Professor Roy Green
Queensland Competition Authority
Level 27
145 Ann Street
Brisbane Queensland 4001

12 March 2018

Dear Professor Green

This letter and the attached detailed documents form Aurizon Network's submission on the QCA's draft decision (**Draft Decision**) relating to the 2017 Draft Access Undertaking (**2017 DAU**).

As you are aware Aurizon Network has very serious concerns in respect of various aspects of the Draft Decision and the process by which it was instigated.

We believe the Draft Decision fundamentally fails to recognise the commercial and regulatory risks Aurizon Network faces in operating the Central Queensland Coal Network (CQCN).

The impact of inadequate recognition of these risks on such a nationally important asset as the CQCN cannot be overstated.

For example, within days of the Draft Decision being released in December 2017, Aurizon's market capital value fell by more than $1.5 Billion. Analysts, investors and stakeholders both locally and internationally have expressed concern regarding the long-term sustainability of Aurizon's business if the Draft Decision is subsequently approved by the QCA as its Final Decision.

Aurizon values our customer relationships very highly. Unfortunately, these relationships have also been adversely impacted given the necessity for Aurizon Network to implement some of the changes in the Draft Decision by nature of their financial retrospectivity to 1 July 2017 (if implemented in a Final Decision by the QCA).

We appreciate that it is the role of the QCA to facilitate the 2017 DAU process but we believe there are material flaws and anomalies in both process and content of the Draft Decision.

As part of our submission we ask that consideration be given to the various points we have raised on these issues as well as additional information that has become available while the 2017 DAU process has been underway.

Process

In addition to the concern Aurizon Network has with a number of elements of the Draft Decision, Aurizon Network also has a fundamental concern with the timing and process that

T +61 7 3019 8065 | michael.riches@aurizon.com.au | aurizon.com.au
Level 4 – 192 Ann St Brisbane QLD 4000 Australia | GPO Box 456 Brisbane QLD 4001 Australia
Aurizon Network Pty Ltd ACN 132 181 116

was followed in reaching that decision. As you are aware, the Draft Decision relates to the 2017 DAU which was submitted by Aurizon Network in response to a purported initial undertaking notice issued by the QCA. That initial undertaking notice was issued without prior notice to Aurizon Network by the QCA, and during its decision-making process for the 2016 Draft Access Undertaking (UT4).

A decision by the QCA to issue an initial undertaking notice is not one to be taken lightly because the compulsory process it triggers can ultimately end with the QCA imposing its own version of an access undertaking on an access provider.[1]

The inappropriateness of the process adopted by the QCA is particularly relevant in light of the very serious concerns that Aurizon Network has with various aspects of the Draft Decision, and the prospect that the QCA may ultimately seek to impose an access undertaking reflective of that Draft Decision on Aurizon Network, which in many respects, lacks cogency and is beyond the QCA's powers to write or approve.

Our concerns with the Draft Decision are detailed in the attached submissions. By way of example, we note the following.

Inflation, rate of return, gamma and credit rating

The decision of the QCA whether to approve or refuse to approve the 2017 DAU is governed by the provisions of the Queensland Competition Authority Act 1997 (Qld) (**QCA Act**). The decision is to be guided by the overarching object set out in section 69E and the matters to which the QCA is directed to have regard in section 138(2). The QCA recites the provisions of the QCA Act in the Draft Decision but fails to explain how its decision to refuse to approve various aspects of the 2017 DAU has proper regard to the matters contained in section 138(2). This is particularly the case in connection with the measurement or estimation of important parameters such as inflation, the rate of return and gamma.

