimate the cost of debt. VAA provided three estimates of the cost of debt (for the 20 day period ending with 20 November 2012), which were as follows:[36]

- 6.42 per cent, which assumed 10 year fixed rate debt. This comprised a debt risk premium of 326 basis points and a risk free rate of 3.16 per cent. The debt risk premium, in turn, was calculated using the Bloomberg BBB fair value curve at 7 years, and adding 25 basis points to extrapolate this to 10 years. This figure excluded an allowance for debt raising transaction costs.

- 6.24 per cent, which was said to reflect the QCA method, and comprised a 5 year risk free rate,[37] 5 year debt risk premium and an allowance for debt raising transaction costs, interest rate swap costs and the transaction cost of entering into credit default swaps.

- 5.67 per cent, which assumed five year fixed rate debt, following IPART.

[36] Value Adviser Associates (February, 2013), *Review of Debt Risk Premium and Market Risk Premium*, prepared for Aurizon.

[37] We note on a matter of detail that this should have been a 4 year term.

VAA contended that the first of these is most relevant, and the last is least relevant, and that arbitrage should cause the first two estimates to be the same.

We agree with VAA that its last estimate is irrelevant to the application of QCA's method. VAA's estimate of its debt risk premium under its first method is most relevant to the results presented in this report, and we observe that its debt risk premium of 326 basis points (and the 25 basis points extrapolation applied to the 7 year Bloomberg BBB figure between 7 and 10 years) are very close to the figures obtained in the PwC research report referred to earlier. The difference between this estimate and what we obtained would appear to be explained by movements in market rates since that time. We note that VAA has excluded debt raising transaction costs from its figure, which should be included.

Turning to VAA's second estimate, there is nothing in the estimate presented that is directly relevant to applying QCA's method for deriving the debt risk premium.[38] We observe that VAA's view that the estimate of the total cost of debt using this second method should be the same as what is estimated for standard fixed rate debt due to arbitrage considerations is a challenge to the analysis and conclusions of Dr Martin Lally, summarised earlier. Our observations are as follows.

- It would appear to be reasonably well accepted now that regulated utilities can use interest rate swaps to reduce their base interest rate in circumstances where there is certainty that the regulatory WACC will be set mechanistically in line with "spot" interest rates at a price review and that this will flow through directly into revenue.[39] It is difficult to see how arbitrage exists that can challenge this view – after all, the "benefit" deemed available from swaps is ascertained from traded instruments and market quotes for transaction costs, which presumably have already been disciplined by arbitrage opportunities.

- Whether credit default swaps can be used to reduce the effective term of the regulated utility's debt risk premium depends upon there being a sufficient market for these instruments, which we have concluded is not present. We do not agree that the difference in the debt risk premium between the term at which debt is issued (10 years under our and VAA's assumptions) and the term of the regulatory period will provide an estimate of the transaction cost of trading in credit default swaps. Rather, the difference in these debt risk premiums is an estimate of the *benefit* that could be obtained through trading in credit default swaps, against which the transaction costs must be offset, *if* the market existed. However, our advice is that the market does not exist, and to this theoretical hedging benefit could not be achieved in practice.

We make the following additional observations regarding VAA's approach:

- VAA contends that econometric analysis undertaken by PwC 'does not directly reference market data around the 10 year maturity and therefore presents problems given that it is entirely

[38] That is, various transaction costs are presented, but these are the values that the QCA has previously presented, and that have been updated in this report. A five year debt risk premium is presented; however, this value is not relevant if credit default swaps cannot be used to alter the regulated business's debt risk premium (and, as a matter of detail, should be a premium for a 4 year term in any event).

