QRC Further WACC Submission January 2014

QRC response to QCA WACC consultation papers

1   Introduction

This submission responds to the various rate of return consultation papers that have been released by QCA in recent months. These are:

·   a further report from Dr Martin Lally in relation to the risk-free rate and market risk premium (**Lally MRP Report**);[1]

·   a further report from Dr Martin Lally in relation to the estimated utilisation rate for imputation credits (gamma) (**Lally Gamma Report**);[2]

·   a report from PwC in relation to the cost of debt estimation methodology (**PwC Cost of Debt Methodology Report**);[3]

·   a report from Incenta Economic Consulting on the benchmark credit rating and cost of debt for Aurizon Network (**Incenta Cost of Debt Benchmark Report**);[4] and

·   a report from Incenta Economic Consulting on the regulatory capital structure and asset/equity beta for Aurizon Network (**Incenta Equity Beta Report**).[5]

The primary purpose of this submission is to respond to these consultation papers. We will also take this opportunity to respond to some new points raised by Aurizon Network in relation to specific parameters at the QCA forum on 13 December 2013, particularly the new points raised in relation to the MRP and equity beta.

We do not intend to respond to the more general issues raised by Aurizon Network at the QCA forum around its ability to attract capital and maintain its credit rating, and any suggested implications of these claims for a cost of capital determination. At this stage these points have not been articulated clearly enough for the QRC to be able to respond meaningfully.

That being said, we strongly support a consistent application of the traditional methodology adopted by the QCA and all other Australian regulators (based on the CAPM) for determining appropriate rates of return, and consider that this methodology will provide appropriate returns to the providers of debt and equity. We also consider that public comment by ratings agencies in relation to Aurizon Network supports our view of its low degree of asset and cashflow risk.

We also note that, in the case of Aurizon Network, substantial additional revenue is earned in excess of the regulated WACC, making any claims of financing challenges theoretical at best. The CAPM approach should not be compromised to address a concern which Aurizon claims (without evidence) could possibly arise, but could only arise in a scenario which we know will not occur (that is, where Aurizon ceases to earn above-regulated returns).

We wish to respond further to this issue if Aurizon continues to pursue these points in its January WACC submission.

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[1] Lally, *Response to submissions on the risk-free rate and the MRP*, 22 October 2013.

[2] Lally, *Estimating Gamma*, 25 November 2013.

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

[4] Incenta, *Aurizon Network: Review of benchmark credit rating and cost of debt*, November 2013.

[5] Incenta, *Review of Regulatory Capital Strusture and Asset / Equity Beta for Aurizon Network: Report to the Queensland Competition Authority*, 9 December 2013.

2 Risk-free rate

The QRC continues to agree with the methodology for estimating the risk-free rate recommended by Dr Lally. The QRC submits that Dr Lally's approach of aligning the risk-free rate term with the term of the regulatory period is the correct approach because it ensures NPV neutrality.

The QRC notes that Dr Lally has comprehensively addressed all of the issues raised by Aurizon Network and it consultants in relation to the risk-free rate term in his October 2013 report for the QCA,[6] and that no new issues were raised at the QCA forum on 13 December 2013. However if significant new matters are raised by Aurizon Network in further submissions, the QRC would ask that it be given an opportunity to respond to this new material.

3 Cost of debt

(a) Methodology issues

The PwC Cost of Debt Methodology Report recommends a 'simple portfolio approach' as a general-purpose cost of debt estimation methodology. The simple portfolio approach is recommended "to satisfy the Authority's requirement for a methodology to derive debt risk premium estimates for a range of credit ratings and terms to maturity".[7]

However, PwC also recommends that the Bloomberg fair value curve "continue to be referenced as an independent source of information on bond yields".[8] PwC recognises that Bloomberg provides a low cost independent alternative view, and that in recent times the extrapolated Bloomberg curve has been a reasonable estimator of the 10 year BBB+ yields.[9]

The QRC recognises that there are necessarily trade-offs involved in choosing an appropriate cost of debt estimation methodology, and advantages and disadvantages associated with each methodology. These include:

Advantages of Bloomberg

- Bloomberg is a well-respected, independent data provider, used by firms when valuing debt in the 'real world'. Bloomberg's estimates are not produced for the regulatory process, but rather are produced for market participants.

- The use of Bloomberg is highly conventional in regulatory practice – Bloomberg has been relied upon by numerous regulators to determine the cost of debt, and use of the Bloomberg fair value curve for this purpose has been upheld in several recent cases before the Australian Competition Tribunal.[10]

- The use of Bloomberg does not require judgements to be made around the dataset and functional form, and thus there is little or no scope for dispute around estimates derived from Bloomberg (except for, in some cases, a confined dispute around extrapolation).

- Bloomberg fair values are available to all participants in the regulatory process, at relatively low cost (i.e. there is no need for experts to compile datasets, decide on functional forms and develop estimates on that basis).

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[6] Lally MRP Report.

[7] PwC Cost of Debt Methodology Report, p vi.

[8] PwC Cost of Debt Methodology Report, p vi.

[9] PwC Cost of Debt Methodology Report, p 72.

[10] For example: *Application by Jemena Gas Networks (NSW) Ltd (No 5)* [2011] ACompT 10 ; Jemena Gas (No 5), [86]; *Application by United Energy Distribution Pty Limited* [2012] ACompT 1, [440].

Advantages of an alternative econometric methodology (e.g. simple portfolio approach)

- An alternative econometric methodology is likely to be more transparent.

- An alternative econometric methodology is more adaptable, and can be used where Bloomberg does not provide fair values for the benchmark credit ratings and/or term.

Given the trade-offs, the QRC considers that the relative merits of each methodology should be assessed on a case-by-case basis, with a preference for Bloomberg where this provides fair value estimates for the relevant benchmark credit rating and term (or which can be extrapolated to match the benchmark). On the other hand, if Bloomberg does not provide estimates for a particular benchmark credit rating and/or term, or if Bloomberg's estimates are demonstrably inaccurate, then an alternative methodology, such as the simple portfolio approach, may well be warranted.

In the case of the UT4 process there is no compelling reason not to adopt Bloomberg. Bloomberg provides BBB fair value estimates which can be used on their own for maturities up to seven years, or extrapolated to provide estimates for longer maturities. Further, these fair value estimates would appear to be reasonably accurate at the current time – the PwC Cost of Debt Methodology Report notes that in general, the extrapolated Bloomberg curve has been a reasonable estimator of the 10 year BBB+ yields in recent times.[11]

For the particular averaging period nominated by Aurizon Network, Bloomberg's estimates appear to be highly accurate, and indeed more accurate than the estimates from the alternative "simple portfolio" econometric methodology. For this averaging period, the Bloomberg fair value estimate at seven years almost precisely matches the yield on the seven-year bond recently issued by Aurizon Network.[12] By contrast, the estimate produced by the simple portfolio approach for this period is significantly higher than the yield on the Aurizon Network bond.

Therefore, in the current circumstances, the QRC would not support a departure from use of Bloomberg fair value estimates for estimating the cost of debt.

