

## QRC's WACC submission

---

This section responds to Aurizon Network's rate of return proposal for UT4.

Aurizon Network has taken an approach to the rate of return which leads to a significant upward bias in the overall estimate. Aurizon Network has:

- proposed a range for most parameters in the weighted average cost of capital (**WACC**) formula in which, in most cases, even the lower bound of the range is excessive; and
- proposed that the upper bound of the range be adopted in each case.

The adoption of upper bound values has no justification either in economic theory or in the statutory scheme. It is an approach which puts undue emphasis on Aurizon Network's commercial interests, at the expense of the interests of network users and the promotion of efficient investment.

Aurizon Network's proposed range also does not properly reflect the regulatory environment in which it operates. The QRC has previously sought to highlight the very low risk nature of Aurizon Network's business and the trend of risk reduction achieved by QR / Aurizon Network through incremental changes to its regulatory arrangements, a trend which Aurizon Network has sought to extend in its UT4 proposal. Aurizon Network's rate of return proposal for UT4 does not reflect this trend of "de-risking", nor does it reflect the QCA's latest thinking in terms of the relationship between risk (and compensation for risk) and the form of regulatory arrangements.<sup>1</sup>

Further, on a number of key parameters, Aurizon Network's proposal does not reflect a balanced view of the available empirical evidence. This is most apparent in Aurizon Network's approach to the market risk premium (**MRP**) and gamma.

The QRC's view on the appropriate rate of return for UT4 is summarised in Table 1 below, and the detailed reasons for this view are set out in the remainder of this section.

**Table 1: Summary of QRC view on UT4 WACC parameters**

Parameter	QRC proposed value	Summary of reasons
Gearing	0.55	No change proposed to UT3 gearing nor to Aurizon Network's proposal
Risk free rate	2.98%	QCA should maintain its approach of using 5-year CGS yields to measure the risk-free rate (refer to note below).
Debt margin	2.60%	The debt margin should be based 5-year corporate bond yields, as this better reflects efficient financing practices of infrastructure businesses such as Aurizon Network (refer to note below).

<sup>1</sup> QCA, *Discussion Paper – Risk and the Form of Regulation*, 22 November 2012 (the **Form of Regulation Paper**).

Debt raising costs	0%	No justification or evidence is provided in support of Aurizon Network's claim for debt raising costs. In the absence of any evidence as to the efficient cost of raising debt finance, no allowance should be made. If any allowance is to be made, this should be based on a careful assessment by the QCA of the efficient costs that are likely to be incurred in raising debt.
MRP	5% - 6%	A balanced view of the empirical evidence supports a range for the MRP of between 5% and 6%.
Equity beta	0.4 – 0.6	Given the very low risk nature of Aurizon Network's business and the trend of risk reduction achieved by QR / Aurizon Network, a reduction in the equity beta is justified, not an increase as proposed by Aurizon Network. The available evidence supports a range for the equity beta of between 0.4 and 0.6.
Gamma	0.50	A balanced of the empirical evidence supports a value for gamma of 0.5, as previously adopted by the QCA.
<b>Nominal vanilla WACC</b>	<b>5.65%</b>	<b>Combining the midpoints of the above parameter values results in a nominal vanilla WACC for UT4 of 5.65%.</b>

Note: risk-free rate and debt margin values are averaged over the last 20 business days of June 2013 (the 20 business days to 28 June 2013).

This remainder of this section is structured as follows:

- Section 1 addresses Aurizon Network's arguments regarding the framework for estimating the rate of return. This section will demonstrate that none of the "framework issues" identified by Aurizon Network support the approach it has taken to estimating the rate of return;
- Section 2 addresses Aurizon Network's proposal for each of the WACC parameters;
- Section 3 sets out the QRC's alternative proposal for the UT4 WACC; and
- Section 4 provides comments in relation to the split cost of capital method.

This submission should be read in conjunction with the supporting expert reports from Professors McKenzie and Partington from the University of Sydney and Mr Alex Sundakov of Castalia. Professors McKenzie and Partington are experts in finance theory and have advised the AER on a number of occasions in relation to rate of return issues. Mr Sundakov has deep experience in advising on financing arrangements for infrastructure businesses both in Australia and internationally.

# 1 Rate of return framework issues

---

## 1.1 Legislative framework

Aurizon Network's submission refers to the pricing principles in section 168A of the QCA Act, which state that the price of access to a service should (among other things):

... generate expected revenue for the service that is at least enough to meet the efficient costs of providing access to the service and include a return on investment commensurate with the regulatory and commercial risks involved...

Aurizon Network appears to rely heavily on the words "at least", as they appear in section 168A of the QCA Act. It is argued that these words are particularly important in this case given what Aurizon Network claims to be the "asymmetric consequences of error".<sup>2</sup> The argument appears to be that the consequences of error in estimating the WACC are asymmetric, in the sense that the consequences of under-estimation are greater than the consequences of over-estimation, meaning that the QCA should err on the upside when estimating the WACC. In other words, Aurizon Network seems to be arguing that it is better to over-estimate, rather than under-estimate, the WACC.

The QRC does not agree that the consequences of under-estimating the WACC are necessarily greater than the consequences of over-estimation, and we note that there is no evidence in Aurizon Network's submission that goes to support this proposition.

Further, the use of the words "at least" in the first of the pricing principles in section 168A of the QCA Act does not support a presumption of over-compensating a service provider to reflect asymmetric risk. The QRC notes that the Expert Panel report which recommended the introduction of a similar provision in the national energy laws (on which the QCA Act pricing principles appear to have been modelled<sup>3</sup>) expressly rejected such a presumption. The Expert Panel commented:<sup>4</sup>

The Panel does not accept the proposition that the risks or costs of regulatory error are necessarily or predominately asymmetrical thereby requiring a presumption in favour of over-compensating a service provider in order to encourage new investment outcomes. While the Panel acknowledges that there are risks associated with potential under- and over-investment arising from regulation, this risk and subsequent cost should be assessed in light of on the circumstances in each case, rather than by means of a broad presumption.

As noted by the Expert Panel, whether the risk of under-estimation is greater or less than the risk of over-estimation entirely depends on the circumstances. It cannot simply be presumed that there should be a tendency towards over-estimation of costs, on the basis that the risks associated with under-estimation are greater.

As will be discussed below, the QRC considers that in the present case, the risks associated with over-estimation of the WACC (and costs more generally) are particularly high. Over-estimation of the WACC will mean that network users will be paying access charges which exceed the efficient cost of providing access, which will lead to less than

---

<sup>2</sup> Aurizon submission, Volume 3, p 104

<sup>3</sup> The pricing principles which now appear in section 168A were inserted in 2008 by the *Queensland Competition Authority Amendment Act 2008*. This followed a series of reforms to the national energy regulatory frameworks which included the insertion of similar provisions in the National Electricity Law and the new National Gas Law in 2007 and 2008 respectively, following recommendations made in the 2006 Expert Panel report.

<sup>4</sup> Beale R., Houston G., Kenny P., Morton E. and Tamblin J., *Expert Panel on Energy Access Pricing: Report to the Ministerial Council on Energy*, April 2006, p 112.

efficient use of rail network assets and under-investment in complementary facilities, such as mine and port infrastructure. Thus, over-estimation of the WACC could have very significant economic implications across the entire Queensland coal supply chain.

Moreover, given the way in which Aurizon Network seeks to be compensated for a return on new investments under its proposed investment framework (with the likelihood that any substantial new investment will be subject to a premium above the regulatory WACC), the risks associated with under-estimating the regulatory WACC would appear to be less than what is claimed. Given that the regulatory WACC is unlikely to be determinative of the rate of return earned on new investment if the proposed investment framework is accepted, it seems unlikely that any reduction in the regulatory WACC would have any practical impact on incentives for this new investment.

It should also be noted that the first of the pricing principles in section 168A is a composite phrase, combining two principles which often appear separately in other statutory schemes. The first part refers generally to the recovery of efficient costs, while the second refers specifically to the rate of return. In a number of other statutory schemes where the same or similar principles appear – such as the National Electricity Law and National Gas Law – they are listed as separate principles. For example, the revenue and pricing principles in the National Electricity Law include two separate principles, as follows:<sup>5</sup>

- (2) A regulated network service provider should be provided with a reasonable opportunity to recover at least the efficient costs the operator incurs in—
- (a) providing direct control network services; and
  - (b) complying with a regulatory obligation or requirement or making a regulatory payment.

[and...]

- (5) A price or charge for the provision of a direct control network service should allow for a return commensurate with the regulatory and commercial risks involved in providing the direct control network service to which that price or charge relates.

The key legislative requirement for the rate of return is that set in the second part of the composite phrase in sub- section 168A(a) – *that the return on investment included in the access price be commensurate with the regulatory and commercial risks involved in providing access*. This should be the touchstone for assessment of Aurizon Network’s rate of return proposal.

## 1.2 The network user’s perspective

Aurizon Network argues that the relevant perspective in assessing the rate of return is the investor’s perspective.

The QRC accepts that what is relevant is the return that would be expected by investors for investing in a business with a similar degree of exposure to market risk as Aurizon Network. However, this does not imply that only Aurizon Network’s commercial interests are relevant in estimating the required rate of return. As in all aspects of Aurizon Network’s draft undertaking proposal, there must be an appropriate balance between Aurizon Network’s legitimate business interests, the interests of network users, and the public interest.<sup>6</sup>

<sup>5</sup> National Electricity Law, s 7A. See also: National Gas Law, s 24 (particularly sub-sections (2) and (5)).

<sup>6</sup> QCA Act, s 138.

It must be borne in mind that in the current context, the risks of over-estimating the required rate of return are just as great as (if not greater than) the risks of under-estimation. It is true that, at least in theory, a rate of return that is set too low may lead to under-investment by Aurizon Network. However it is equally true that a rate of return for Aurizon Network that is set too high may lead to under-investment by its customers in complementary facilities, and a distortion of competition in upstream or downstream markets. Clearly it would not be in the public interest (nor would it be in the interests of Aurizon Network or access seekers) for there to be less than efficient investment in complimentary facilities across the Queensland coal supply chain, or for the international competitiveness of Queensland coal producers to be compromised. Therefore the perspective of Aurizon Network's customers is just as important as the investor perspective.