[39] For example, Jemena has argued that savings to the customer can be achieved through undertaking interest rate swaps: Jemena, (21 June, 2013), *Rate of Return Guidelines – Consultation Paper*, Submission from Jemena Limited to the Australian Energy Regulator, p. 22.

dependent on the equation used and the currency of the data used to derive the equation.'[40] However, the PwC econometric approach, which we have applied in this report, uses current data (tested for 'staleness') and relies on observations that are relatively close to a 10 year maturity. For example, by including floating rate bonds (converted to fixed rate equivalents), the current report includes 5 bonds in the econometric analysis, which have maturities of between approximately 8 years and 13 years, which the Australian Competition Tribunal regards as valid observations.[41] In addition, we note that VAA has referred to two SPI bonds, with maturities of 8.3 years and 9.6 years.[42]

- VAA dismisses the use of the AAA curve for extrapolation, and notes that there is no Bloomberg curve beyond 7 years. We take this to mean that VAA would only use contemporaneous data, which agrees with the approach that we have applied (following the PwC approach), but is contrary to the approach applied by Aurizon Network, as discussed below.

- We have several concerns with the 'matched pairs' methodology as applied by VAA, which does not accord with the approach that has been used by the AER (and is applied in PwC's (2013) report for the Authority):

  – A+ (Fonterra) and AA+ (GE Capital) rated bonds are used even though the AER's approach is to rely only on credit rating bands that are next to the credit rating band in question. That is, since a BBB+ credit rating is being targeted, only A- and BBB rated bonds should be used for the 'paired bonds' analysis;

  – GE Capital is not a valid observation, as this is a financial business, which is not included under the AER's (and PwC's) methodology;

  – VAA's inclusion of the two SP AusNet (SPI) bond pairs is questionable, as the PwC methodology was to exclude these bonds since their pricing (and A- credit rating) was likely to be influenced by the 51 per cent ultimate ownership by the Singapore Government (through Singapore Power). However, in May, 2013, a 20 per cent stake in SP AusNet was bought by the Chinese Government's State Grid Corporation, and the credit rating fell to BBB+. As a result, the case for the exclusion of these bonds is weaker;

  – Even allowing the inclusion of the SP AusNet bonds, VAA's approach diverges from the methodology applied by PwC (and accepted by the AER), that only the bonds closest to 7 years and 10 years be applied. By contrast, VAA has used the same longer term SP AusNet bond (with a term of 9.6 years), with two shorter term bonds (with terms of 4.8 and 8.3 years).

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40 Value Adviser Associates (February, 2013), p.15.

41 See Australian Competition Tribunal, *Application by ActewAGL Distribution [2010] ACompT 4*, par. 58, where it states that: 'The Tribunal considers that, as a matter of principle, floating rate bonds ought to be taken into account and treated equivalently to fixed rate bonds.'

42 As discussed in the text, there is less cause to exclude SP AusNet bonds now that State Grid Corporation of China has taken up a 19.9 per cent stake, which was bought from Singapore Power.

- While the extrapolation factor of 23.7 basis points obtained by VAA is close to the 24 basis points estimated by PwC (2013) for an averaging period whose ending date was very similar (i.e. separated by 2 days),[43] it used a completely different pairs of bonds;[44] and

- Finally, we agree with VAA that CDS data should not be used to infer the change in the BBB+ debt risk premium between 7 and 10 years.

4.3.2 Comments on Aurizon Network's submission on the cost of debt

In submitting its cost of debt range to the Authority, Aurizon Network provided 'lower bound' and 'upper bound' estimates of 6.09 per cent and 6.43 per cent respectively for the cost of debt (exclusive of transaction costs), as shown in Table 4.5 below. Its lower bound estimate of 6.09 per cent appears to be based on the VAA-estimated 'paired bonds' 7 to 10 year debt risk premium extrapolation of 24 basis points. The upper bound estimate of 6.43 is not based on the VAA analysis, but applies the last available 7 to 10 year debt risk premium reported by Bloomberg (for the 20 days to 22 June, 2010).