It is apparent from the Draft Decision that where a decision is required as to the use or application of a methodology, or selection of a point estimate, the QCA has almost routinely determined to adopt an approach that reduces overall expected revenue to be recovered by Aurizon Network in the UT5 period. For example:

- Inflation: the Draft Decision does not approve the break even method, or even have regard to it as containing relevant information for estimating forecast inflation. The break even method is dispensed absent any examination of whether the issues of concern raised in connection with it by the QCA are of any relevance to the purpose for which the QCA would use the methodology, being the estimation of forecast inflation over a four year period.
- Risk-free rate: in the Draft Decision the QCA adheres to its preferred approach of "matching" the risk-free rate to the term of the regulatory period which has the effect of inappropriately lowering the value of this parameter relative to the use of a 10 year term. In so doing, the QCA fails to take into account relevant information in the form of evidence concerning how investors evaluate investment opportunities, which is of direct relevance to the object of Part 5 of the QCA Act, including economically

[1] Our position in relation to this issue has already been provided to the QCA as set out in our letter dated 19 May 2016 and does not need to be restated here

efficient investment. This real world evidence is put to one side by the QCA in favour of a misapplied theoretical principle (the "NPV=0" principle).

- Market Risk Premium (**MRP**): having settled upon the use of a four-year term for the risk-free rate, the QCA fails to adjust its MRP estimates so that they are appropriately estimated by reference to a four-year risk free rate. This has the effect of reducing the point estimate for the MRP. Such an approach is irrational. Further, a notional "increase" in the MRP to 7% in the Draft Decision is in truth no increase at all from the 6.5% that applied in UT4 for the reasons set out in our detailed submission.
- Equity beta: in the Draft Decision the QCA maintains regulated energy and water companies as preferred comparators for estimating the equity beta applicable to Aurizon Network. This is despite considerable differences in the operating environments between, on the one hand, gas, electricity and water networks, and on the other, a complex and integrated rail network transporting coal. Despite compelling evidence to the contrary the QCA has determined that risk information derived from other networks with similar operating environments to Aurizon Network is irrelevant. Given the inherent uncertainty of estimating parameters such as the equity beta, the position of the QCA adopted in the Draft Decision to reduce the equity beta relative to that applied in UT4, despite an increase in the upper end of the asset beta range identified by the QCA's consultant, is surprising and concerning.
- Gamma: the Draft Decision application of a value for imputation credits of 0.46 based on a utilisation approach is materially at odds with the significant weight of scrutiny and extensive consultation given to this topic by other bodies such as the Australian Competition Tribunal and the Federal Court. In addition, the approach adopted by the QCA applies no weight to the evidence from tax statistics.
- Debt Risk Premium (**DRP**): the approach adopted by the QCA in the Draft Decision for measuring the DRP is not fit for purpose during the measurement period used by the QCA. The inclusion of A- bonds creates a downward bias that could have been appropriately eliminated by pooling BBB and BBB+ bonds, which are most reflective of Aurizon Network's credit status and represent a sufficient sample size, so as to properly estimate the DRP.
- Credit Rating: in the Draft Decision the QCA sets a benchmark credit rating of BBB+, and therefore sets a capital structure based on 55% gearing. However, the QCA then acknowledges that the cash flows from the Draft Decision do not support the credit metrics required to retain the benchmark rating. There is therefore a material inconsistency in the conceptual model used by the QCA. The Draft Decision also considers only maintaining a credit rating from one agency, despite strong market evidence of the need for firms with large debt portfolios to maintain a rating from at least two credit rating agencies.

Most significantly, despite professing to do so in the Draft Decision, the QCA does not step back from these individual decisions and consider whether the overall result, a rate of return of 5.41%, will promote the economically efficient operation of, use of, and investment in the CQCN. More specifically, the QCA does not address how an entity like Aurizon Network will, with a regulated rate of return on capital of 5.41%, be able to compete in internationally competitive markets for the funds that it needs to sustain its operations in the long term in a manner that is consistent with the promotion of economically efficient investment.