Moreover in light of the investment framework proposed by Aurizon Network for UT4, any change in the regulatory WACC is likely to have limited impact on incentives for new investment by Aurizon Network. Since under the proposed investment framework there would be no obligation on Aurizon Network to fund expansion projects at the regulatory WACC, and given the scope for Aurizon Network to negotiate alternative access terms should the need for new investment arise, it seems unlikely that the regulatory WACC setting will have any real bearing on Aurizon Network's investment decisions.

From the perspective of network users, it is critical the regulatory WACC properly reflect the regulatory and commercial risks involved in providing access, and be no higher than is necessary to compensate Aurizon Network for these risks.

### 1.3 Estimation issues

The QRC acknowledges that the available methods for estimation of some WACC parameters can be imprecise, and that there can be scope for estimation error.

However, it does not follow that in estimating WACC parameters there should be a tendency towards upper range estimates. This approach potentially creates a significant bias in the process for estimating the rate of return, and consequently may lead to outcomes which do not promote the economically efficient operation of, use of and investment in, significant infrastructure by which services are provided. The approach advocated by Aurizon Network creates the potential for distortion of investment incentives through introduction of a systematic upward bias.

There is no reason to expect that any estimation errors will necessarily be skewed in one direction or another, and therefore it is not appropriate to bias the overall estimate in one particular direction to account for such errors. While it is possible that one particular parameter may be under-estimated, it is equally possible that other parameters may be over-estimated such that the overall WACC is reasonably commensurate with the risks involved in providing access – in short, any errors in estimation may be expected to be roughly equally distributed in either direction and thus 'balance out'. Therefore it is far more appropriate, and more consistent with the requirements of the QCA Act, for a regulator to determine a WACC based on its best estimate of the various parameters, and not introduce any bias in either direction into the estimation process.

As noted above, the QRC does not agree that the consequences of estimation error will necessarily be asymmetric. Given the nature of services provided by Aurizon Network, and the favourable investment framework embedded in the draft undertaking (including the absence of an obligation to fund capital expenditure for expansions), the risks associated with over-estimating the WACC are arguably greater than the risks associated with under-estimation in this case.

Therefore, to the extent that there is some risk of estimation error, it would not be appropriate to account for this by adoption of upper range estimates.

The accompanying expert report of Professors McKenzie and Partington notes the potential for error in adjustments designed to upwardly bias the WACC parameters, and the inadequate justification for seeking to do this.<sup>7</sup> Professors McKenzie and Partington do not recommend use of upper range estimates for CAPM input parameters because of the bias this potentially creates.

## 1.4 Financial market conditions

Aurizon Network argues that the world economy and financial markets are currently in a highly uncertain state and that this exacerbates the risk of estimation error and thus justifies a further upward adjustment to the WACC.<sup>8</sup>

For the reasons set out above, the QRC does not agree with Aurizon Network's proposed upward adjustments to the WACC to account for estimation error. Therefore, to the extent that estimation error may be "exacerbated" by uncertainty around the financial and economic outlook, this cannot justify any further upward adjustment to the overall WACC estimate.

To the extent that there is market uncertainty, this may be relevant to the estimation of individual parameters, such as the debt risk premium, market risk premium or the risk free rate. Each of the individual rate of return parameters is discussed below, in the context of the most recent evidence of current financial market conditions.

However there does not appear to be any economic or other justification for making an arbitrary upward adjustment to the overall WACC estimate.

As noted above, Professors McKenzie and Partington do not recommend making the types of arbitrary adjustments proposed by Aurizon Network to account for either potential estimation error or uncertainty in the financial market outlook.<sup>9</sup>

Further, McKenzie and Partington reject the claim that current market conditions are in any way 'anomalous' or highly uncertain, such that some adjustment to the WACC may be justified.<sup>10</sup> They note that on one view of the historical evidence the current environment is nothing more than a return to 'normal', after a period of unusually high interest rates. McKenzie and Partington note that while interest rates are indeed lower now than in recent years, this does not suggest any abnormality or anomaly in market conditions. Rather, in light of the long term history of interest rates, it would appear that it is not current rates that are abnormally low, but instead it is the rates in recent history that have been abnormally high.<sup>11</sup>

## 1.5 Regulatory context and Aurizon Network's exposure to risk

As noted above, the key legislative requirement for the rate of return is that it be commensurate with the regulatory and commercial risks involved in providing access. It is therefore critical that the assessment of Aurizon Network's rate of return proposal be undertaken in the context of the regulatory framework and Aurizon's exposure to risk factors under this framework.

<sup>7</sup> McKenzie & Partington, *Review of Aurizon Network's Draft Access Undertaking*, October 2013, pp 14-15.

<sup>8</sup> Aurizon submission, Volume 3, p 126.

<sup>9</sup> McKenzie & Partington, *Review of Aurizon Network's Draft Access Undertaking*, October 2013, pp 14-15.

<sup>10</sup> McKenzie & Partington, *Review of Aurizon Network's Draft Access Undertaking*, October 2013, pp 15-17.

<sup>11</sup> McKenzie & Partington, *Review of Aurizon Network's Draft Access Undertaking*, October 2013, p 15.

In the Form of Regulation Paper the QCA expressly recognised that the form of regulation (and related ancillary mechanisms) will affect the variability and hence the risk of a regulated firm's return.<sup>12</sup>

The QRC has previously sought to highlight the very low risk nature of Aurizon Network's business and the trend of risk reduction achieved by QR / Aurizon Network through incremental changes to its regulatory arrangements. Some of the risk protections introduced by Aurizon Network in previous undertakings have included:

- introduction of the revenue cap to address volume risk;
- increased scope of take or pay arrangements;
- introduction of capital expenditure pre-approval processes;
- accelerated depreciation, to reduce asset stranding risk; and
- broadening the scope of review events.

Aurizon Network has sought a continuation of this trend in UT4, through introduction of additional risk protection mechanisms. For example, Aurizon Network has proposed a further reduction in the scope for optimisation of the asset base, and a further broadening of the scope of review events.

The Castalia Report identifies the key risk protection mechanisms embedded in Aurizon Network's draft undertaking (and the approved standard access agreements), including those that have been introduced in previous periods and those that are new in Aurizon Network's proposal for UT4. This analysis highlights the fact that many of these risk protection mechanisms do not apply to other regulated businesses, and thus Aurizon Network's exposure to risk is in fact much lower than many of its infrastructure peers. The analysis also highlights that Aurizon Network's risk allocation has clearly been sought to be reduced in UT4 when compared to UT3.

The accompanying report from Castalia finds that Aurizon Network's exposure to risk is in fact materially lower than that of all the comparator businesses considered in that report (these include three energy network businesses, the Sydney Desalination Plant, and Telstra). The reduced exposure to risk of Aurizon Network is largely due to the range of risk protection mechanisms built into its regulatory framework, including the revenue cap, take or pay arrangements and the various protections from expenditure risk. Castalia conclude that Aurizon Network's reduced exposure to risk means that its equity beta should be lower than that allowed for the comparator businesses (this is discussed further below).

## 1.6 Risk factors not accounted for in the regulatory WACC

Aurizon Network claims that, notwithstanding the very significant protections from risk provided in the regulatory framework, it remains exposed to a number of risks, many of which are not accounted for in the regulatory WACC.

The QRC does not accept that Aurizon Network is exposed to all of these additional sources of risk, or that where it is exposed to such risk, that this is not accounted for in the regulatory WACC. For example any risk of asset stranding associated with reduced demand could be classified as a systematic risk and therefore would be compensated for through the CAPM/WACC framework.

To the extent that some risks are diversifiable (such as any risk of optimisation associated with a deterioration in network condition), then these risks are not accounted for in the CAPM/WACC framework. The CAPM framework is not intended to compensate investors for risks that are diversifiable and which can be managed by the business. The

<sup>12</sup> QCA, *Discussion Paper – Risk and the Form of Regulation*, 22 November 2012, vi.

framework does not compensate Aurizon Network for diversifiable risks because it is not appropriate to do so. Therefore it is not clear how the existence of these risks (to the extent that they do in fact exist) should be relevant to the QCA's consideration of the appropriate rate of return. Nor does the lack of compensation for diversifiable/manageable risks indicate that it is inappropriate for Aurizon Network to bear these risks.

Finally, in relation to regulatory risk, the QCA does not agree that this is a material 'risk', or that it is necessarily asymmetric in nature. To the extent that there is risk of regulatory error, there is no reason to expect that this would be directionally biased one way or the other. Moreover, for the reasons set out in section 1.5 above, the QRC considers that rather than imposing risk on Aurizon Network, the regulatory framework in fact provides significant protection from systematic risk factors.

## 1.7 Conclusions on the rate of return framework

The QRC considers that there is no justification for Aurizon Network's approach to the rate of return calculation, which involves adopting the upper bound of its range of estimates for each parameter. This approach is not supported either by economic theory, or by the statutory scheme.

The legislation simply requires that the rate of return be commensurate with the regulatory and commercial risks involved in providing access. This implies that the rate of return for Aurizon Network must reflect the nature and degree of its exposure to regulatory and commercial risks, taking into account the protections from risk afforded to it by the legislative framework and its proposed draft undertaking.

Professors McKenzie and Partington find no merit, from the perspective of economic and finance theory, in Aurizon Network's proposal to use upper bound values for WACC parameters. Their report notes that by definition, the use of high end parameters for the WACC will result in a WACC that is upwardly biased.<sup>13</sup>

Professors McKenzie and Partington also find no merit in any of the arguments advanced by Aurizon Network in support of its proposed approach. Their report notes:<sup>14</sup>

Aurizon present various arguments about why the WACC should be adjusted upwards and in particular that high end parameter values should be used in computing the WACC. Aurizon's arguments include matters such as adjustments for estimation error, adjustments for unsystematic and stranding risks and adjustments arising from current conditions in financial markets. In the light of our foregoing analysis none of these arguments are convincing and in particular we see no merit in using the upper bound of a range of estimates for each WACC parameter.

The remainder of this section provides an assessment of Aurizon Network's proposal for each WACC parameter, having regard to the most recent empirical evidence, expert analysis from Professors McKenzie and Partington, and the framework considerations outlined above.

---

<sup>13</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 5.

<sup>14</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 20.