We make the following comments on Aurizon Network's cost of debt estimates:

- We agree with Aurizon Network that the Bloomberg FVC is an appropriate benchmark, which was also recognised by the PwC (2013) report. However, we consider that bond pricing can be tested without the Bloomberg curve, and that other data sources such as UBS can be included (including the addition of floating rate bonds translated to fixed rate equivalents);

- The cost of debt estimates are estimates of the fixed yield for a 10 year term, based on the 10 year risk free rate, and are therefore not consistent with the Authority's preferred approach (i.e. the Lally methodology);

- As shown in the last two columns of Table 4.5 below, as an estimated range for the cost of 10 year BBB+ fixed rate debt, Aurizon Network's estimates span the range of estimates that the PwC (2013) report obtained for an almost identical averaging period (i.e. 6.32 per cent using the econometric approach and 6.39 using the extrapolated 'paired bonds' methodology). However, we do not agree with Aurizon Network's application of the last available debt risk premium reported by Bloomberg for the AAA credit rating band, as market conditions have changed significantly since 2010.[45] We also note that Aurizon Network incorrectly stated that the AER's most recent decision on Powerlink applied the AAA extrapolation;[46]

- We do not agree with Aurizon Network's criticism of the 'paired bonds' analysis on the basis that it uses US data and is subject to the idiosyncratic nature of individual bond issues. The PwC

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43 We note that VAA used only a 5 day averaging period, believing that this would not create bias.

44 The bond pairs that we have used were for CBA Property Fund, GPT, SP AusNet, and Sydney Airport (the latter being a pair of floating rate bonds).

45 Putting aside our disagreement with the use of the defunct AAA FVC yields, we observe that we could not replicate the quantum that Aurizon Network has applied. We find the last reported AAA debt risk premium (averaged over 20 days) between 7 and 10 years was 44 basis points, which when added to the 7 year Bloomberg BBB debt risk premium of 3.01 per cent would imply a cost of debt of 6.6 per cent.

46 The AER applied the 'paired bonds' extrapolation in the Powerlink decision. See AER (April, 2012), *Final Decision – Powerlink Transmission determination 2012-13 to 2016-17*.

(2013) methodology, which has been applied by the AER has not included US data. Whilst there is idiosyncratic interference in a cross-section of bonds that are used to estimate a fair value curve, the advantage of the 'paired bonds' approach is that it allows a 'controlled experiment' in which the idiosyncratic factors attaching to bonds are held constant (since it is the same issuer), and all that is being varied is the term to maturity.

- The Aurizon Network's cost of debt estimates are too low based on its intended methodology of adding an extrapolation factor to the 7 year Bloomberg debt risk premium. The 7 year Bloomberg debt risk premium for Aurizon Network's averaging period was 3.01 per cent, which is already above Aurizon Network's proposed 10 year debt margin of 2.94 per cent. We could not reconcile why Aurizon Network's lower and upper bound 10 year debt margins are both approximately 31 basis points below the values we calculated following Aurizon's stated methodology of adding 24 and 58 basis points respectively to the Bloomberg 7 year debt risk premium.

- Finally, the 12.5 basis points for transaction costs, which was applied by Aurizon Network, is reflective of the Authority's approach to date.

Table 4.5: Cost of debt range submitted by Aurizon Network vs the PwC (2013) report

	Aurizon Network	Aurizon Network	PwC (2013) methodology	PwC (2013) methodology
Averaging period, 20 days to:	30 Nov.2012	30 Nov.2012	28 Nov.2012	28 Nov.2012
	Lower bound	Upper bound	Econometric	'Paired bonds'
a) 10 year risk free rate (CGS)	3.15%	3.15%	3.14%	3.14%
b) Debt margin	2.94%	3.28%	3.18%	3.25%
c) Cost of debt (excl. transaction costs)	6.09%	6.43%	6.32%	6.39%

Source: Aurizon Network (2013), pp.132 and 149. Note: c) = a) + b).

5. Benchmark transaction costs

5.1 Introduction

In this chapter we estimate a number of benchmark transaction costs that are required to re-finance a benchmark firm's debt portfolio, and undertake benchmark transactions to align re-financing risks with the regulatory cycle. The three transaction cost components requested by the Authority are considered in turn:

- Debt-raising transaction costs (corporate bonds);
- Interest rate swap costs that are required to convert the margin on 10 year debt to a 4 year margin; and
- If applicable, credit default swap costs.