Determining an appropriate rate of return does not, as the Draft Decision terms it, involve a "balancing" of the competing interests of Aurizon Network, access holders and access seekers. Providing an appropriate return on investment, commensurate with the regulatory and commercial risks involved, is entirely consistent with the legitimate business interests of

Aurizon Network, the public interest, and the interest of persons who may seek access. The critical issue is that the rate of return is appropriately determined so that the resulting revenue and prices generate expected revenue that is at least enough to meet the efficient costs of providing access.

As discussed in our detailed submissions, the proposed rate of return of 5.41%, (a drop of approximately 1.8% from the WACC under UT4):

- does not promote the economically efficient operation of, use of, and investment in the CQCN, contrary to the object of Part 5 of the QCA Act;
- fails to recognise the very significant complexity and corresponding risks associated with operating the CQCN; and
- does not provide an environment for Aurizon Network to efficiently invest in the CQCN.

Maintenance and operating allowance

Compounding the adverse implications of the proposed WACC for Aurizon Network's business is the proposal to reduce Aurizon Network's maintenance allowance by $104 million, and to effectively direct the manner in which Aurizon Network should carry out maintenance on its network. Those decisions will also have very real implications for users of the rail network, particularly as the QCA and its independent advisers are unambiguously telling Aurizon Network to prioritise maintenance tasks over tonnage throughput to achieve the lowest cost of maintenance, regardless of the consequences for the efficiency of the supply chain.

The QCA's approach to the maintenance allowance and the manner in which it says Aurizon Network should carry out maintenance tasks are at odds with the legislated object of Part 5 of the QCA Act, to incentivise efficient operation, use and investment in the relevant infrastructure.

The Draft Decision proposes to reduce Aurizon Network's operating allowance by $112 million. An allowance at this level is insufficient to allow Aurizon Network to effectively manage its business. The QCA's approach to calculating the operating allowance is at odds with, in particular, the object of Part 5 and the pricing principles in section 168A (a) and (d) of the QCA Act.

Aurizon Network can see no reasonable basis for the rate of return being proposed in the Draft Decision, and no reasonable basis for the Draft Decision in respect of the maintenance or operating allowances.

Beyond power decisions

There are many aspects of the Draft Decision which, if reflected in a final decision by the QCA, Aurizon Network believes would be beyond the power vested in it under the QCA Act. These matters are set out in our detailed submission.

We urge the QCA to reconsider its position on each of these matters and the other issues addressed in our detailed submissions.