## 2 Assessment of Aurizon Network's proposal for individual WACC parameters

---

### 2.1 Risk-free rate

#### (a) Averaging period for measurement of the risk-free rate

Aurizon Network's submission includes a value for the risk-free rate (and also the debt margin) which it refers to as 'indicative', as it is based on an indicative averaging period. Aurizon Network says in its submission that it intends to seek confidential approval of its proposed UT4 averaging period from the QCA. It is said that providing confidential advance notice of the averaging period is common regulatory practice.

As the QRC is not privy to the confidential discussions between Aurizon Network and the QCA on this matter, we do not know whether an averaging period has been agreed, and if so when the period was or will be.

If Aurizon Network has not yet nominated a period, then they should be required to do so as soon as possible. The standard regulatory practice is for the service provider to nominate a future averaging period at the *beginning* of the regulatory review process, and for this period to be reasonably close to the commencement of the new regulatory period. It is not standard practice for the service provider to be allowed to delay nomination of the averaging period until well into the review process.

If Aurizon Network is not prepared to nominate an averaging period, or if Aurizon Network's proposal for the averaging period is otherwise unreasonable, then the QCA should itself choose a period for measurement of the risk-free rate and debt margin.

The QRC considers that a reasonable choice of period would be the last 20 business days of June 2013. This would be the last 20 business days preceding the commencement of the UT4 undertaking period, and would thus be consistent with the standard practice of choosing a period that is reasonably close to the commencement of the new regulatory period.

In the remainder of this section, we provide estimates of the risk-free rate and debt margin over Aurizon Network's 'indicative' averaging period (the 20 business days to 30 November 2012), and over our preferred averaging period (the last 20 business days of June 2013).

#### (b) Method of measuring the risk free rate

The QRC continues to support the QCA's approach of seeking to match the term of the risk free rate and debt margin to the length of the regulatory cycle (i.e. five years). This approach is consistent with previous QCA practice and with the expert advice of Associate Professor Lally.<sup>15</sup>

Aurizon Network argues that a five-year term for the risk-free rate is not appropriate, and instead adopts a ten-year term. Aurizon Network criticises the expert analysis of Associate Professor Lally which supports the adoption of a term matching the length of the regulatory cycle.

Aurizon Network's proposal for a longer term risk-free rate appears to be based on an assertion that investors in the infrastructure asset class generally view these types of investment as longer term (i.e. ten years rather than five years). However no evidence is provided by Aurizon Network in support of this proposition.

The available evidence suggests that for regulated infrastructure businesses, the average debt term at issuance may in fact be significantly less than ten years. Analysis

---

<sup>15</sup> Lally M, *The Appropriate Term for the Risk Free Rate and the Debt Margin*, 27 April 2010.

undertaken by the AER in its 2008/09 review of WACC parameters indicated that the average debt term at issuance for regulated energy network businesses was (at that time) around seven years.<sup>16</sup>

Further, recent debt raising activities by Aurizon Holdings suggest that it in fact raises finance for much shorter periods than ten years. Aurizon Holdings has recently announced that \$3.0 billion of floating rate facilities will be placed at Aurizon Network with a spread of tenors up to five years.<sup>17</sup>

Therefore, the QRC submits that the QCA should maintain its previous approach of adopting of five-year term to maturity for the risk-free rate. On this basis, we estimate the risk free rate for the 20 business days ending 30 November 2012 (the averaging period used by Aurizon Network) to be 2.76%.<sup>18</sup> Measured over the 20 business days to 28 June 2013, the risk free rate is 2.98%.

## 2.2 Debt margin

### (a) Proposed term to maturity

The QRC considers that the estimate of the debt margin should also be based on a five year term to maturity. This approach would align the assumptions regarding debt financing practices with the term of the regulatory period, and would also be more consistent with recent evidence of Aurizon Network's actual debt financing practices and the practices of other regulated businesses (referred to above).

Adopting a five year term to maturity would be consistent with the practice of several other state regulators. For example IPART adopts a five year term to maturity for measuring the cost of debt, as recommended by its consultant, Professor Kevin Davis.<sup>19</sup> The Economic Regulation Authority of Western Australia also adopts a five year term to maturity.

The QRC notes that the AER has also recently indicated that it will use a shorter term of debt assumption in estimating the debt margin for energy network businesses. Whereas previously the AER has assumed a ten year term of debt for these businesses, it has recently signalled that it will adopt a seven year term of debt assumption in future. The AER has given several reasons for this, including:<sup>20</sup>

- as noted above, analysis undertaken by the AER indicates that the average debt term at issuance for regulated energy network businesses is around seven years;
- in recent years, there has been a lack of data on ten-year bond yields, including because Bloomberg has ceased publishing BBB fair value estimates past seven years and CBASpectrum has ceased publishing fair value estimates for all durations and across all credit ratings. This has been at least partly attributable to less issuance and trading of longer dated corporate bonds in the wake of the global financial crisis. The lack of data on longer dated bond yields has led to intense debate around how best to estimate a ten-year debt margin; and

---

<sup>16</sup> AER, *Final Decision: Electricity transmission and distribution network service providers: Review of weighted average cost of capital parameters*, 1 May 2009, pp 159-164.

<sup>17</sup> Aurizon Holdings, 'Aurizon completes its debt refinancing', ASX Announcement, 27 June 2013.

<sup>18</sup> This estimate is based on the average annualised yield on five year Commonwealth Government Securities over this period, sourced from the Reserve Bank of Australia (Table F16).

<sup>19</sup> IPART, *Developing the approach to estimating the debt margin – Draft Decision*, February 2011; IPART, *WACC methodology: Research – Draft Report*, September 2013.

<sup>20</sup> AER, *Better Regulation: Explanatory Statement: Draft rate of return guideline*, August 2013, pp 105-109.

- the available data suggests that the term premium between seven and ten years is likely to be relatively small.

The QRC therefore submits that the debt margin for UT4, should be based on a five-year term to maturity, in line with the term-to-maturity assumption proposed for the risk free rate. On this basis, we estimate the debt margin for the 20 business days ending 30 November 2012 (the averaging period used by Aurizon Network) to be 3.00%.<sup>21</sup> Measured over the 20 business days to 28 June 2013, the debt margin is 2.60%.<sup>22</sup>

(b) Extrapolation method proposed by Aurizon Network

Alternatively, if a ten-year term to maturity assumption is to be adopted in estimating the debt margin (as proposed by Aurizon Network), then the QCA should not accept the proposed method for extrapolating the Bloomberg seven year BBB yield to estimate a ten-year yield.

Aurizon Network has included two alternative extrapolation methods in its submission:

- **AAA extrapolation method.** This method adds the seven to ten year term premium on AAA bonds (as estimated by Bloomberg), to the seven year BBB bond yield. Since Bloomberg has not estimated yields on ten year AAA rated bonds since June 2010, in order to apply this method the term premium on AAA bonds must be measured over the 20 business days to 20 June 2010. Aurizon Network estimates a term premium of 58 basis points using this method.
- **Matched pairs method.** This method estimates the seven to ten year term premium using pairs of bonds from the same issuer, but with different maturities. VAA (Aurizon Network's consultant) estimates a term premium of 25 basis points using this method.

Aurizon Network states in its submission that it is proposing a range for the debt margin based on these two methodologies, with the bottom of the range given by application of the matched pairs extrapolation method and the top of the range given by application of the AAA extrapolation method. However due to Aurizon Network's approach of adopting the top of the range for each parameter, it is effectively proposing to apply the AAA extrapolation method and place no weight on the matched pairs method.

As noted by Aurizon Network in its submission, the AAA extrapolation method has a major disadvantage in that it relies on data that is now over three years old. Since Bloomberg ceased publishing ten year AAA yields in June 2010, the extrapolation proposed by Aurizon Network using this methodology must rely on data from June 2010.

For this reason, VAA (Aurizon Network's consultant) does not recommend the AAA extrapolation method. VAA states that given the absence of current data on ten year AAA yields, this method simply cannot be applied.<sup>23</sup> VAA instead recommend the matched pairs method of extrapolation.

VAA's recommendation is consistent with recent regulatory practice. Since Bloomberg has ceased publishing AAA yields out to ten years, the AER has moved away from the AAA extrapolation method and has generally applied the matched pairs method.<sup>24</sup>

The QRC submits that Aurizon Network's proposed approach to extrapolation of the debt margin based on AAA spreads cannot be accepted, given that not even Aurizon

<sup>21</sup> Over the 20 business days to 30 November 2012, the average annualised 5-year BBB bond yield was 5.76%. Over the same period, the average annualised 5-year CGS yield was 2.76%.

<sup>22</sup> Over the 20 business days to 28 June 2013, the average annualised 5-year BBB bond yield was 5.58%. Over the same period, the average annualised 5-year CGS yield was 2.98%.

<sup>23</sup> Dr Steven Bishop and Professor R. R. Officer (Value Adviser Associates), *Review of Debt Risk Premium and Market Risk Premium: Prepared for Aurizon*, February 2013, [56].

<sup>24</sup> For example: AER, *Access arrangement final decision, Envestra Ltd, 2013-17*, Part 1, March 2013, pp. 29-30.

Network's own consultant is prepared to support this approach. If any extrapolation is to be applied in order to estimate a ten year debt margin, this extrapolation must be based on the matched pairs method, as recommended by VAA and as adopted in recent regulatory decisions.

As stated above, the QRC considers that both the risk-free rate and debt margin should be calculated applying a 5-year term to maturity, not a 10-year term – if this approach is adopted then there would be no need to consider the issue of extrapolation. However if a 10-year term to maturity is to be applied, then for the reasons set out in this section, the approach to extrapolation should be based on the matched pairs method, not the AAA method.

(c) Proposed allowance for debt raising costs

The QRC does not agree with the inclusion of a debt raising cost allowance of 12.5 basis points in the debt margin.

Aurizon Network has not provided any justification for its proposed allowance, other than to note that it is consistent with previous QCA decisions. There is no evidence that the proposed allowance accurately reflects the costs that would be incurred by a prudent and efficient service provider in raising debt finance.

To the extent that any allowance is to be made for debt raising costs, this should reflect an assessment of the costs an efficient service provider would be expected to incur. There is no evidence to suggest that Aurizon Network's proposed allowance reflects such an assessment.