However, if the simple portfolio approach is to be used in determining the cost of debt in the UT4 process, the QRC would prefer that it be used as part of an average, along with the Bloomberg fair value curve estimate. We consider that this would be a more prudent approach, given that the simple portfolio approach is a relatively new methodology, and in the present case it does not appear to be as accurate as Bloomberg. Taking an average of two methodologies is an approach that has been used in the past to estimate the regulatory cost of debt (e.g. when CBASpectrum and Bloomberg both provided fair value estimates[13]).

(b)   Benchmark assumptions for Aurizon Network

The QRC agrees with use of a BBB+ benchmark credit rating for Aurizon Network, as recommended by the Incenta Cost of Debt Benchmark Report.

However, the QRC does not agree with Incenta's recommendation for use of a ten-year term-to-maturity assumption for estimating Aurizon Network's cost of debt. In its October submission, the QRC argued for a five year term of debt assumption, on the basis that this was likely to better reflect efficient financing practice. Recent evidence of Aurizon Network's actual financing practice (issuing of bonds with a seven year term) reinforces our view that a ten year term is unlikely to reflect an efficient financing practice. In these circumstances, assuming a term of debt that is longer than seven years would be likely to over-compensate Aurizon Network for the efficient cost of debt.

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[11] PwC Cost of Debt Methodology Report, p 72.

[12] Incenta Cost of Debt Benchmark Report, pp 40-41.

[13] For example, in *ActewAGL*, the Tribunal decided to take an average of the CBASpectrum and Bloomberg estimates, on the basis that there was no grounds to prefer one estimate over the other (*Application by ActewAGL Distribution* [2010] ACompT 4, [80])

4   Market risk premium (MRP)

(a)   QCA / Lally methodology for estimating on the MRP

The QRC agrees with the general approach taken by the QCA to determining the MRP, which has been endorsed by Dr Lally. In general, we agree with an approach which takes into account a wide range of methodologies and evidence on the MRP, including historical measures, current survey evidence and forward-looking estimation methodologies. However, we consider that in deriving a final estimate of the MRP, due consideration ought to be given to the relative strengths and weaknesses of each of the methodologies.

In the present case, the QRC considers that 6% represents a reasonable estimate of the MRP, but should be seen as an upper bound value. An estimate of 6% has been recommended by Dr Lally in several recent reports, and is also supported by the QRC's consultants, Professors McKenzie and Partington.

There are several reasons why the QRC considers 6% to be an upper bound for the MRP:

- Firstly, the advice of Professors McKenzie and Partington in that an estimate of 6% is more likely to be too high, rather than too low, given the inherent upward bias in several of the measures.[14]

- Secondly, the QCA has previously acknowledged that one of the measures it uses – the Cornell method – is unequivocally biased upwards and therefore an upper bound only.[15] Given that the Cornell method is accepted as biased upward and is used therefore to provide no more than an upper bound estimate, it would be illogical and unreasonable to include it in any mean or median calculation. The only role for an upper bound is as a final test to confirm that estimates derived from other measures are not too high – it cannot be included in an average calculation alongside other genuine point estimates without undermining the reasonableness of the result.

  If this measure is removed from the average and median calculations (as it should be if it is to be properly treated as an upper bound rather than point estimate), the mean and median MRP estimates are both below 6% (refer to Table 1 below).

Table 1: Mean and median MRP estimates, excluding Cornell method

Method	QCA estimate (as at October 2012)
Ibbotson historical averaging	6.21%
Siegel historical averaging	4.32%
Cornell method	8.70%
Survey evidence	5.80%
Mean (excluding Cornell method)	*5.44%*
Median (excluding Cornell method)	*5.80%*

Source: adapted from QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, Table 3.1

- Thirdly, a number of experts, including Professors McKenzie and Partington, have noted that historical measures of the MRP are also likely to be biased upward, due to survivorship bias.

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[14] M McKenzie and G Partington, *Report to the Queensland Resources Council: Review of Aurizon Network's Draft Access Undertaking*, October 2013, p 26.

[15] QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11.

- Finally, current survey measures of the MRP indicate values of less than 6%.[16] These survey estimates would appear to be the only truly unbiased estimates of the MRP, and the only measures which reflect a current 'real world' view.

It is for these reasons that the QRC proposes a range for the MRP of 5 – 6%, rather than a point estimate of 6% as recommended by Dr Lally. Based on current evidence, the QRC considers that 6% should be seen as an upper bound for the MRP.

The QRC notes that in its final rate of return guideline published in December 2013, the AER indicated that 6.5% is likely to be an appropriate estimate for the MRP at the current time (a shift from its previous position of 6%). This was based on consideration of the following evidence:[17]

- historical averages, which the AER says support an MRP of approximately 6%;

- survey estimates, which also generally support an estimate of 6%;

- conditioning variables, some of which suggest the MRP may be below the historical average at 5.6%;

- other regulators' decisions, which support an estimate of 6%; and

- DGM estimates, which presently lie in a range of 6.1 – 7.5%.

The QRC considers that the weight of this evidence in fact supports an MRP of no more than 6%. The historical averages, survey estimates and recent regulatory practice all support a value of 6%, while the conditioning variables referred to by the AER suggest a lower value. The only support for a higher estimate comes from DGM analysis, a method which Professors McKenzie and Partington express strong reservations about, due to the sensitivity of estimates to assumptions made (for this reason Professors McKenzie and Partington do not consider DGM-based empirical estimates).[18]

The QRC therefore maintains its view that an appropriate range for the MRP at the current time is 5 – 6%.

(b)   Rounding margin for the MRP

Dr Lally has re-iterated his view that the MRP should be rounded to the nearest 1%, to reflect the imprecision in the various methods used to estimate this parameter.

The QRC does not agree that such a wide rounding margin is appropriate. While it is true that estimates of the MRP are likely to be imprecise, precision and accuracy will not necessarily be improved just by rounding to the nearest whole number (except perhaps by chance). On the contrary, to the extent that there is some confidence in the methodology used to derive an estimate, rounding of that estimate will generally result in a less accurate estimate.

If any rounding is to be applied, the QRC considers that the rounding margin of 1% proposed by Dr Lally is too wide. While we acknowledge that there is some imprecision in MRP measures, we believe that a rounding margin of 1% would overstate the degree of imprecision. Further, such a wide rounding margin means that rounding of the MRP alone may lead to very significant changes to the overall rate of return and regulated revenues – for example, over the UT3 period, a 1% decrease in

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[16] P Fernadez, J Aguirreamalloa, P Linares, *Market Risk Premium and Risk Free Rate used for 51 countries in 2013: a survey with 6,237 answers*, IESE Business School, June 2013. Fernandez et al report a median MRP for Australia of 5.8% in 2013. As discussed further below, although the mean MRP was higher, it appears that the mean is being biased upward by a very high maximum value of 25%, which was not present in the 2012 results (the maximum in 2012 was 10%).

[17] AER, *Better Regulation: Explanatory Statement - Rate of Return Guideline*, December 2013, p 97.