Conclusion

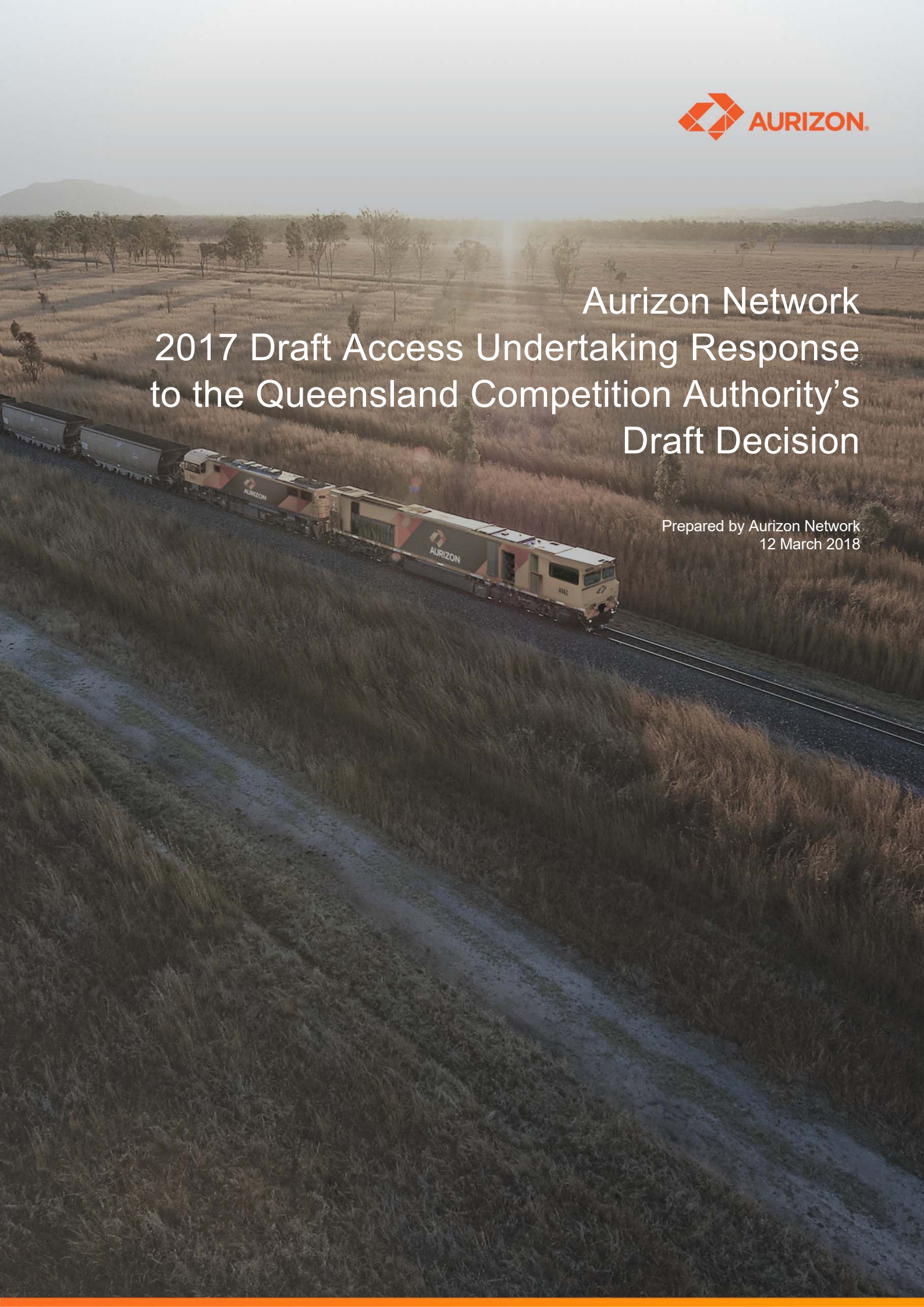
Subject to our comments in the attached detailed submissions, Aurizon Network cannot accept a final decision that reflects the QCA's positions in the Draft Decision.

Aurizon Network respectfully asks that in making its final decision on the 2017 DAU (as amended in response to the Draft Decision), the QCA ensures its decision is appropriately guided by the object of Part 5 of the QCA Act and the matters to which it is directed to have regard in section 138(2) of that Act. While the process of determining regulated prices is an administrative one, this process cannot ignore that Aurizon Network operates in a commercial environment with an objective to deliver long term value to its customers and competes for debt and equity funding in internationally competitive markets.

It is our submission that the Draft Decision does not take into regard the real world in which Aurizon Network operates and, in so doing, fails to promote economically efficient operation of, use of, and investment in, the CQCN with subsequent detrimental impact on our customers and the economy.

Yours sincerely

Michael Riches
Group Executive Network



Aurizon Network 2017 Draft Access Undertaking Response to the Queensland Competition Authority's Draft Decision

Prepared by Aurizon Network
12 March 2018

Aurizon Network
2017 Draft Access Undertaking Response to the QCA's Draft Decision