A more careful and sophisticated process of assessing these costs is undertaken by the AER for energy network businesses. The approach of the AER involves identifying all transaction costs that would be incurred by a prudent and efficient business, and making allowance for these costs through an annual allowance that is included in cashflows, as part of operating expenditure. The allowance made by the AER is typically in the order of 9 to 10 basis points, which is materially lower than what is being claimed by Aurizon Network. An example of a recent application of the AER's methodology is set out in the box below.

**Application of the AER's debt raising cost methodology to APA GasNet**

In its recent access arrangement decision for APA GasNet (March 2013), the AER calculated an allowance of 9.7 basis points per annum for debt raising costs.

To ensure that the transaction costs used in this calculation reflected 'current market conditions', the individual fees associated with a single bond issue (\$250 million), two issues (\$500 million) and three issues (\$750 billion) were updated using a five year window of 'up to date bond data'. The up-front fees were then converted into an annualised allowance using a ten year amortisation period (ie, the same period underlying the return on debt calculation) and the nominal vanilla WACC it had approved for APA GasNet. The annualised allowances calculated by the AER were 10.8 basis points, 9.7 basis points and 9.4 basis points for one, two and three issues respectively.<sup>25</sup>

Having estimated the debt raising cost allowances applying across a number of bond issues, the AER then calculated the number of bond issues that would need to be made by GasNet. It derived this by multiplying the benchmark gearing ratio (60%) by the opening value of GasNet's regulatory asset base (\$617 million). This resulted in an estimated debt level of \$372 million, which equates to approximately 2 bond issues.

The AER therefore concluded that a debt raising cost allowance of 9.7 bppa was appropriate and

<sup>25</sup> AER, *Access Arrangement GasNet Australia (Operations) Pty Ltd 2013-17, Final decision, Part 2*, March 2013, p.137.

included an allowance of \$0.36 million per annum into its GasNet's operating expenditure.

Therefore, the QRC submits that Aurizon Network's proposed allowance for debt raising costs should not be accepted. To the extent that any allowance is to be made, this should be calculated based on careful analysis of the costs that would be incurred by a prudent and efficient business, as is done by the AER. Given the larger scale of Aurizon Network's operations (compared to most energy network businesses), any allowance should be no higher than what is allowed by the AER (i.e. no more than 9-10 basis points).

The QCA should also seek to ensure that there is no double recovery of debt raising costs. In particular, the QCA should ensure that any costs recovered through the corporate cost allowance (e.g. costs associated with investor relations and roadshow activities) are not recovered again through a separate debt raising cost allowance.

## 2.3 Market risk premium

Aurizon Network proposes a range for the market risk premium (**MRP**) of between 6% and 7%. However, as with all WACC parameters, Aurizon Network adopts the upper bound of its range in calculating its proposed rate of return for UT4, which means that it is effectively proposing a value of 7% for the MRP.

Adopting a value of 7% for the MRP would represent a significant departure from past regulatory practice. The QCA (and other regulators) have consistently adopted a value of 6% for the MRP in past decisions, recognising that this reflects the weight of empirical evidence on this parameter.

The QRC would not support an increase in the MRP above 6%. The QRC considers that a reasonable range for the MRP is between 5% and 6%.

A value of no more than 6% is consistent with the recommendation of Professors McKenzie and Partington. McKenzie and Partington state that, if anything, 6% is likely to be an over-estimate of the MRP, given the upward bias in some of the underlying measures (the issue of upward bias is discussed further below).<sup>26</sup>

The key evidence on the MRP is summarised below, and is discussed in further detail in the accompanying expert report of Professors McKenzie and Partington:

- **Historic average excess returns.** Historical data indicates a range for the MRP of approximately 3% to 6%. In a recent report for the AER, Associate Professor Handley estimated the long-run historic MRP to be 3.0% to 4.7% based on geometric averaging, or 4.9% to 6.1% based on arithmetic averaging.<sup>27</sup> The QCA has noted that Ibbotson historical averaging produces an estimate of 6.2%, while Siegel historical averaging (which adjusts for the effects of inflation) produces an estimate of 4.3%, both as at October 2012.<sup>28</sup> However, the QCA and some experts, including Professors McKenzie and Partington, have suggested that these historical estimates may overstate the

<sup>26</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 27.

<sup>27</sup> Handley, *An estimate of the historical equity risk premium for the period 1883 to 2011*, April 2012, p 6.

<sup>28</sup> QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11.

true MRP, due to 'survivorship bias'.<sup>29</sup> Therefore, these estimates should be seen as an upper bound for the MRP.

- **Survey evidence.** Although subject to a number of limitations, surveys can provide some evidence on the MRP expected by market practitioners. A recent survey conducted by Fernandez et al (2013) covering 73 Australian respondents indicated an average MRP value of 5.9% and a median value of 6%.<sup>30</sup> The QCA recently estimated an MRP value of 5.8% as at October 2012 based on survey evidence.<sup>31</sup>
- **Dividend growth model estimates.** Dividend growth models produce varying estimates of the MRP, depending on the dataset, methodology, assumptions and time period used. Recent estimates from dividend growth models indicate a wide range of values for the MRP, from 5.9% to 8.4%.<sup>32</sup> The QCA has recently estimated an MRP value of 8.7% as at October 2012 based on the 'Cornell method', which is a form of the dividend growth model.<sup>33</sup> However, many regulators and experts tend to interpret these results with caution, including because of the sensitivity of the models to input assumptions.<sup>34</sup> McKenzie and Partington note that the dividend growth model has significant problems, and caution that it relies heavily on input assumptions around future growth.<sup>35</sup> The QCA refers to its Cornell estimate as "unequivocally biased upwards", and an "upper bound only" for the MRP.<sup>36</sup>
- **Past regulatory decisions and Tribunal decisions.** Many regulators have consistently adopted a value for the MRP of 6% (see below). Moreover in a number of recent cases, the Australian Competition Tribunal has upheld decisions of regulators to adopt a value of 6%, most recently in *Application by APA GasNet* (decided in September 2013).<sup>37</sup>

**Table 2: Recent regulatory decisions on the MRP**

Regulator	Regulated business	Date of decision	MRP value
ACCC	Telstra (access determination for the wholesale ADSL service)	May 2013	6.0%

<sup>29</sup> Survivorship bias refers to the fact that excess returns are only measured for those stocks that survive, and exclude stocks that no longer exist. Since those stocks that have survived are likely to have been those with higher returns over time, this may create a bias in the estimate of historical returns. Refer to: QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11; Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 24.

<sup>30</sup> Fernandez, Aguirreamalloa and Corres, *Market Risk Premium used in 82 Countries in 2012: A Survey with 7,192 Answers*, IESE Business School Working Paper, CH-14, January 2013.

<sup>31</sup> QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11.

<sup>32</sup> Lally, *The Dividend Growth Model*, 4 March 2013.

<sup>33</sup> QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11.

<sup>34</sup> For example, the AER notes growing scepticism around estimates from dividend growth model estimates, largely for this reason (AER, *Access arrangement final decision, Envestra Ltd, 2013-17, Part 2, March 2013*, pp 138-140).

<sup>35</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 21.

<sup>36</sup> QCA, *Discussion Paper: The Risk-free Rate and the Market Risk Premium*, November 2012, p 11.

<sup>37</sup> *Application by APA GasNet Australia (Operations) Pty Limited (No 2)* [2013] ACompT 8, [227]-[308]. See also: *Application by Envestra Limited (No 2)* [2012] ACompT 3; *Application by WA Gas Networks Pty Ltd (No 3)* [2012] ACompT 12; *Application by DBNGP (WA) Transmission Pty Ltd (No 3)* [2012] ACompT 14.

AER (upheld by ACT <sup>38</sup> )	APA GasNet (access arrangement review 2013-2017)	April 2013	6.0%
AER	Envestra Victoria (access arrangement review 2013-2017)	April 2013	6.0%
AER	Multinet Gas (access arrangement review 2013-2017)	April 2013	6.0%
AER	SP Ausnet (access arrangement review 2013-2017)	April 2013	6.0%
QCA	SEQ Water (Irrigation Price Review 2013-17)	April 2013	6.0%
QCA	SunWater (Irrigation Price Review 2012-17)	May 2012	6.0%
AER	Aurora Energy (electricity distribution price review 2012-2017)	April 2012	6.0%
ERA (upheld by ACT <sup>39</sup> )	Dampier to Bunbury Natural Gas Pipeline (access arrangement review)	December 2011	6.0%
ACCC	Telstra (access determinations for declared fixed line services)	July 2011	6.0%
AER	APT Allgas (access arrangement review 2011-2016)	June 2011	6.0%
AER (upheld)	Envestra SA / QLD (access)	June 2011	6.0%

<sup>38</sup> Application by APA GasNet Australia (Operations) Pty Limited (No 2) [2013] ACompT 8.

<sup>39</sup> Application by DBNGP (WA) Transmission Pty Ltd (No 3) [2012] ACompT 14.

by ACT<sup>40</sup>) arrangement review 2011-2016)

---

ERA (upheld by ACT <sup>41</sup> )	WA Gas Networks / ATCO Gas (access arrangement review)	February 2011	6.0%
------------------------------------	--	---------------	------

---

A balanced view of this evidence supports a value for the MRP of no more than 6%. Only one estimation method (the dividend growth model) produces an estimate materially above 6%, and that method has been described by the QCA as being “unequivocally biased upwards”. All other methods produce values around or below 6%.

The QRC considers that a reasonable range for the MRP is 5% to 6%. This range is consistent with all of the evidence presented above, and reflects the fact that several of the measures are known to be upwardly biased. This range encompasses the point estimate provided by survey evidence and is at or below the upper bound estimates provided by historical averaging and the dividend growth model. It is also broadly consistent with recent regulatory practice.

## 2.4 Equity beta

Aurizon Network proposes a range for the equity beta of between 0.9 and 1. As with the MRP and all other WACC parameters, Aurizon Network adopts the upper bound of its range in calculating its proposed rate of return for UT4, which means that it is effectively proposing a value of 1 for the equity beta.

An equity beta of 1 would be a significant change from the equity beta set for UT3 and previous periods. Such a shift can only be justified if there has been a change in Aurizon Network's risk profile such that its exposure to market-wide risk factors has demonstrably increased.