[18] M McKenzie and G Partington, *Report to the Queensland Resources Council: Review of Aurizon Network's Draft Access Undertaking*, October 2013, pp 19-21.

the MRP would have implied a 0.36% decrease in the overall WACC and a reduction in regulated revenue of approximately $50 million over the four-year period.

Adopting such a wide rounding margin means that very small changes in the inputs or assumptions underpinning one methodology could lead to a very significant change in the overall MRP estimate. For example, slightly altering the future growth assumptions underpinning the Cornell method might only change the output of that methodology by 0.05%, but this would have a much more dramatic effect on the overall MRP estimate if it shifts the average from 5.49% to 5.51%.

As a result, the scope for dispute over inputs and assumptions may *increase* in some cases with a wider rounding margin, because the stakes would potentially be higher. While in some cases rounding may eliminate any dispute over the final estimate, in other cases it may increase the amount that is in dispute. With a 1% rounding margin, the amount at stake in any dispute will always be at least 1%, which is substantial. As noted above, over the UT3 period, a 1% difference in the MRP would have accounted for approximately $50 million in revenue.

The QRC considers that if any rounding margin is to be applied to the MRP, it should be no higher than 0.5%, and preferably around 0.2% or 0.25%. A smaller rounding margin would provide a more appropriate balance between the competing considerations referred to above.

We note that in its recent rate of return guidelines, the AER said that it would adopt a rounding margin of 0.25% in estimating the return on equity. In deciding to use a rounding margin of 0.25%, the AER considered both the limited precision of estimates, and the materiality of various rounding margins.[19]

(c)   New matters raised by Aurizon Network at the QCA forum

Aurizon Network's consultant, SFG, sought to raise a number of new MRP arguments at the QCA WACC forum on 13 December 2013. SFG argued that various adjustments ought to be made to the QCA's calculation of the MRP, and stated that if any one of these adjustments were made the MRP estimate produced by the QCA methodology would increase to 7%.

For the reasons set out in Table 2, the QRC does not agree with the adjustments proposed by SFG.

In any event, it is not apparent that the MRP estimate would necessarily change if any of the adjustments are made. At least one of the proposed adjustments has already been considered by Dr Lally and factored into his calculations, which produce an MRP estimate of 6%.

Table 2: SFG proposed adjustments to QCA MRP calculation

SFG argument	Response
Use mean rather than median of various approaches	Dr Lally states, correctly, that you cannot take an average, because the Cornell method does not produce a point estimate (it produces a range). In any event, the QRC agrees with the QCA in its view that the Cornell method provides an upper bound only, because of its inherent upward bias. As noted above, given that the Cornell method provides no more than an upper bound estimate, it would be illogical and unreasonable to include it in any mean or median calculation. The only role for an upper bound is to confirm that estimates derived from other measures are not too high – it cannot be included in an average calculation alongside other genuine point estimates without fundamentally undermining the reasonableness of the result.

[19] AER, *Better Regulation: Explanatory Statement – Rate of Return Guidelines*, December 2013, pp 64-65.

SFG argument	Response
Adjust the Ibbotson estimate to correct Brailsford data errors	Dr Lally's view (as explained at the QCA WACC forum) is that the error that previously existed in the historic data has already been corrected, and so no further adjustment would be required. The QRC is not aware of any other error in the historical estimates which have been relied on for some time by numerous regulators (or any suggested correction to perceived errors).
Eliminate the Siegel approach	Dr Lally stated at the WACC forum on 13 December 2013 that he does not favour eliminating the Siegel estimates from the calculation. The QRC agrees with this view. It is important to include the Siegel method in any consideration of the MRP because, unlike the Ibbotson method, it adjusts for the effects of unanticipated inflation
Use the 2013 Fernandez survey results, instead of the 2012 results	Using the 2013 survey results would not change the outcome of the MRP calculation. When properly applied, these more recent results continue to support an MRP below 6%. The 2013 results show a median MRP of 5.8% for Australia, which is lower than the median MRP reported for Australia for 2012 (6.0%).[20] While the mean MRP reported for Australia for 2013 is higher (6.8%), it is apparent that this mean value is being skewed upward by a very high maximum value of 25%, which was not present in the 2012 results (the maximum in 2012 was 10%). The sample for 2013 is also much smaller (17 respondents in 2013, compared to 73 in 2012), which would suggest caution in relying solely on the mean result where there are clear outliers. If other countries are included (which Dr Lally favours), both the mean and median MRP values are still between 5.8% and 6% for 2013.
Use an updated MRP estimate from independent expert reports	The QRC would not support including a new data source or methodology, unless it is shown to be probative and robust. The QRC does not know what independent expert reports SFG are referring to, or how their inclusion would affect the outcome.
Use a "Wright estimate" based on corrected Brailsford data	The QRC understands "the Wright approach" to be the approach previously advocated by SFG which involves estimating the expected real market return from its historical average, converting this to a nominal market return using current expected inflation, and then deducting the current nominal risk-free rate. This approach has been considered by Dr Lally in his October 2013 report for the QCA.[21] The QRC would not favour the inclusion of the Wright methodology in the set used by Lally or the QCA. As noted by Dr Lally, this method would only be preferable to more conventional historical averaging approaches (such as the Ibbotson approach) if the overall cost of equity is more stable over time than the MRP.[22] Dr Lally notes in his October 2013 paper that the

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[20] P Fernadez, J Aguirreamalloa, P Linares, *Market Risk Premium and Risk Free Rate used for 51 countries in 2013: a survey with 6,237 answers*, IESE Business School, June 2013, Table 2.

[21] Lally MRP Report, p 60.

[22] Lally MRP Report, p 60.

SFG argument	Response
	evidence on this question does not favour using this alternative approach (rather it favours use of the more traditional Ibbotson approach). In other papers for the AER, Lally has presented evidence which contradicts the proposition that the overall cost of equity is more stable than the MRP.[23]
	The empirical evidence referred to by Dr Lally does not appear to support the inclusion of this methodology alongside other more traditional approaches, such as the Ibbotson and Siegel methods. Therefore, the QRC would not support use of this alternative methodology, as proposed by SFG.

On several of the above points, Aurizon Network has not yet submitted the new evidence or studies that were referred to by SFG at the QCA WACC forum (many of these points were not raised in Aurizon Network's April 2013 submission).

To the extent that Aurizon Network, or any other respondent, seeks to raise new issues and/or submit new evidence on any of the above points, the QRC requests that it be given an opportunity to respond to this new material.

5 Equity beta

(a) QCA consultation paper on the asset/equity beta for Aurizon Network

The QRC agrees with the general approach taken by Incenta to assessing Aurizon Network's asset/equity beta, based on first principles analysis of exposure to systematic cashflow risk.

The equity beta is fundamentally a measure of a business' exposure to systematic cashflow risk, and therefore any estimate of this parameter must be premised on a first principles analysis of such risks. It is for this reason that the QRC's October submission sought to highlight the various features of the regulatory regime which insulate Aurizon Network from systematic risk, and was supported by an expert report from Castalia comparing Aurizon Network's risk exposure with that of other businesses. By contrast, Aurizon Network's submission relies heavily on a comparison with US Class 1 Railroads to justify its equity beta proposal, but contains very little by way of first principles analysis to support this comparison.