The first category of debt-raising transaction costs was recently examined in detail by PwC, and we rely on those findings to inform our analysis.[47] Bond transaction costs are the target, as this is consistent with the benchmark assumption that 100 per cent of debt portfolio is comprised of bonds. The allowances for interest rate swap costs and credit default swap costs have been separately estimated by Evans & Peck, as a sub-contractor to Incenta.

5.2 Benchmark debt-issuing transaction cost allowance

In the past, the Authority has general applied a debt-raising transaction cost of 12.5 basis points regardless of the size of the business and its level of debt. The work that the Authority commissioned from PwC provides an updated view of the benchmark level of debt-raising transaction costs, which is based on recently observed benchmarked costs. The two major components of debt-raising transaction costs are:

- Arrangement/placement fees (arrangement fees) that are paid to investment banks to compensate them for their management of the debt-raising process; and
- Other costs associated with the debt-raising process, including items such as lawyers' fees and credit rating agency fees.

Based on an analysis of Bloomberg data, PwC found that Australian businesses issuing bonds in the US have recently been paying an arrangement fee in the order of 8.5 basis points per annum (bp).[48] This quantum of fees was found to be relatively invariant to term at issuance, or issuance size. It was also found to be slightly lower than the average arrangement fee paid by US companies issuing debt in the US market.

The other bond issuance transaction costs were estimated by PwC based on interviews with legal firms, banks and credit rating agencies that are involved in the bond raising process, and charge fees

47 PwC, (June, 2013).

48 PwC, (June, 2013), p.77. Given international competition in the market for funds, we would expect that the arrangement fee component should be relatively similar in the US and Australian markets.

for their services. Based on these discussions, PwC derived the separate bond issuance transaction costs listed in Table 5.1.

Table 5.1: Other bond issuance transaction costs – Domestic (2013)

Cost item	Unit	Estimated value	Source
Legal counsel – Master program	Per 10 years	$56,250	Legal firms
Legal counsel – issuer's	Per issue	$15,625	Legal firms
Credit rating agency – Initial credit rating	Per issue	$77,500	Rating agencies
Credit rating agency – Annual surveillance	Per annum in total	$35,500	Rating agencies
Credit rating agency – Up front bond issue	Per issue	5.2bps of issue size	Rating agencies
Registrar – Up front	Per 10 years	$20,850	Banks
Registrar - Annual	Per annum per issue	$7,825	Banks
Investment bank's out-of-pocket expenses	Per issue	$3,000	Estimated

Source: PwC (June, 2013), p. 84.

The individual cost components are explained as follows:

- *Legal counsel – Master program* – legal costs for the preparation of a Master Program, which becomes the base document for multiple issuances over a period of 10 years;
- *Legal counsel – issuer's* – legal fees for the preparation of documents for the issue of bonds under the Master Program;
- *Credit rating agency – Initial credit rating* – fee to establish a credit rating;
- *Credit rating agency – Annual surveillance* – rating agency fee to maintain the credit rating each year;
- *Credit rating agency – Up front bond issue* – fee charged by the rating agency when a new bond is issued;
- *Registrar – Up front* – initial set-up fee charged by a bond registry organisation;
- *Registrar – Annual* – an annual fee charged by the registry service; and
- *Investment bank's out-of-pocket expenses* – fees charged by agents of a bank for travel, accommodation, venue hire, printing etc.

Based on a survey of recent debt issuance by infrastructure businesses, PwC determined that the standard bond issuance size is $250 million. Based on an assumed Regulated Asset Base (RAB) for Aurizon Network of $4.9 billion, and the assumed benchmark gearing of 55 per cent, a benchmark debt level of $2.7 billion is indicated. This, in turn, means that the benchmark firm would need to undertake 11 bond issues of approximately $250 million each.