As discussed in section 1.5 above, the QRC considers that Aurizon Network's exposure to risk has in fact been significantly *reduced* in recent years through introduction of various risk protection mechanisms into the regulatory framework. Aurizon Network has sought a continuation of this trend in its UT4, by proposing several new risk protection mechanisms, such as accelerated depreciation for legacy assets. This implies that if anything, Aurizon Network's equity beta should be reduced for UT4, and should certainly not be increased.

The QRC also notes the QCA's Form of Regulation Paper and the conclusions that the beta should not simply be assessed based on benchmarking against other firms, because the regulatory framework can change the risk profile compared to the unregulated businesses sought to be benchmarked against.

In the Form of Regulation Paper the QCA made the following observations about a form of regulation similar to that adopted by Aurizon Network:<sup>42</sup>

A relevant example is the use of revenue caps in conjunction with unders-and-overs accounts. Under a revenue cap, if the firm under- (over-) recovers revenue from customers, then it receives (repays) the difference between the actual and allowable revenue. Since the total variability of revenue is eliminated

<sup>40</sup> Application by Envestra Limited (No 2) [2012] ACompT 3.

<sup>41</sup> Application by WA Gas Networks Pty Ltd (No 3) [2012] ACompT 12.

<sup>42</sup> QCA, Discussion Paper – Risk and the Form of Regulation, 22 November 2012, vii.

from a net present value perspective, there is no meaningful revenue risk - either diversifiable or non-diversifiable.

As noted in section 1.5 above and in the Castalia Report, the regulatory settings which apply to Aurizon Network insulate it from nearly all risk that an unregulated business would bear. The QRC considers that:

- firstly, the reduction in the non-diversifiable risk borne by Aurizon Network produced by the terms of its approved undertaking and standard access agreements, has not (in previously regulated decisions) been fully reflected in the beta used for calculating the WACC (such that even if the risk profile was maintained at UT3 levels the beta should be reduced); and
- secondly, the reduction in the non-diversifiable risk to be borne by Aurizon Network as proposed in UT4 (compared to UT3) would logically suggest that the beta for UT4 must be lower than UT3.

The QRC asked Professors McKenzie and Partington to assess Aurizon Network's proposal for an increase in the equity beta to a value of 1.0. McKenzie and Partington find no evidence to support Aurizon Network's proposal.<sup>43</sup>

As is clear from Aurizon Network's submission and the supporting report from SFG, the proposed estimate of the equity beta can only be sustained if significant weight is given to beta estimates for US railroad businesses and Australian-listed industrial transportation firms. However it is not clear how these benchmarks are relevant to estimating the equity beta for Aurizon Network. These other businesses are likely to have very different risk characteristics to Aurizon Network, for example:

- unlike Aurizon Network, these businesses are not subject to revenue cap regulation and so are not protected from volume risk in the same way. This is a critical difference between Aurizon Network and these other businesses; and
- these businesses would not necessarily have the same ability to pass through unanticipated cost increases to customers, in the same that Aurizon Network is able to by use of review events, endorsed variation events, the annual review of reference tariffs, and periodic regulatory resets (upon expiry of the undertaking).

The QCA has previously considered this issue, and has concluded that transport companies and US class 1 railroads do not have comparable risk profiles to Aurizon Network, and are therefore not useful comparators. In its assessment of QR Network's UT3 proposal, the QCA commissioned a report from Allen Consulting Group (**ACG**), which concluded that these firms were not close comparators to QR Network given the fundamental differences in their underlying drivers of business risk to QR Network.<sup>44</sup> ACG found that the returns of transport firms and railroads are more sensitive to the economy due to the nature of consumer goods they carry. In contrast, QR Network's revenue cap insulates it from such volatility despite wide swings in coal prices, and the derived demand for its coal haulage services has less sensitivity to changes in the Australian economy.

As Table 35 of Aurizon Network's submission shows, if these other comparators are removed from the analysis, and energy network businesses and OLS estimates are relied on instead, the asset beta estimate would be 0.35, which implies an equity beta of 0.55.<sup>45</sup>

The QRC considers that even an equity beta of 0.8 is likely to be highly favourable to Aurizon Network, given the protections from risk provided by the regulatory framework.

---

<sup>43</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 32.

<sup>44</sup> QCA, *Draft Decision: QR Network's 2010 DAU - Tariffs and Schedule F*, June 2010, p 44.

<sup>45</sup> This assumes a debt beta of 0.12 (as previously determined by the QCA), gearing of 55% and a corporate tax rate of 30%.

Aurizon Network’s equity beta certainly compares favourably to other infrastructure businesses that would appear to have a higher degree of exposure to market-wide risk factors – for example:

- Energy network businesses are assigned an equity beta of 0.8, and the empirical evidence suggests that this may in fact overstate the correct beta for these businesses. The AER has noted that empirical evidence suggests that the equity beta of a benchmark efficient energy network business is in the range of 0.41 to 0.68.<sup>46</sup> The QCA has previously noted that energy network businesses are likely to be better comparators than transport companies or US class 1 railroads, but that these businesses are still likely to have a higher beta than Aurizon Network.<sup>47</sup> Given that these businesses are currently assigned an equity beta of 0.8 and the empirical evidence suggests that the true beta for these businesses is in fact lower than this, this would imply that Aurizon Network’s equity beta should be significantly *below* 0.8.
- Telstra is assigned an equity beta of 0.7, notwithstanding its significant exposure to demand and cost risk (including risks associated with competition from alternative technologies).<sup>48</sup>
- the Sydney Desalination Plant (SDP) is assigned an equity beta of 0.7, notwithstanding its higher exposure to a range of risk factors.

The QRC engaged Castalia to benchmark Aurizon Network’s risk profile and proposed equity value against other infrastructure businesses.<sup>49</sup> Castalia compares Aurizon Network’s proposed equity beta with five other infrastructure businesses, and also compares exposure to various risk factors across these businesses. Castalia find that while Aurizon Network contends for a significantly higher equity beta than what is allowed for these other businesses, its overall exposure to risk is in fact lower. Castalia’s analysis is summarised in Table 3 below.

**Table 3: Relative risk exposure and equity beta values – Castalia case studies versus Aurizon Network**

	Aurizon Network	SDP	Electrane t	GasNet	Aurora	Telstra
Revenue risk		-	-	++	++	++
Expenditure risk		++	++	++	++	++
Inflation risk		*	*	*	*	+
Stranding and bypass		+	*	+	*	++

<sup>46</sup> AER, *Final Decision: Electricity transmission and distribution network service providers: Review of weighted average cost of capital (WACC) parameters*, May 2009, p 343.

<sup>47</sup> QCA, *Draft Decision: QR Network’s 2010 DAU - Tariffs and Schedule F*, June 2010, p 47.

<sup>48</sup> ACCC, *Inquiry to make final access determinations for the declared fixed line services: Final Report*, July 2011, pp 64-66.

<sup>49</sup> Castalia, *Aurizon Access Undertaking: Risk Allocation Analysis*, October 2013.

risk

Regulatory risk		+	-	-	-	++
Political risk		+	*	*	*	+
Other risk		+	*	*	*	+
Overall risk		+	+	++	+	++
Equity beta	1.13 (proposed)	0.7	0.8	0.8	0.8	1.05

Note: for comparison with the other businesses, Aurizon Network's proposed beta of 1 has been re-levered to reflect the 60% gearing assumption applied to the other comparator businesses. Telstra's equity beta of 0.7 has also been re-levered, as it is assigned a gearing ratio of 40%.

Key:

- + = Case study slightly greater risk than Aurizon Network, ++ = significantly greater risk
- = Case study slightly less risk than Aurizon Network, -- = significantly less risk
- \* = No significant difference between case study and Aurizon Network

Castalia's relative risk analysis indicates that Aurizon Network's equity beta should be *lower* than its infrastructure peers, not higher. The implication is that the equity beta for Aurizon Network should be lower than 0.7 based on 60% gearing, which is equivalent to 0.6 at Aurizon's 55% gearing.

The QRC considers that a reasonable range for the equity beta for Aurizon Network is 0.4 to 0.6, with a midpoint value of 0.5. This range is consistent with all of the evidence presented above, including:

- SFG's analysis, with US railroads and transport companies stripped out, indicates an asset beta value of 0.35, which implies an equity beta of 0.55;
- Castalia's relative risk analysis suggests that the equity beta for Aurizon Network should be no higher than 0.7 based on 60% gearing (equivalent to 0.6 at Aurizon Network's 55% gearing), which is the value applied to SDP, a businesses which bears greater risk than Aurizon Network; and
- empirical analysis of the equity beta for energy network businesses (which the QCA considers to be the most relevant comparators, albeit with slightly greater risk exposure compared to Aurizon Network), indicates that the equity beta for these businesses is in the range of 0.4 to 0.7; and
- McKenzie and Partington's review of the Aurizon Network proposal, which concludes that the available evidence does not support Aurizon Network's proposed equity beta of 1.0.<sup>50</sup>

<sup>50</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 32.

Therefore, the QRC submits that Aurizon Network's proposal for an increase to the equity beta should not be accepted. Instead, the QCA should adopt an equity beta value of 0.5, reflecting the midpoint of the range referred to above.

The QRC makes this submission on the assumption that Aurizon Network's risk profile for UT4 will be broadly in line with its UT3 risk profile. Of course, if some of those elements of the undertaking proposal which provide for increased risk protection in UT4 are accepted, then the equity beta would need to be lowered further to reflect this.

## 2.5 Gamma

The QRC supports the QCA's current (and past) practice of adopting a value for gamma of 0.5. The QRC does not support the lower gamma value proposed by Aurizon Network for UT4.