The QRC agrees with Incenta that, based on first principles analysis, it is clear that Aurizon Network is fundamentally different to the US Class 1 Railroads, in terms of exposure to systematic risk. The QRC also agrees that regulated energy and water businesses are much better comparators, although we believe that these businesses are likely, if anything, to be *more* risk-exposed than Aurizon Network.

While we generally agree with Incenta's analytical framework and the comparisons drawn with regulated energy and water businesses, the QRC has a number of material concerns with how the analytical framework has been applied to derive an estimate of Aurizon Network's equity beta. Notwithstanding their view that regulated energy and water businesses are likely to be the only appropriate comparators for Aurizon Network, Incenta derives a beta estimate for Aurizon Network that is out of step with recent empirical evidence and regulatory determinations for these comparator businesses.

The QRC's specific concerns with Incenta's application of the analytical framework are set out below and in the accompanying Castalia report. In summary, the QRC has three key concerns:

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[23] For example: Lally, Review of the AER's Methodology for the Risk Free Rate and the Market Risk Premium, 4 March 2013.

- the QRC disagrees with the inclusion of toll roads in the range used by Incenta to estimate the asset/equity beta. Given the very significant differences between toll roads and Aurizon Network in terms of exposure to systematic risk, the QRC submits that these businesses should not feature in any range of estimates for Aurizon Network's asset or equity beta;

- the QRC disagrees with the inclusion of international energy businesses (particularly the North American businesses) in the sample used to estimate the energy networks beta; and

- the QRC is concerned that the use that the use of an unconventional estimation methodology (the simulated month methodology) is having such a significant impact on the beta estimates, and that this impact cannot be explained.Most significantly, Incenta's analysis relies heavily upon an econometric analysis ('simulated analysis') which the QRC considers is not supported by evidence and is methodologically unsafe.

The QRC submits that, if the Incenta analytical framework is properly applied using a conventional methodology, it supports an equity beta value for Aurizon Network of between 0.4 and 0.6. This is consistent with the outcome which would be reached on the analysis of Aurizon Network's own consultant, if US Class 1 Railways and listed transport businesses (which Incenta considers to be inappropriate comparators) are excluded from the analysis. This is also generally consistent with recent analyses of the equity beta undertaken by other regulators for comparable businesses, including most recently by the AER in relation to Australian regulated energy networks.

The QRC therefore maintains its position that an appropriate range for Aurizon Network's equity beta is 0.4 – 0.6.

Application of first principles analysis to US Class 1 Railroads

The QRC agrees with Incenta that, based on first principles analysis, there is little in common between Aurizon Network and US Class 1 Railroads, in terms of exposure to systematic cashflow risk.

Put simply, the mere fact that both Aurizon and US Class 1 Railroads have business that involve railway track and locomotives says little of consequence about the riskiness of their cashflows, or the covariance of that riskiness to the market.

The QRC has conducted a detailed comparison of Aurizon Network with the US Class 1 Railroads on each of the risk factors identified by Dr Lally, which are referred to by Aurizon Network in its April 2013 submission. This comparison reveals that, contrary to the claims made by Aurizon Network, US Class 1 Railroads have very different risk profiles.

Most significantly:

- Unlike Aurizon Network, US Class 1 Railroads are not subject to a revenue cap form of regulation which protects against cost and volume risk. In fact, US Class 1 Railroads are not subject to any form of ex ante price or revenue regulation.

- US Railroads ship a wide range of commodities, some of which are highly exposed to fluctuations in domestic economic activity and consumer demand.

- Many of the US Class 1 Railroads are subject to a high degree of competition, from other forms of transport (e.g. trucking) and in some cases, from other railroads. The degree of competition faced by the US Class 1 Railroads can vary considerably between the various commodities they ship (e.g. competition from trucking tends to be stronger in shipping of agricultural commodities).

- Many of the US Class 1 Railroads have options for further diversification, with these diversification options potentially exposing them to significant demand and cost risks. For

example, some of the US Class 1 Railroads are considering expanding their operations to include shipping of petroleum products.

A detailed comparison of Aurizon Network with US Class 1 Railroads is set out in Attachment 1.

Application of first principles analysis to toll roads

Important also in the Incenta analysis is a finding that toll roads should be included in the sample of betas. While these are not then used directly, they appear to provide something of an 'upper bound' test for the reasonableness of the equity beta calculation which is then undertaken.

Unlike for Class 1 Railways, however, Incenta did not undertake a thorough 'first principles' analysis of the appropriateness of toll roads as a comparator. The QRC considers that, had this been done, toll roads would have been found not to be comparable. The high construction, patronage, regulatory and other risks associated with toll road businesses bear little resemblance to the stable, risk-insulated environment in which Aurizon Network operates.

Some of the key differences between toll roads and Aurizon Network include:

·   Toll roads are typically not subject to a form of regulation which protects them from either cost or revenue risk. As noted by Incenta, while toll road prices are often fixed, they are generally not subject to a periodic review whereby revenues are realigned with cost.[24] This means that toll roads are exposed to both fluctuations in demand, and variations in costs over time. In short, the form of price regulation applied to toll roads provides them with very little (if any) protection from cost and revenue risk. In fact, the opposite is true, as the form of price control applied to toll roads means that they are highly exposed to these risks, as they are unable to adjust prices if needed to mitigate their impact.

·   Toll roads invariably face competition from alternative (usually free) roads. Users of toll roads will almost always face a choice between paying for use of the toll road and taking a free (but perhaps slower) alternative route.

Indeed Incenta notes that toll roads "are subject to significantly more volume (revenue) risk.[25] This view is supported by the recent history of toll roads in Australia, which includes numerous toll road operators facing insolvency, often as a result of volumes being significantly less than forecast and/or construction costs exceeding estimates (risks which Aurizon Network is insulated from under its regulatory framework).[26]

Given the very significant differences between toll roads and Aurizon Network in terms of exposure to systematic risk, the QRC submits that these businesses should not feature in any range of estimates for Aurizon Network's asset or equity beta. Even as an upper bound, the inclusion of toll roads in the range has the potential to upwardly bias the beta estimate for Aurizon Network, even if only by making an otherwise unreasonable outcome look reasonable.

Clearly if toll roads are excluded from Incenta's range, the point estimate for Aurizon Network's beta would fall between the Grant Samuel estimate for DBCT and the energy network beta, rather than being based solely on the estimate for energy networks.

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[24] Incenta Equity Beta Report, p 13 (note B to Table 1.2).

[25] Incenta Equity Beta Report, p 4.

[26] Some recent Australian examples include the Clem Jones Tunnel in Brisbane, the Cross City Tunnel in Sydney and Eastlink in Melbourne. In the US, American Roads (operator of smaller toll roads across the US) has recently filed for Bankruptcy and the South Bay Expressway outside San Diego sought Chapter 11 bankruptcy protection in 2010, citing construction delays and insufficient traffic to make payments on $510 million of debt.