The result, shown in Table 5.2 below, is an estimated benchmark debt-raising transaction cost of 10.8 basis points for one bond issue of $250 million, and a cost of 9.9 basis points for a debt level matching Aurizon Network's assumed benchmark debt level of $2.7 billion.

Table 5.2: Benchmark debt-raising transaction costs (bppa)

Number of bonds	Value	1 bond issued	11 bonds issued
Amount raised		$250 million	$2,750 million
Arrangement fee		8.51	8.51
Bond Master Program (per program)	$56,250	0.33	0.03
Issuer's legal counsel	$15,625	0.09	0.09
Company credit rating	$77,500	0.46	0.04
Annual surveillance fee	$35,500	0.14	0.01
Up-front issuance fee	5.20 bp	0.77	0.77
Registration up-front (per program)	$20,850	0.12	0.12
Registration - annual	$7,825	0.31	0.31
Agents out-of-pockets	$3,000	0.02	0.02
Total		10.8	9.9

Source: Based on PwC (June, 2013), p. 84.

5.3 Benchmark swap transaction cost allowance

The benchmark swap transaction cost allowance was provided by Evans & Peck, as a sub-consultant to Incenta. Evans & Peck has provided similar advice to the Authority in the past in relation to the South East Queensland water and waste water businesses. Its advice was provided based on the following assumptions.

Assumptions

The results below are based upon the following assumptions for a hypothetical entity:

- On the debt side the benchmark entity funds itself with an average of 10 year fixed rate bonds.
- The regulatory period for resetting pricing is 4 years.
- The RAB is $4.9 billion, representing the geared financing, and remains constant over the periods under assessment.
- Equivalent credit rating is consistent over time at BBB+.
- The Debt to Debt plus Equity gearing is 55 per cent and constant over time.
- Swaps are priced as if contracted at 10am Tuesday 1 October.

Mechanism

For each hypothetical swap, the hypothetical execution and risk spreads were obtained from a bank that is active in this market. The swap was assumed to be to BBSW (mid-market swap rate), and the swap spreads were not adjusted further for the timing of any difference payments (calendar quarters, monthly etc. rather than quarterly as quoted). The swap from 10 year fixed to 10 year floating was obtained – as well as the spread breakdown for the hypothetical entity; then the spread from floating to 4 year fixed can be derived – and the spread breakdown.

The 'execution spread' is an estimate of the buffer that the bank would levy to cover itself for fluctuations in the market while the back-to-back transactions are placed. These circumstances might require the bank to incur unforeseen costs. The 'risk spread' is an estimate of the charge that a bank makes for the risk of the counterparties defaulting.

Basis for derivation

The fixed rates underlying the swap spreads were based on the prevailing mid inter-bank market Australian dollar swap rates as published in ICAP (an inter-bank broker) on Reuters page ICAPAUSSWAPS01, and relevant basis swap markets as published on Reuters page ICAPAUBASIS (i.e. the same publisher) as at 10.00am, 1 October, 2013, Australian Eastern Daylight Savings Time. The rates we have applied are mid-market (BBSW).[49] The credit spreads are based upon an internal bank process of credit risk assessment, which is representative of perceived risk in the bond swaps market at the time of the quotation. The execution spreads are based on the bank's assessment of market risk at the time of the quotation, and the bank's internal pricing model (which takes account of its operating costs and required returns).

Results

Table 5.3 below provides a summary of the results. The key points to note are:

- The pricing has been carried out for a BBB+ credit risk, and the swap transactions were assumed to be executed in equal tranches over a 20 day period in order to avoid creating a market disruption;

- The pricing of a swap from fixed to floating is virtually (but not exactly) the same as for the reverse swap – but within the limits of this exercise the difference is not material. Thus, only one set of pricing has been given for any swap, be that fixed-to-floating or floating-to-fixed;

- The pricing for the two stage swaps were derived by adding the spreads for the first swap to those of the second. For example, the cost of swapping the 10 year fixed, BBB+ rated debt to 4 year fixed, BBB+ rated debt = (0.050 + 0.020) + (0.023 + 0.020) = 0.113

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[49] An increase of 5 basis points would need to be applied to convert the cost to the bid rate (BBSY bid). This adjustment would be needed if the margins quoted on the debt were margins to BBSY bid, which is common, but not needed if the margins are to BBSW. In previous analogous situations the QCA has advised that the rate relative to BBSW (mid-market) should be applied.