A value for gamma of 0.5 is supported by the weight of empirical evidence on the distribution ratio and the value of distributed imputation credits (gamma being the product of these two parameters<sup>51</sup>). In particular:

- the available evidence on the distribution ratio indicates that a reasonable estimate of this parameter is 0.7. This is consistent with the most recent tax data, and analysis of this data conducted by NERA in a recent report for the Energy Networks Association.<sup>52</sup>
- the available evidence on the value of distributed imputation credits indicates that a reasonable estimate of this parameter is also 0.7. This includes:
  - evidence on the proportion of investors who are eligible to redeem imputation credits. While foreign investors cannot redeem imputation credits to offset personal tax liabilities, domestic investors can redeem credits and can offset the personal tax liability by \$1 for every \$1 of imputation credit they receive. Data from the Australian Bureau of Statistics indicates that approximately 70% of equity in Australian enterprise groups (including companies and unit trusts) is held by domestic investors.<sup>53</sup>
  - recent analysis of tax statistics indicates that between 65% and 81% of distributed imputation credits are actually redeemed by investors (estimates differ slightly depending on the period over which this is measured);<sup>54</sup> and
  - estimates of the implied value of imputation credits from econometric studies indicate a range of values, from 0.35 and 0.8, depending on

---

<sup>51</sup> Under the Officer framework, the value for gamma is typically calculated as the product of the distribution rate (or payout ratio) and the value of distributed imputation credits (referred to as the utilisation rate, or theta). The distribution rate represents the proportion of generated imputation credits that companies distribute to investors, while theta represents the value to investors of each credit received (as a proportion of the credit's face value). The Officer framework was set out in Bob Officer's seminal paper: R. R. Officer, 'The cost of capital under an imputation tax system', *Accounting and Finance*, Vol. 34, Issue 1, May 1994.

<sup>52</sup> NERA, *The Payout Ratio: A Report for the Energy Networks Association*, June 2013.

<sup>53</sup> Australian Bureau of Statistics, *Feature Article: Foreign Ownership of Equity*, September 2007.

<sup>54</sup> Analysis by Handle and Maheswaran (2008) indicates that over the period 1988-2000 the redemption rate was 67%, while over the period 2001-2004 it was 81% (J. C. Handley and K. Maheswaran, 'A measure of the efficacy of the Australian imputation tax system', *The Economic Record*, Vol. 84, No. 264, March 2008). More recent analysis by Hathaway (2010) indicates that over the period 2004-2008 the redemption rate was 65% (N Hathaway, *Comment on "A measure of the efficacy of the Australian imputation tax system" by John Handley and Krishan Maheswaran*, July 2010).

the dataset and input assumptions used.<sup>55</sup> As the wide range of implied values indicates, these studies can be highly sensitive to the dataset, methodology and input assumptions used. The AER has recently expressed concerns with this method of estimating the value of imputation credits, including because of potential econometric issues and conceptual difficulties with interpreting results.<sup>56</sup>

Combining the above estimates of the distribution rate and the value of distributed credits delivers a value for gamma of 0.5. The QRC considers that this represents the most reasonable estimate of this parameter.

A value of 0.5 is supported by the accompanying expert report of Professors McKenzie and Partington. McKenzie and Partington support taking into account a wide range of evidence in estimating gamma, and on this basis support a value of 0.5, as previously adopted by the QCA.<sup>57</sup>

A value of 0.5 is also consistent with recent analysis undertaken by the AER. In its recently released draft rate of return guidelines, the AER has indicated that it will adopt a value for gamma of 0.5 in future decisions. This is based on careful analysis by the AER of the body of evidence available on this parameter, including the evidence referred to above.<sup>58</sup>

Aurizon Network's proposal for a gamma of 0.25 does not reflect the weight of the empirical evidence in relation to the value of imputation of distributed credits. Rather, Aurizon Network relies on a single study of the implied value of imputation credits, being a study conducted by SFG for QR National.

Aurizon Network also refers to the AER adopting a value of 0.25 in recent decisions. However this no longer reflects the position of the AER. In its recently published draft rate of return guidelines, the AER has conducted further analysis of this issue, and has indicated that it will now adopt a value of 0.5 (not 0.25) in future decisions.<sup>59</sup>

McKenzie and Partington recommend against the approach proposed by Aurizon Network which relies on a single study and ignores the wider body of empirical evidence. McKenzie and Partington recommend 'triangulating' across a number of estimation methods, and they conclude that when this is done non-selectively there is plenty of evidence to support a gamma of 0.5 or higher.<sup>60</sup>

For these reasons, the QRC does not support the gamma value proposed by Aurizon Network for UT4. The QRC submits that a value of 0.5 should be adopted for gamma, consistent with past QCA practice and the available empirical evidence on this issue.

<sup>55</sup> Recent research by the Economic Regulation Authority of Western Australia indicates an implied value of between 0.35 and 0.55 (ERA, *Explanatory statement for the draft rate of return guidelines: Meeting the requirements of the National Gas Rules*, August 2013, pp 201-205). Earlier research by Brown and Clarke (1993) had indicated a higher value, of around 0.8 (P. Brown and A. Clarke, 'The ex-dividend day behaviour of Australian share prices before and after dividend imputation', *Australian Journal of Management*, Vol. 18, June 1993). Other studies have estimated different values, generally within a range of 0.35 to 0.7.

<sup>56</sup> AER, *Better Regulation: Explanatory Statement: Draft rate of return guideline*, August 2013, pp 241-245.

<sup>57</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, p 36.

<sup>58</sup> AER, *Better Regulation: Explanatory Statement: Draft rate of return guideline*, August 2013, section 8 and appendix K.

<sup>59</sup> AER, *Better Regulation: Explanatory Statement: Draft rate of return guideline*, August 2013, section 8 and appendix K.

<sup>60</sup> Michael McKenzie and Graham Partington, *Review of Aurizon Network's Draft Access Undertaking*, 5 October 2013, pp 34-36.

### 3 The QRC's position on the UT4 WACC

---

For the reasons above, the QRC submits that Aurizon Network's rate of return proposal should not be accepted.

An alternative rate of return proposal, reflecting a more balanced view of the available evidence, is set out below. The QRC considers that this alternative proposal appropriately reflects the regulatory and commercial risks involved in providing access.

**Table : QRC position on the UT4 WACC**

	<b>Aurizon Network proposal</b>	<b>Alternative proposal (Nov-12 period)</b>	<b>Alternative proposal (Jun-13 period)</b>
Gearing (D/V)	0.55	0.55	0.55
Risk-free rate	3.15%	2.76%	2.98%
Debt margin	3.28%	3.00%	2.60%
Debt raising costs	0.125%	0%	0%
Market risk premium	7%	5% - 6%	5% - 6%
Equity beta	1.0	0.4 – 0.6	0.4 – 0.6
Gamma	0.25	0.50	0.50
Cost of debt	6.56%	5.76%	5.58%
Cost of equity	10.15%	5.51%	5.73%
Nominal vanilla	8.17%	5.65%	5.65%

WACC

---

Note: where a range of values is proposed (for the MRP and equity beta), the midpoint of the range is taken for the purposes of calculating the WACC.

## 4 Split cost of capital

---

The QCA has identified the 'split cost of capital' as an alternative method of estimating the rate of return. The QCA has said that it sees this method as potentially allowing for a more accurate pricing of risk.<sup>61</sup>

The QRC agrees that it is critical that the regulated rate of return accurately reflect the risks actually faced by the regulated business. We also agree that the 'split cost of capital' may offer a useful tool for ensuring that risk is priced accurately.

The split cost of capital theory may provide a useful alternative framework for assessing Aurizon Network's exposure to risk, and checking that the rate of return calculated under the traditional method properly reflects this degree of exposure to risk.

The QRC agrees that Aurizon Network's 'RAB activities' are unlikely to expose it to any material risk factors, and thus the WACC (calculated on a traditional basis) is likely to overcompensate investors for the risk associated with those activities. Under the revenue cap model, Aurizon Network is virtually assured of full recovery of the cost of its sunk asset base. Further, the risk of optimisation of the asset base is very low.

The QRC does not agree that the traditional WACC necessarily undercompensates Aurizon Network for its 'non-RAB activities' such as new capital expenditure. As noted above (section 1.5), there are a range of risk protection mechanisms built into the existing regulatory framework (and further risk protections proposed for UT4) which have the effect of insulating Aurizon Network from many of the risk that would ordinarily apply to a regulated business in respect of new capital expenditure. In particular, the ability for Aurizon Network to obtain pre-approval for the scope, standard and cost of new capital expenditure largely eliminates the risk that any new capital expenditure will not be rolled into the RAB.

This analysis of Aurizon Network's RAB and non-RAB activities suggests that overall, Aurizon Network's exposure to risk is very limited. This analysis also indicates that applying the traditional WACC framework to Aurizon Network is likely to lead to overcompensation for risk, unless the equity beta is set so as to properly reflect Aurizon Network's very limited risk exposure.

---

<sup>61</sup> QCA, *Discussion Paper: Split Cost of Capital*, April 2013, p viii.

**Table 4: Summary of risk protection mechanisms proposed for UT4**

*Note: The QRC does not agree that all of these risk protection mechanisms, as proposed by Aurizon Network for UT4, are necessary or appropriate. Nonetheless, they are listed here as they appear in Aurizon Network’s UT4 proposal. Clause references are references to clauses of Aurizon Network’s draft undertaking and the proposed standard access agreements. While this list is lengthy, it is intended to highlight the main examples of risk protection mechanisms, and is not an attempt to provide an exhaustive list of all the applicable risk protection mechanisms in favour of Aurizon Network.*

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<i>Protections against volume risk</i>		
<p><b>Revenue cap</b></p> <p>The application of a revenue cap (together with the ‘unders and overs’ adjustment regime) means that Aurizon Network is protected from revenue recovery risk. Aurizon Network is protected from volume risk and is thus assured of full recovery of its revenue allowance in NPV terms.</p> <p>In the Form of Regulation Paper the QCA noted that this feature of the regulatory regime has the effect of eliminating revenue risk. The QCA noted:<sup>62</sup></p> <p><i>“A relevant example is the use of revenue caps in conjunction with unders-and-overs accounts. Under a revenue cap, if the firm under- (over-) recovers revenue from customers, then it receives (repays) the difference between the actual and allowable revenue. Since the total variability of revenue is eliminated from a net present value perspective, there is no meaningful revenue risk - either diversifiable or non-</i></p>	<p>For UT4 it is proposed that the AT1 component of reference tariffs also be included in the revenue cap (whereas the UT3 revenue cap only included the AT2-4 components).</p>	<p>Many regulated businesses are subject to a price cap regime, under which the service provider bears demand risk. Under a price cap regime, the service provider will recover less than its revenue allowance if actual volumes turn out to be less than what was forecast at the time the price cap was set.</p> <p>Examples of service providers subject to price cap regimes include electricity distribution businesses operating in the NEM, many regulated gas pipelines and Telstra in respect of its declared fixed line services. In the case of Telstra, volume risk is particularly high due to uncertainty around future demand for fixed-line communications services (including due to the increasing substitutability of mobile) and also due to the way in which the ACCC allocates costs based on historic peak levels of demand.</p>

<sup>62</sup> QCA, *Discussion Paper – Risk and the Form of Regulation*, 22 November 2012, vii.