Appropriate comparators for Aurizon Network

The QRC agrees with Incenta (and the QCA) that regulated energy and water businesses are likely to be the closest comparators to Aurizon Network, in terms of exposure to systematic cashflow risk.

However, for the reasons set out the QRC's October submission and the accompanying Castalia report, we consider that Aurizon Network's risk exposure is in fact lower than that of regulated energy networks. The form of regulation applied to Aurizon Network provides it with various protections from revenue and cost risk, many of which are not available to regulated energy network businesses.

Therefore the QRC submits that the equity beta for energy networks must represent an upper bound for Aurizon Network's equity beta.

Estimation of asset/equity beta for energy and water businesses

The QRC has significant concerns with the way in which Incenta has derived estimates of the asset and equity beta for energy and water businesses, which it says are the best comparators for Aurizon Network. Incenta produces beta estimates for energy and water businesses which vary considerably from recent empirical estimates and regulatory determinations for these comparator businesses, but there is no apparent reason or explanation for this very significant difference.

Incenta's asset beta estimate for energy networks is 0.42, based on it 'simulated month' estimation methodology. Incenta's asset beta estimate for energy networks using the simulated month methodology is significantly higher than its estimate the conventional beta estimation methodology – this change in methodology increases the median asset beta value from 0.34 to 0.42, and the equity beta at 55% gearing from 0.57 to 0.73, which would imply a 0.43% increase in the overall WACC. Similarly for water businesses, using the simulated month methodology instead of the conventional methodology increases the asset beta estimate from 0.35 to 0.40.

Whereas Incenta's conventional estimates for energy and water businesses are generally in line with other recent empirical estimates and regulatory practice, its estimates based on the simulated month methodology are not. Previous empirical estimates – including studies by Aurizon Network's consultant (SFG), Incenta's conventional empirical analysis, and a recent evidence review conducted by the AER – indicate that the asset beta for these comparator businesses is around 0.35, which implies an equity beta of 0.59 at 55% gearing (see Table 3 below).

Table 3: Recent empirical estimates of beta for energy and water businesses

Estimate	Asset beta	Equity beta at 55% gearing
Energy network businesses		
Incenta (December 2013 report for the QCA) – conventional beta estimate for energy businesses (median value)	0.34	0.57
SFG (August 2012 report for QR Network) – OLS beta estimate for Australian-listed energy networks	0.35	0.59
Australian Energy Regulator (December 2013 rate of return guideline) – range established by reference to various empirical estimates for Australian energy networks (refer to Box 1 below).	0.24 – 0.37	0.36 – 0.63

Estimate	Asset beta	Equity beta at 55% gearing
Water businesses		
Incenta (December 2013 report for the QCA) – conventional beta estimate for water businesses (median value)	0.35	0.59

The QRC is concerned that the use of an alternative methodology is having such a significant impact on the beta estimates, and that this impact cannot be explained. The accompanying Castalia report notes that there is no logical explanation for the material and persistent upward bias that is observed in the estimates produced by the simulated month methodology, and therefore recommends that the estimates from this alternative methodology be treated with extreme caution.

The QRC also notes that Incenta's sample of energy businesses includes a large a number of international businesses, many of which are not subject to the same (or similar) form of regulation. In previous analyses of energy network betas, the empirical analysis has been restricted to Australian businesses, to ensure that only businesses with similar risk profiles are included. Castalia recommends excluding international businesses for several reasons, including:

· many of these businesses are not 'pure play' network businesses, but rather are often vertically integrated into downstream retail and/or upstream wholesale markets;

· as the betas for these businesses are from different markets, they are not directly comparable with betas in the Australian market, because they are necessarily measuring covariance against different markets; and

· the form of regulation applied to these businesses is in some cases very different to that applied to Australian businesses.

Incenta's empirical estimates for different groups of energy businesses indicate that these factors have a very significant impact. Incenta estimates an asset beta of 0.31 for Australian, NZ and UK businesses, but for the US and Canadian businesses (which dominate the sample), Incenta's estimate of the asset beta is 0.41.[27] Castalia considers that the main reason for this difference is that there are a number of important differences between Australian, NZ and UK energy businesses and those in North America – chief amongst which, they expect, would be differences in the form of, and approach to the application of, regulation (as noted by Incenta, whereas the Australian, NZ and UK businesses are subject to price/revenue cap regulation, the North American businesses are subject to various different forms of regulation, described as 'decoupled', 'cost of service' and 'incentive' regulation).

The QRC submits that for the purposes of deriving beta estimates for Aurizon Network, a more conventional analysis of betas for energy and water businesses should be used. This means restricting the sample of businesses to Australian businesses and using more conventional estimation techniques.

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[27] Incenta Equity Beta Report, p 65 (Table 5.5).

Box 1: Recent AER consideration of equity beta for energy network businesses

The AER has very recently reviewed its position on the equity beta for energy network businesses as part of its rate of return guideline process.

Until recently, the AER has applied an equity beta value of 0.8 for energy network businesses that it regulates. However, in its final rate of return guideline (published in December 2013), the AER indicated that it will apply an equity beta value of 0.7 in future determinations for these businesses. The AER's equity beta value of 0.7 was chosen from within a range of 0.4 to 0.7.

The AER's decision to adopt an equity beta of 0.7 was based on a combination of conceptual analysis and empirical estimates of beta for Australian energy network businesses. The AER stated that the empirical studies "present a consistent pattern" and that "this pattern is robust to the use of different econometric techniques, different comparator sets and different time periods". The empirical studies consistently indicate a range for energy networks' equity beta of 0.4 to 0.7.

The equity beta range of 0.4 to 0.7 referred to by the AER implies an asset beta range for energy network businesses of 0.24 to 0.37, given the 60% gearing level assumed for these businesses.

Source: AER, *Better Regulation: Rate of Return Guideline*, December 2013; AER, *Better Regulation: Equity beta issues paper*, October 2013.

Application of Incenta's analytical framework to derive an equity beta estimate for Aurizon Network

For the reasons set out above, while we generally agree with Incenta's use of a 'first principles' analytical framework to determine comparators, and its conclusion that the most appropriate comparisons are to be drawn with Australian regulated energy and water businesses, the QRC has concerns with how the framework has been applied to derive an estimate of Aurizon Network's equity beta.

In particular:

· As noted above, it is unclear why the beta for toll roads should be included in the range for determining Aurizon Network's beta, given that toll roads face much greater exposure to both cost risk and volume risk.

· Due to the inclusion of the toll roads beta in the range, the estimated beta for DBCT is effectively excluded from the final point estimate and the beta estimate for Aurizon Network is set equal to the energy networks beta.

· The sample of energy networks should not include international businesses, given that many of these international businesses are subject to a very different form of regulation.

· Incenta does not use a conventional estimation methodology, but instead uses a 'simulated month' estimated methodology. Using this alternative estimation methodology leads to a significant increase in the asset beta estimate for energy networks, and it is not clear why this should be the case (it is not explained by Incenta, and Castalia is unable to identify any logical explanation for this significant difference).