Table 5.3: Benchmark swap cost (basis points)

	4 year	10 year
Credit rating	BBB+	BBB+
Execution spread	2.0	2.0
Risk spread	2.3	5.0
Benchmark swap cost	11.3	

Source: Market quotes obtained by Evans & Peck for 1 October, 2013

6. Cost of debt estimates

6.1 Cost of debt estimates for the 20 days to 31 October, 2013

Table 6.1 below shows the total cost of debt estimates obtained by applying the PwC econometric methodology, and the extrapolated Bloomberg (matched pairs) methodology, inclusive of transaction costs.

Table 6.1: Total cost of debt estimates for Aurizon Network (20 business days to 31 October, 2013), per cent

Row		Econometric methodology	Extrapolated Bloomberg
1	Risk free rate (4 year CGS)	3.211	3.211
2	10 year Debt Risk Premium	2.720	2.513
3	Debt-raising transaction costs	0.099	0.099
4	Interest rate swap costs	0.113	0.113
5	Total cost of debt	6.14	5.94

Source: Estimates based on Bloomberg, Evans & Peck and Incenta analysis. Note: Total cost of debt calculated as (5)=(1)+(2)+(4)

Applying the extrapolated Bloomberg and econometric estimation methodologies, a total cost of debt estimate range of 5.94 per cent to 6.14 per cent is obtained for the averaging period covering the 20 business days to 31 October, 2013. In the PwC (2013) report, a relatively close correspondence of the 10 year BBB+ yield estimates using the econometric and extrapolated Bloomberg methodologies was observed, and it was noted that this had been the case for some time. However, the PwC (2013) report found the extrapolated Bloomberg estimate exceeded the econometric estimate (respectively 325 basis points and 318 basis points). For the current averaging period the direction of the divergence has switched (with the econometric estimate now higher than the extrapolated Bloomberg estimate), and the absolute differential has increased (from 7 basis points to 21 basis points).

6.2 Aurizon's recent bond issue

In May 2013 Aurizon Network announced a $3 billion debt raising program, and having obtained a BBB+ credit rating from Standard & Poor's and Baa1 credit rating from Moody's, on 18 October 2013 Merrill Lynch announced that:[50]

> Notably, Aurizon Network (Baa1/BBB+) priced a new A$525 m upsized 7-yr offering in what was their inaugural debt transaction, led by BofAML. The deal was announced as a minimum A$300m sized 7-yr offering with initial guidance in the context of ASW+180-185bps. The orderbook received tremendous sponsorship from the top tier Australian asset managers as well as decent support from Asian and European accounts. The orderbook ultimately peaked at just under A$750m from in excess of 55 accounts, with final pricing at ASW+180bps and final volume of A$525m.

While the 7 year term of this initial Aurizon Network bond issue is below the benchmark 10 year term, we expect that in future longer term bond issues will follow, including issues in international markets. In particular, while Aurizon Network is a new entrant to the corporate bond market, this medium term note (MTN) has been well received by investors. This provides a good foundation for future bond issues, including issues for longer terms.

[50] Merrill Lynch (18 October, 2013), *Capital Markets Weekly Update, Week ending: 18 October 2013*, p. 10.

With respect to pricing, we found that on 24 October, 2013, on an un-annualised basis Aurizon Network's bond was priced by Bloomberg at 5.82 per cent (5.907 per cent annualised), which represented a spread of 175.3 basis points to the Australian swap curve (ASW), and a 217.3 basis points spread to a CGS yield of similar maturity. On that day the annualised 7 year BBB yield indicated by the Bloomberg FVC was almost exactly the same (5.89 per cent).