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<i>diversifiable.”</i>		
<p><b>Take or pay across 100% of AT2, AT3 and AT4 (Schedule F, clause 2.4)</b></p> <p>The application of take or pay arrangements, in the context of a revenue cap, mitigates the risk of cashflow timing differences for these tariff components.</p>	<p>The scope of take or pay has significantly increased since UT1 with 100% take or pay becoming standard from UT2 onwards. Consequently Aurizon Network’s risk in this regard is actually reducing over time as older (lower take or pay) access agreements expire and are progressively replaced with 100% take or pay agreements.</p>	<p>As noted above, many other regulated businesses face a much higher degree of volume risk, principally because they are subject to price caps, not revenue caps.</p> <p>Aurizon Network’s protection from volume risk is further strengthened by the use of take or pay arrangements.</p>
<p><b>Scope for revision of volume forecasts (Schedule F, clause 4.1(b))</b></p> <p>Aurizon Network may submit revised volume forecasts annually and (subject to QCA approval) adjust reference tariffs to reflect the revised forecasts.</p>		<p>It is unusual for a service provider to have scope to submit revised volume forecasts part way through a regulatory period. For example, price controls for electricity distribution businesses operating in the NEM are based on 5-year forecasts of energy sales and peak demand, and there is no scope to revisit these forecasts within the period (i.e. the business is exposed to the risk that actual demand may be significantly lower than forecast over the 5 year period). Similarly, prices for Telstra’s declared fixed-line services are based 3-year forecasts of demand, and there is no scope to revisit these forecasts.</p>
<p><b>Adjustments for under-recovery of electric traction related costs in the Blackwater system (Schedule G, clause 2(d))</b></p> <p>Aurizon Network proposes for UT4 that it be entitled to pass</p>	<p>This is proposed as a new risk protection mechanism for UT4.</p>	<p>As noted above, many regulated businesses are subject to a price cap regime, under which the service provider bears the risk of underrecovery as a result of actual usage differing from assumed or forecast</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p>through to access holders any 'underrecovery' of electric traction related costs in the Blackwater system (against an assumed profile of electric locomotive usage).</p>		usage.
<p><b>Relinquishment and transfer fees (Standard End User Access Agreement, clauses 10.2 and 11.3)</b></p> <p>Relinquishment and transfer fees are payable where an access holder relinquishes their access rights or transfers them to a different origin-destination pairing which results in lesser revenue. This effectively provides another mechanism that insulates Aurizon from demand changes, at an individual access holder level.</p>		<p>Where a regulated business is subject to a price cap regime, the risk of individual customers relinquishing or transferring access rights is borne by the service provider. For example, a gas pipeline operator subject to a price cap regime would be subject to the risk that large industrial users may relinquish access rights at some point in future (e.g. the risk that a large gas-powered generation facility may shut down or move to different site).</p>
<i>Protections against capital expenditure recovery risk</i>		
<p><b>Pre-approval of scope and standard of capital expenditure (Schedule E, clauses 3 and 4)</b></p> <p>Aurizon Network may seek the QCA's approval for the proposed scope and standard of works for a proposed capital expenditure project. Alternatively, Aurizon Network may seek the acceptance of relevant customers and access seekers of the proposed scope and/or standard of works for the proposed project (clause 8.10). The QCA must accept capital expenditure into the regulatory asset base if the proposed scope and standard of works has been either approved by the QCA or accepted by customers and access seekers, and the cost of the project has been</p>		<p>Pre-approval processes exist in some regulatory regimes (but not all).</p> <p>In many regulatory regimes, there is no pre-approval process. This means that if the service provider needs to undertake significant capital expenditure within a period, and that expenditure has not been approved for that period, there is a risk that some or all of the capital expenditure may not be rolled into the asset base at the commencement of the next regulatory period. For example under the National Electricity Rules, there is no scope for pre-approval of expenditure as prudent and efficient, and there is the</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p>approved by the QCA as prudent (Schedule E, clause 2.2(a)).</p> <p>In practice, there is no risk of Aurizon Network undertaking investment without approval, as it has no obligation to invest and can therefore simply withhold investment until approval is provided.</p>		<p>potential for the AER to disallow some or all of the capital expenditure undertaken in a previous period to the extent that out-turn capital expenditure exceeds the approved forecast for that period (NER, clauses S6.2.2A / S6A.2.2A).</p>
<p><b>Pre-approval of cost of capital expenditure (Schedule E, clause 5)</b></p> <p>At any time, Aurizon Network may seek the QCA's approval for the proposed cost for a proposed capital expenditure project.</p> <p>The QCA must accept capital expenditure into the regulatory asset base if the proposed scope and standard of works has been either approved by the QCA or accepted by customers and access seekers (see above), and the cost of the project has been approved by the QCA as prudent (Schedule E, clause 2.2(a)).</p>		<p>As noted above, pre-approval processes exist in some regulatory regimes, but not all.</p>
<p><b>Accelerated depreciation for new capital expenditure</b></p> <p>In previous undertakings, Aurizon Network had adopted shorter lives for new assets (20 years for UT3 assets, compared to up to 50 years for UT1 and UT2 assets) in order to reduce the risk of these assets being stranded.</p>		<p>While there is generally some flexibility to modify approaches to depreciation over time, any proposed change in the method of depreciation (including any change to asset lives) will need to satisfy certain criteria. For example, for gas businesses, the relevant criteria are set out in Rule 89 of the National Gas Rules. In a recent decision, the Australian Competition Tribunal upheld a decision of the AER to reject a proposal by APA GasNet to change its method of depreciation from that used in previous</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
		regulatory periods – the AER decided (and the Tribunal agreed) that APA GasNet’s proposed change in depreciation method, did not satisfy the criteria.
<p><b>Accelerated depreciation for existing assets (proposed for UT4)</b></p> <p>As part of its UT4 proposal, Aurizon Network has also shortened the life of legacy assets (i.e. UT1 and UT2 assets), in order to reduce the risk of these assets being stranded.</p>	<p>This is proposed as a new risk protection mechanism for UT4.</p>	<p>As noted above, while there is generally some flexibility to modify approaches to depreciation over time, any proposed change in the method of depreciation will need to satisfy certain criteria.</p>
<p><b>Extremely limited scope for optimisation of regulatory asset base (Schedule E, clause 1.2(e))</b></p> <p>The scope for optimisation (a reduction in the value of the RAB) was already very limited in UT3.</p> <p>Under the proposed framework for UT4, the scope for optimisation will be even more limited. Optimisation will only be permitted in UT4 where the QCA made its decision to accept the capital expenditure into the RAB on the basis of information provided by Aurizon Network that Aurizon Network knew, or should have known, was false or misleading at the time it provided the information and the provision of that false or misleading information resulted in a materially different outcome from that which would have occurred if the QCA had been provided with information that was not false or misleading. It seems very unlikely that optimisation would ever occur under this proposed framework.</p>	<p>It is proposed that for UT4, 3 of the existing grounds for optimisation in UT3 be removed, namely:</p> <ol style="list-style-type: none"> <li>1 where circumstances arise in the future where demand has deteriorated to such an extent that regulated prices on an unoptimised asset would result in a further decline in demand;</li> <li>2 it becomes clear that there is a possibility of actual (not hypothetical) bypass; or</li> <li>3 an End of Period Assessment conducted in accordance with clause 5 of Schedule A determines that the Rail Infrastructure has deteriorated by more than would have been the case had good operating practice and prudent and effective maintenance and asset replacement policies and practices</li> </ol>	<p>Scope for optimisation of the asset base exists in several other regulatory frameworks.</p> <p>For example under the National Gas Rules, the AER may require removal of assets from the RAB where those assets are no longer contributing to the provision of regulated services. Rule 85 of the National Gas Rules provides that a full access arrangement may include (and the AER may require it to include) a mechanism to ensure that assets that cease to contribute in any way to the delivery of pipeline services (redundant assets) are removed from the capital base.</p> <p>The National Electricity Rules allow for removal of assets from the RAB for a transmission network service provider, where those assets are dedicated to one transmission network user and the AER determines that those assets are no longer contributing to the provision of prescribed</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
	been pursued.	transmission services (NER, clause S6A.2.3).
<p><b>No obligation to fund expansion capital expenditure at the regulated rate of return (clause 8.2.1)</b></p> <p>Aurizon Network may elect to fund a network expansion at the regulated rate of return, but it is not required to do so.</p> <p>Alternatively, Aurizon Network and an access seeker (or group of access seekers) may agree “commercial terms” (access conditions) in relation to access rights that will require an expansion or customer specific branch line (clause 6.9). Commercial terms (access conditions) agreed with access seekers may potentially provide for a higher rate of return on any expansion capital expenditure, and/or may provide for increased risk transfer to Access Seekers.</p>	<p>In UT3 "Access Conditions" had to be 'reasonably required in order to mitigate QR Network's exposure to the financial risks associated with providing Access for the Access Seeker's proposed Train Service' and access conditions in respect of Significant Investments required QCA approval. There is no equivalent restrictions on the 'commercial terms' that can be sought under UT4.</p>	<p>Many regulated businesses are subject to externally set service standards, and are required to upgrade or expand the capacity of their networks where necessary to ensure that these standards are met.</p> <p>Further, some businesses are required to undertake capital expenditure to augment their networks, where this is required to meet or manage expected demand. For example electricity networks are required to fund any augmentations to their network that result from growth in customers' consumption.</p>
<p><b>Removing obligation to rectify capacity shortfalls</b></p> <p>UT4 contains no obligation to rectify capacity shortfalls, such that Aurizon Network effectively bears no construction risk (the outcome is simply that the 'conditional' access holders have their access rights compressed).</p>	<p>UT3 contained an obligation to invest to rectify capacity shortfalls.</p>	<p>Service standards imposed on energy network businesses may impose minimum capacity requirements, and there may be obligations on the service provider to ensure these minimum standards are met.</p>
<i>Protections against operating and maintenance cost risks</i>		