· Due to the inclusion of international energy businesses in the sample, and use of the simulated month methodology, Incenta's beta estimate for energy businesses is significantly higher than other recent empirical estimates for these businesses, including estimates recently published by the AER.

The QRC submits that Incenta's calculation needs to be adjusted to apply a more conventional analysis of the beta for Australian energy networks and remove toll roads from the beta range.

Castalia estimate that, if these adjustments are made, Incenta's analysis would produce an asset beta estimate of approximately 0.27 for Aurizon Network, which translates to an equity beta of 0.42 at 55% gearing.

Table 4: Revised beta estimates for Aurizon Network

	Asset beta	Equity beta
Incenta estimate	0.42	0.73
Removing toll roads from beta range	0.39	0.67
Removing international energy businesses and other comparators subject to different form of regulation	0.31	0.51
Applying conventional estimation techniques	0.27	0.42

Source: Castalia Report, Table 1.1 (based on Incenta estimates).

Alternatively, given Incenta's conclusion that regulated energy and water businesses are likely to be the closest comparators, the equity beta for Aurizon Network could simply be based on the beta estimated by other regulators for water and energy businesses. The AER has very recently estimated the equity beta for energy networks to be between 0.4 and 0.7 at 60% gearing (see Box 1 above). An equity beta range of 0.4 – 0.7 for businesses with 60% gearing equates to an equity beta range of approximately 0.4 – 0.6 at Aurizon Network's 55% gearing – as previously noted, this should indicate the upper bound for Aurizon Network's equity beta, given Aurizon Network's lower exposure to risk, compared to energy networks.

(b)   New matters raised by Aurizon Network at the QCA forum

At the QCA WACC forum, Aurizon Network sought to divert the discussion of asset/equity beta into a discussion around the overall reasonableness of the WACC and the implicit 'equity margin'.

The QRC considers that the analytical framework adopted by Incenta is the correct way to approach the issue of the asset/equity beta. It is inappropriate and uninformative to make broad comparisons of the overall WACC and equity margin for various businesses, without a first principles analysis of comparative risk profiles. Given Aurizon Network's very limited exposure to risk, it is appropriate that it be allowed a lower equity margin and a lower overall WACC compared to other businesses.

In any event, the comparison shown by Aurizon Network at the QCA forum was highly misleading, as it did not normalise the WACC estimates and equity margins for different market conditions and different gearing levels among the businesses. The comparison also included a number of businesses with dramatically different risk profiles (e.g. the US Class 1 Railroads) and businesses for which the WACC had not been set by a regulator based on first principles analysis (e.g. DBCT, where the WACC was not determined by the QCA, but rather formed part of a negotiated package that was ultimately approved).

Set out below is a comparison of equity beta estimates only, which only includes comparable businesses (regulated energy and water businesses), and which adjusts for different gearing levels. This comparison is restricted to the equity beta component, so as to remove the impact of changes in market conditions, which clearly affected the Aurizon Network comparison. Different gearing between the businesses is adjusted for by using 55% gearing for all businesses and re-levering beta values to reflect this.

The comparison below shows that Aurizon Network's equity beta proposal is substantially above all of the comparator businesses. The QRC proposal is slightly lower than the comparator businesses, reflecting our view that Aurizon Network is less exposed to risk.

Figure 1: Equity beta comparison (re-levered for 55% gearing)
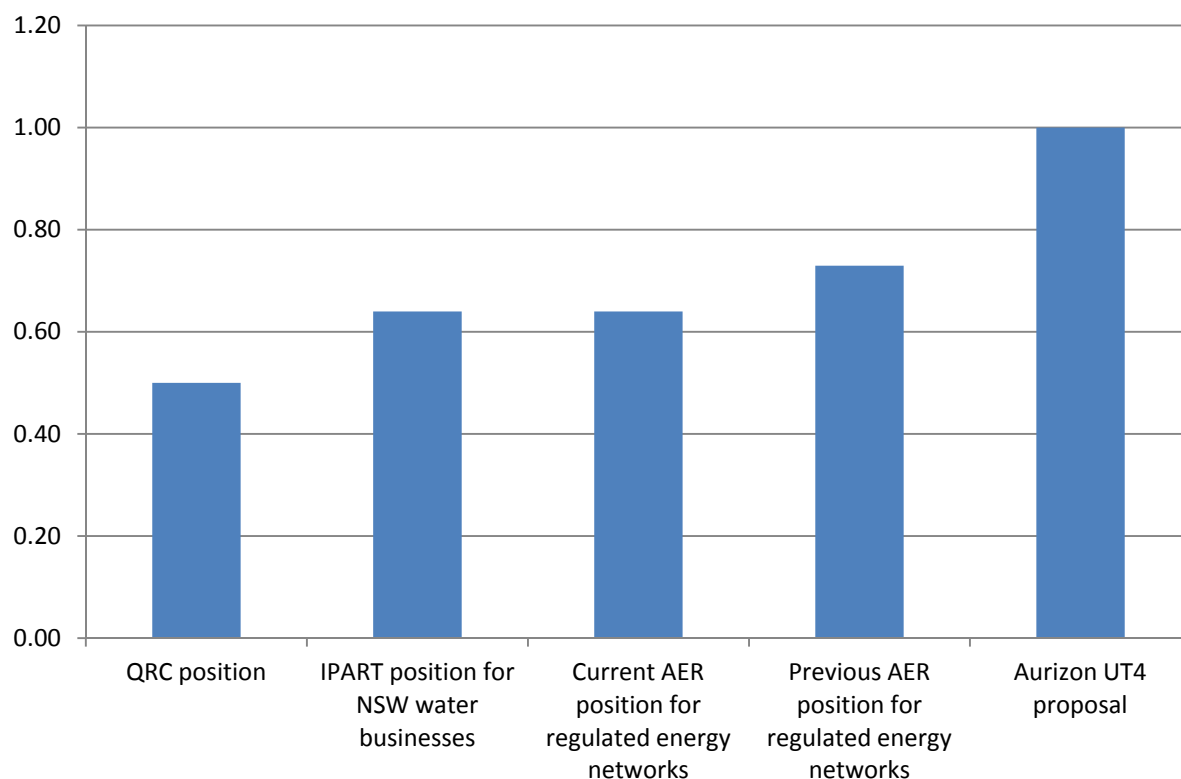
6   Gamma

(a)   Lally/QCA consultation papers on gamma

The QRC supports an approach which takes a balanced view of all available evidence on gamma. This approach is supported by the QRC's expert advisors, and by the QCA's consultant, Dr Lally.

The QRC agrees with Dr Lally that it would be unsafe to simply rely on a single market value study in estimating the value of theta, given the imprecision in the results of these studies, and sensitivity to assumptions made. This is illustrated by Dr Lally's analysis, and also several other recent studies.[28]

The QRC recognises that there is some evidence which may suggest a value higher than 0.5 for gamma, as well as some evidence which might suggest a lower value. Dr Lally suggests that on one view of the evidence, gamma may be as high as 0.85.