<p><b>Scope for revision of maintenance cost forecasts (Schedule F, clause 4.1(b))</b></p>	<p>This is proposed as a new risk protection mechanism for UT4.</p>	<p>As noted above, it is unusual for a service provider to have scope to submit revised volume forecasts part way through a regulatory period. It is similarly</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p>Aurizon Network may adjust its allowable revenue and reference tariffs annually to account for changes in maintenance costs attributable to the difference between the approved volume forecasts and any revised volume forecast.</p>		<p>unusual for a service provider to be able to revise its cost forecasts to account for differences between forecast and actual demand.</p> <p>For example, expenditure forecasts for electricity distribution businesses operating in the NEM are based on 5-year forecasts of peak demand, and there is no scope to revisit these forecasts within the period (i.e. the business is exposed to the risk that peak demand may be significantly higher than forecast over the 5 year period, leading to higher expenditure needs).</p>
<p><b>Review events for maintenance costs (Schedule F, clause 5.3)</b></p> <p>Aurizon Network may seek a variation to reference tariffs where certain changes to maintenance costs occur, such that a “Review Event” is triggered.</p>	<p>The Review Events proposed for UT4 are more extensive than those in UT3. The definition of a “Review Event” proposed for UT4 includes where: (a) Aurizon Network’s maintenance costs have been prudently and efficiently incurred, but are greater than its maintenance cost allowance, such that there will be a change in the costs reflected in the AT3, AT4 and/or AT5 inputs of a reference tariff of greater than 2.5%; (b) there has been a change in maintenance practices, reasonably requested by a customer subsequent to commencement of the undertaking; or (c) where Aurizon Network through a competitive process, has engaged or otherwise appoints a Third Party or an Aurizon Party to perform any maintenance activities and the cost to Aurizon Network of performing those maintenance activities through that third Party or Aurizon Party (as applicable) exceeds, or will</p>	<p>In some regulatory regimes, there are provisions allowing for pass through of costs associated with certain unforeseen events. However the types of events for which a pass through may be sought are usually tightly confined either by the statutory scheme and/or by the applicable regulatory determination (see for example, clause 6.6.1 of the National Electricity Rules). The types of events for which a pass through may be allowed typically include changes in service standards, or changes in tax regimes.</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
	<p>exceed, the maintenance costs allowance for those activities included in the AT3, AT4 and/or AT5 inputs of a reference tariff by more than 2.5%.</p>	
<p><b>Review event for Force Majeure (Schedule F, clause 5.3(e))</b></p> <p>Aurizon Network may seek a variation to reference tariffs where certain Force Majeure events occur (including acts of God, fires, floods, earthquakes, etc) causing Aurizon Network to incur incremental costs of greater than \$1 million.</p> <p>Additionally, the standard access agreements (clause 24.5) provide that Aurizon Network is not obliged to reinstate any part of the rail network that is damaged or destroyed by a Force Majeure event where it considers it uneconomic to do so (unless user funding is provided). Coupled with the review event and the ability to lodge DAAUs to seek tariff increases to cover these costs, this means that Aurizon Network is effectively insulated from risk arising from these natural disasters.</p>		<p>There can be similar scope for pass-through of costs associated with force majeure events in other regulatory regimes. However, as noted above, the types of events for which a pass through may be sought are usually tightly confined either by the statutory scheme and/or by the applicable regulatory determination.</p>
<p><b>Annual adjustments for actual changes in cost indexes (Schedule F, clauses 4.3(b)(i) and 4.3(b)(ii))</b></p> <p>At the end of each year, there is an adjustment to allowable revenue to account for any difference between the actual maintenance cost index (MCI) and consumer price index (CPI) values for that year and the forecast MCI and CPI values that were used for the purpose of determining the</p>		<p>An ex post adjustment for the difference between actual and forecast inflation is highly unusual.</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p>reference tariffs for that year.</p> <p>This protects Aurizon Network against any potential unanticipated increases in maintenance costs, or unanticipated general price inflation.</p>		
<p><b>Adjustments for actual energy and audit costs (Schedule F, clauses 4.3(b)(iii), (iv) and (v))</b></p> <p>There is a further annual adjustment for any difference between actual and forecast energy costs (costs associated with environmental initiatives, or associated with the connection of the electrical traction system), and audit costs.</p>	<p>Scope for these adjustments under UT4 is broader than under UT3. In particular, the potential to adjust for audit costs is new.</p>	<p>Ex post adjustment for the difference between actual and forecast costs of this nature is also highly unusual.</p>
<p><b>Removal of ballast fouling adjustment</b></p> <p>Aurizon Network's UT4 proposal involves an adjustment seeking to reverse that previously made in UT3 to reflect the degradation of the network which had occurred because of Aurizon Network's maintenance practices not controlling ballast fouling.</p> <p>This is an attempt by Aurizon Network to shift the risks associated with imprudent maintenance activities onto network users.</p>	<p>This would amount a reversal of the position taken by the QCA on ballast fouling for UT3.</p>	<p>Under most regulatory frameworks, the service provider will only be allowed to recover the costs that a prudent and efficient operator would be expected to incur. For example, under the National Electricity Rules, the AER will only accept a service provider's operating expenditure forecast, if it is satisfied that the forecast reasonably reflects the costs that a prudent operator would require to achieve the relevant objectives (clause 6.5.6(c)).</p> <p>This implies that any risk of costs associated with imprudent operating practices is properly borne by the service provider.</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p><b>Scope to submit DAAUs (QCA Act, s 142)</b></p> <p>Aurizon Network may, at any time, submit amendments to its undertaking for approval by the QCA. This allows Aurizon Network to manage any unforeseen risks that may arise. Aurizon Network / QR has used the amendment mechanism on numerous occasions.</p> <p>In practice this produces an upwards bias to tariffs as Aurizon Network only submits DAAUs which seek to increase tariffs (and is not obliged to do submit a DAAU to reduce tariffs where, for examples, circumstances have resulted in less than anticipated costs).</p>		<p>Scope to amend regulatory arrangements part way through a regulatory period is typically very limited.</p> <p>For example, under the National Electricity Rules and National Gas Rules, regulatory arrangements are generally locked in for a five-year period (or sometimes longer). Scope to re-open these arrangements is very limited, for example in relation to pre-specified pass through events or for pre-identified contingent projects. There is no general right to amend approved regulatory arrangements.</p>
<i>Protections against performance risk</i>		
<p><b>Allowable Threshold (Standard End User Access Agreement, clause 20.4(e))</b></p> <p>The standard access agreements exclude liability for any non-provision of train services up to a specified allowable threshold,</p>	<p>The allowable threshold is sought to be fixed at 10% in UT4.</p>	<p>Many regulated businesses face financial penalties if they do not meet externally set performance standards, and thus face significant financial risk if they do not meet these standards.</p>
<p><b>Aurizon Network Cause (Standard End User Access Agreement, clause 12)</b></p> <p>Under the standard access agreement, Aurizon Network generally only loses take or pay revenue where the train service was lost due to Aurizon Network cause. In circumstances where loss of a train service is</p>	<p>Loss of train service will only be attributable to Aurizon Network cause where the loss was not in any way attributable to a railway operator (both UT3 and UT4) or passenger priority obligations, unavailability of loading/unloading facility, failure to load a train in maximum permit time and unavailability of/cancellation of</p>	<p>For example, the two Queensland electricity distribution businesses (Energex and Ergon) are subject to minimum service standards, and guaranteed service levels under the Queensland Electricity Industry Code. The minimum service standards and guaranteed service levels relate to the frequency and duration of distribution outages, and timeliness of service delivery. Where a business fails to meet guaranteed service levels, it may be liable to</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<p>predominantly attributable to Aurizon Network it can still therefore recover take or pay for its non-operation if there is any contribution from the named other causes.</p>	<p>services on private infrastructure (all of which are newly proposed in UT4).</p>	<p>pay compensation to affected customers.</p>
<p>Other exclusions and limitations of liability (Standard End User Access Agreement, clause 20)</p> <p>The standard access agreement contains numerous other limits on Aurizon Network's liability for its performance (or non-performance) under an access agreement (by virtue of exclusions, time bars, and caps on liability).</p>		
<p><i>Protections against credit risk of access holders</i></p>		
<p><b>Security requirements (Standard End User Access Agreement, clause 5 / Standard Operator Access Agreement, clause 6)</b></p> <p>The standard access agreements provide for substantial security to be provided by access holders.</p>	<p>A number of the security requirements have been increased for UT4. For example in the operator access agreement, the requirement (subject to credit rating) is provision of up to the greater of 1 year of access charges or the aggregate of the deductibles under each required insurance policy. This is a substantial increase from the up to 12 weeks of access charges required under UT3.</p>	<p>Standard access agreements for other regulated businesses often include security requirements. However in several sectors the amount of security payments which may be required, and the circumstances in which they may be required are tightly regulated.</p> <p>For example, under the National Energy Retail Rules, the amount of a security deposit for a small customer must not be greater than 37.5% of the customer's estimated bills over a 12 month period. Further, a security deposit cannot be required in certain circumstances (National Energy Retail Rules, Part 2, Division 6).</p>

Aurizon Network risk protection mechanism	Change proposed from UT3 (if any)	Comparison with other regulated businesses
<i>Protections against regulatory risk</i>		

#### **Limits on QCA discretion**

In a number of areas the QCA's discretion is limited by the terms of the proposed undertaking. For example, in reviewing capital expenditure proposals from Aurizon Network, the QCA is required to have regard to certain factors, and must accept Aurizon Network's proposal in certain circumstances (Schedule E, clauses 3.2, 4.2, 4.3, 5.2 and 5.3). Similarly, in reviewing proposed variations to reference tariffs, the QCA is required to take into account certain factors, including Aurizon Network's legitimate business interests (Schedule F, clause 5.5(c)).

In most regulatory schemes, any limits on the regulator's discretion are set by the law or regulations governing the regulatory process. It is unusual for the regulator's discretion to be limited or defined by the terms of the service provider's undertaking.

For example in regulation of energy network businesses, the extent of the AER's discretion is defined by various provisions of the National Gas Rules and National Electricity Rules, and these rules are set by an independent rule-making body (the AEMC).