The QRC has previously noted that a gamma of 0.5 is likely to be at the lower end of a reasonable range. Having reviewed Dr Lally's most recent report for the QCA, we note that a higher value could certainly be justified. In light of Dr Lally's most recent advice to the QCA, a reasonable range for gamma is likely to be 0.5 – 0.7.

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[28] For example, a recent study conducted by the Economic Regulation Authority of Western Australia as part of its rate of return guideline process produced a wide range of values for theta, from 0.11 to 0.73 using standard econometric techniques and 0.35 to 0.55 using more robust techniques. The ERA noted that "the study showed that the DDO [dividend drop off] methodology is extremely sensitive to: (i) the underlying construction of the sample, (ii) the parametric specification of the model; and (iii) the regression technique applied" (ERA, *Explanatory Statement for the Rate of Return Guidelines: Meeting the requirements of the National Gas Rules*, 16 December 2013, p 220).

(b)   Matters raised by Aurizon Network at the QCA WACC forum

In contrast to the position taken by the QRC and Dr Lally, Aurizon Network continues to take a position on gamma which relies solely on one estimate of the market value of imputation credits, from a dividend drop-off study conducted by their consultant, SFG.

One of the reasons given by Aurizon Network for adopting this position is that it is consistent with the findings of the Australian Competition Tribunal in its May 2011 decision in *Energex*. However it is important to note that in *Energex*, the Tribunal made clear that its decision was based on the material before it in that case, and that the estimation of a parameter such as gamma "*is necessarily, and desirably, an ongoing intellectual and empirical endeavour*".[29] The decision in *Energex* was by no means the final word on gamma, and the Tribunal was at pains not to foreclose future debate and analysis of this issue.

The debate on this issue has indeed moved on significantly since the decision in *Energex*. Significant further analysis has been undertaken, including new conceptual analysis by the AER, and further empirical analysis. As noted by the QRC in its October 2013 submission, the conclusion of the AER following its further analysis was that an appropriate value for gamma going forward is 0.5.[30]

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[29] *Application by Energex Limited (Gamma) (No 5)* [2011] ACompT 9, [45].

[30] AER, *Better Regulation: Rate of Return Guideline*, December 2013.

Attachment 1: Comparison of Aurizon Network with US Class 1 Railroads

Factor	Aurizon Network	US Class 1 Railroads
Nature of the product / service	Aurizon Network's submission notes that it is a "single commodity railway". The sole commodity transported over the CQRN is coal.	US Class 1 railroads carry a wide range of commodities. In many cases, US Class 1 Railroads carry commodities for which demand is highly volatile, and exposed to fluctuations in the domestic economy (e.g. motor vehicles and consumer products). This greatly increases the exposure of US Class 1 Railroads to systematic risk. The Association of American Railroads reports that in 2012, shipping of coal accounted for 21.6% of revenue for US Class 1 Railroads. Other commodities shipped included: chemicals (13.5% of revenue); farm products (7.8%); non-metallic minerals (3.9%); food products (8%); motor vehicles and equipment (7.2%) and "miscellaneous mixed shipments" (12.9%).[31] For individual railways, the commodity mix can vary quite considerably. For instance, Canadian Pacific Railway Ltd (which derives 11% of its revenue from coal) gets 21% of its revenue from grain. Some other railways are more reliant on shipping of consumer and industrial products – for example, Burlington Northern Sante Fe received 54% of their revenue from such products, CSX received 57%, and Norfolk Southern 54%.
Nature of customer (public / private; domestic / foreign; business / residential)	Aurizon Network's submission notes that it "primarily services export markets".	For many of the commodities shipped by US Class 1 Railroads, the end-customers are mostly domestic customers. Therefore the US Class 1 Railroads are generally highly exposed to domestic demand fluctuations. For example, in relation to coal, which accounts for over 20% of revenue for US Class 1 Railroads, consumption of US produced coal is predominantly domestic (i.e. it used for domestic power generation). The US Energy Information Administration reports that in 2011, over 90% of total coal distributions in the US were to domestic destinations. Railroads moved around 72.5% of domestic coal, with the remainder accounted for by trucking, water and other forms of transport.

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[31] Association of American Railroads, *Class 1 Railroad Statistics*, 9 July 2012.

Factor	Aurizon Network	US Class 1 Railroads
		In relation to other commodities, some are more export-oriented than others. For example in relation to farm products, the majority of US corn is domestically consumed but the majority of US wheat is exported (although the level of wheat production is much lower).
Presence of price, revenue or rate of return regulation	Aurizon Network is subject to revenue cap regulation, with an 'unders and overs' adjustment mechanism. This form of regulation means that Aurizon Network is insulated from revenue risk. The regulatory framework also includes various mechanisms which protect Aurizon Network from cost risk. These include 'review events', scope for revision of cost forecasts in certain circumstances, and capital expenditure pre-approval mechanisms.	US class 1 railroads are not subject to ex ante revenue, price or rate of return regulation. Therefore, US Class 1 Railroads are not protected from volume and cost risk to nearly the same degree as Aurizon Network. Prior to the 1970s, rates charged by US class 1 railroad operators were subject to ex ante regulation by the Interstate Commerce Commission (ICC). However through the 1970s, a series of reforms were implemented which provided for deregulation of freight rail rates. The Railroad Revitalization and Regulatory Reform Act of 1976 provided for greater latitude in the setting of freight rates and in particular allowed freedom to set rates for traffic where there was competition. The Staggers Rail Act of 1980 went further by providing railroads with a high level of freedom in setting rates, allowing railroads the right to negotiate private rate contracts with shippers, and decreasing the difficulty for railroads in abandoning unprofitable rail lines. Since the passage of the Staggers Rail Act in 1980, freight rail rates have been subject to ex post review only, with such review only occurring where a complaint is made by a shipper regarding the reasonableness of a rate being charged. Shippers may appeal to the US Surface Transportation Board for rate relief, but only where: (i) the railroad operator does not face competition from other railroads or other transportation modes on a particular segment (i.e. there is market dominance on that segment); and (ii) the rate being charged on that segment is unreasonable. A finding of market dominance will only be made if the ratio of revenue to variable cost on a segment is greater than 180 per cent, *and* based on a qualitative analysis of intramodal and intermodal competition, the railroad can be shown to be dominant. Where a railroad is found to be dominant, the reasonableness of rates being charged will be assessed by reference to the degree by which revenues derived from traffic exceed long-run marginal cost. The US Surface Transportation Board may exempt railroads from the application

Factor	Aurizon Network	US Class 1 Railroads
		of the ex post review mechanism in cases where it is not necessary to carry out the rail transportation policy, and when the railroad transaction is either limited in scope or the application of the statute is not needed to stay the abuse of market power. A number of exemptions have been made by the STB, including in relation to shipping certain agricultural products. Since 1996, 45 rate cases have come before the US Surface Transportation Board. In only 11 of those cases has the STB found rates to be unreasonable.[32] This regulatory regime is clearly very different to that applying to Aurizon Network. There is no revenue cap to protect the railroads from volume and cost risks. The difference in the regulatory regimes is likely to at least partly reflect the fact that US class 1 railroads are much more constrained by competition, both from other railroads and from other modes of transport (see below re market power).
Pricing structure (extent of fixed component)	Aurizon Network's price structures comprise a significant fixed take or pay component. Take or pay applies across AT2, AT3 and AT4, which account for the vast majority of Aurizon Network's revenue. According to Aurizon Network, in UT4, these tariff components will account for 87% of revenue in the Newlands system, 88% in the Moura system, 86% in the GAPE system, 75% in the Goonyella system and 73% in the Blackwater system.	Aurizon Network's submission acknowledges that: "*It is difficult to make any direct comparisons between Aurizon Network and US Class 1 Railroads as the pricing structures employed by the latter are not known, and are likely to vary across different service offerings.*" It is indeed difficult, if not impossible, to draw any comparison between Aurizon Network and the US Class 1 Railroads on this point. All that can be said is that price structures and price levels vary considerably between railroad operators in the US and between the various types of commodities that are shipped. A study by Christensen Associates for the US Surface Transportation Board indicates that the US Class 1 Railroads implement differential pricing between commodities and between geographic areas (i.e. charging different mark-ups over marginal cost to different user groups), in order to provide for recovery of fixed costs and ensure revenue adequacy. Unsurprisingly, Christensen Associates find that rates generally tend to be lower in areas where there is greater competition from other railroads or other transport options, which suggests that a greater

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[32] http://www.stb.dot.gov/stb/industry/Rate_Cases.htm

Factor	Aurizon Network	US Class 1 Railroads
		share of fixed costs are borne by users in areas where there is less competition. This suggests that the means of recovering fixed costs is very different between the US Class 1 Railroads and Aurizon Network.
Contract duration	Long-term take or pay contracts, typically 10 years duration.	Aurizon states that: "*it is understood that US Class 1 railroads do enter into long-term contracts although the specific duration of these contracts is not known*". As with pricing structures, it is likely that contract durations vary considerably between US railroad operators and between the types of commodities shipped. Data on volumes of commodities shipped by rail shows that volumes have changed significantly over time – for example between 2007 and 2012, the volume of coal shipped by rail in the US fell by 15%, from around 850 million tonnes to 722 million tonnes. This suggests either the use of long-term contracts is limited, or where such contracts are entered into they do not protect the rail operators from volume risk. Incenta states that its investigations reveal that in fact long-term contracting is not common among US Class 1 Railroads.[33]
Degree of monopoly power / market power	Aurizon Network is a monopoly service provider. Queensland coal producers do not face any realistic alternatives.	One of the reasons behind the deregulation of freight rail rates in the US was that railroad operators were increasingly constrained by competition, particularly from other modes of transport such as trucking and water transport. Rail is by no means the only transport option available to shippers. For each of the commodities shipped by US class 1 railroads, they compete to varying degrees with other railroads and other modes of transport. For agricultural commodities, rail is by no means the dominant form of transport. In 2010, rail accounted for only 29% of all grain movements in the US, with the rest accounted for by trucking (58%) and barge (13%). Rail's share of movements

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[33] Incenta Equity Beta Report, p 35.

Factor	Aurizon Network	US Class 1 Railroads
		for individual grains varies – in 2010 its share of movements for corn was 22%, for wheat 70%, for soybeans 27%, for sorghum 30%, and for barley 54%.[34] For coal, rail accounts for a higher share of movements. In 2012, rail accounted for around 70% of coal movements in the US. In 2006, Christensen Associates undertook a detailed study of competition in the US freight railroad industry for the US Surface Transportation Board.[35] One of the key findings made by Christensen and Associates was that over the period 1987 to 2006, US Class 1 Railroads did not appear to be earning above normal profit – given that there was no ex ante regulation of rates over this period, this suggests that the US Class 1 Railroads were significantly constrained by competition.
Growth options, particularly options to adopt new products – Lally states that the existence of such growth options should increase the firm's sensitivity to economic shocks, as the value of these growth options should be more sensitive to the economy	Aurizon Network states that it has growth options arising from expansion plans, as well as replacement of existing network infrastructure. However, the value of these options is linked to the state of international coal markets, rather than to the Australian domestic economy.	US class 1 railways are likely to have options to expand their networks. An example of a network expansion project being considered by one of the US Class 1 Railroads is the Southern California International Gateway, which would involve an extension of rail lines much closer to the Port of Los Angeles – this expansion project is being planned by Burlington North Santa Fe, and has been approved by the Los Angeles Harbor Commission. Additionally, US class 1 railways may have options to use their existing networks for shipping a wider range of commodities. For example Burlington North Santa Fe has recently indicated that it intends to start using its existing network to ship crude oil from new oil fields. BNSF states that:[36] "*Rail's flexibility is making it possible to move inbound drilling supplies to and outbound production from new oil and gas fields. The supply and demand for crude oil are growing dramatically, and BNSF's significant investments in facility and line expansion have helped prepare it to serve these markets. BNSF's rail network is vast and readily available to connect domestic sources of oil and gas*

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[34] US Department of Agriculture, *Transportation of U.S. Grains: A Modal Share Analysis 1978-2010 Update*

[35] Laurits R. Christensen Associates, *A study of competition in the US Freight Railroad Industry and analysis of proposals that might enhance competition: Revised Final Report,* prepared for The Surface Transportation Board, Washington, DC, November 2009.

[36] Burlington Northern Santa Fe Railway, 2012 Annual Review

Factor	Aurizon Network	US Class 1 Railroads
		supply with key areas of demand. BNSF touches 16 of the top 19 oil-producing counties in western North Dakota and five of six in eastern Montana through 1,000 miles of rail lines in the Williston Basin. BNSF has the presence and the network to serve the major North American shale plays – including Niobrara, Permian Basin, Eagle Ford and the Anadarko Basin shales of Granite Wash, Woodford and Mississippian Lime – and is positioned to act as a gateway to the Canadian oil sands. By the end of 2014, BNSF will offer service from shale plays throughout North America to more than 50 destinations that serve inland and coastal refineries and ports, through both unit train and manifest service." These options to diversify into shipping of different commodities are unlikely to be available to Aurizon Network (or at least not to the same extent). These growth options may be particularly sensitive to movements in the economy, to the extent that demand for those other commodities is particularly volatile.
Operating leverage – Lally notes that the direction of the relationship between operating leverage and risk exposure is unclear, and may differ between firms with monopoly power and those in competitive markets	Aurizon states that it has high operating leverage. However it is not clear what this implies about its exposure to risk. While high operating leverage may imply high risk if revenues are subject to significant variations, or if costs can increase substantially and the entity is unable to pass the increase to customers, neither of these are true for Aurizon Network.	As noted by Aurizon in its submission, it is not possible to directly estimate operating leverage for US class 1 railroads. Aurizon presents a proxy measure based on the relationship between operating income and sales, but says that it should be interpreted with caution given that it is a proxy measure. This proxy measure suggests that US class 1 railroads may also have high operating leverage. If it is true that US class 1 railroads do in fact have high operating leverage, it is unclear what this means in terms of their exposure to risk, or comparability with Aurizon Network, given Lally's comments about the lack of any clear relationship.