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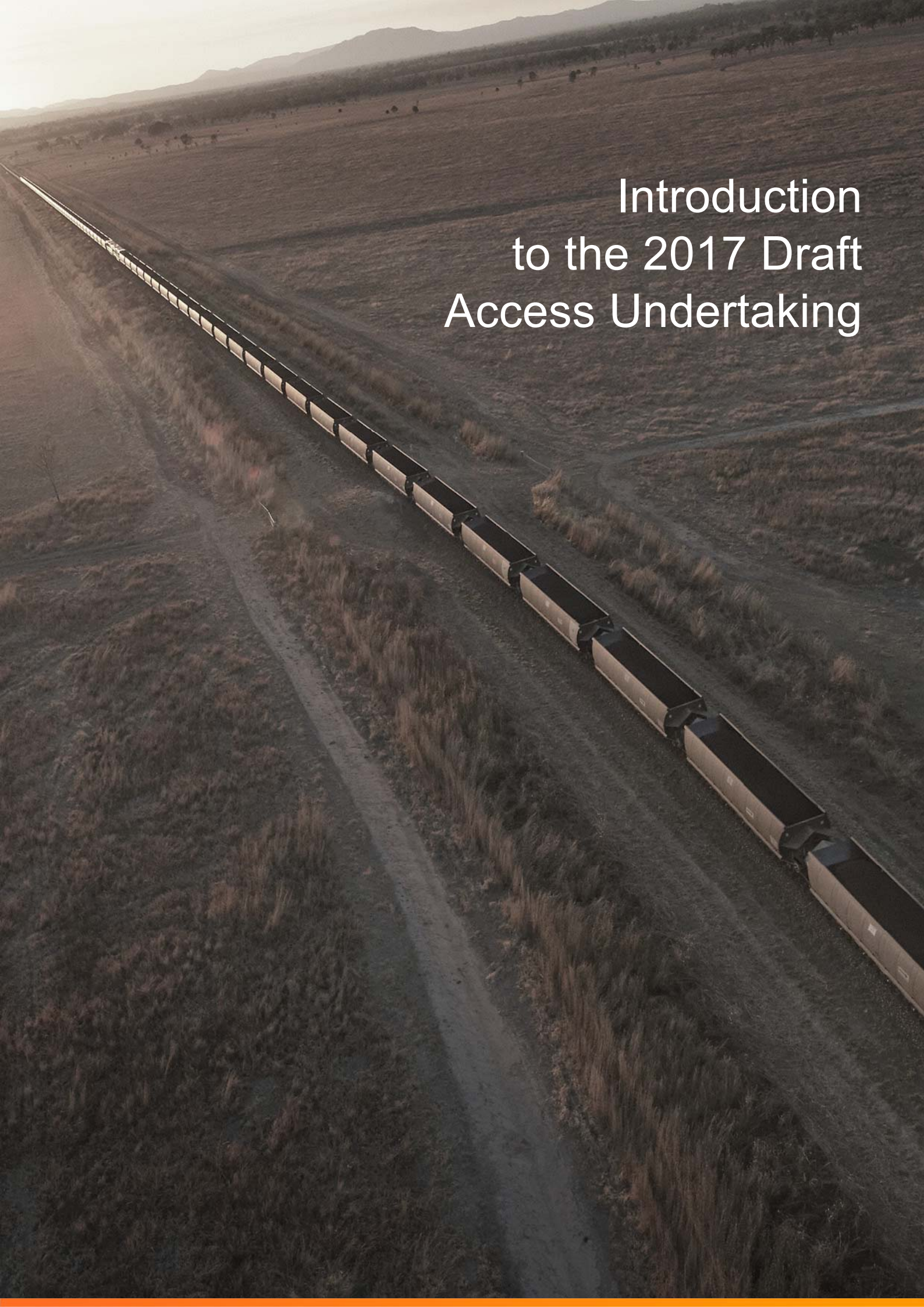


Introduction to the 2017 Draft Access Undertaking

Introduction

The Queensland Competition Authority's (**QCA's**) Draft Decision is to refuse to approve the 2017 Draft Access Undertaking (**UT5**) submitted by Aurizon Network.

We have assessed the QCA Draft Decision on UT5 (**Draft Decision**) in terms of Aurizon Network's operations, the potential impact on users of, and access seekers to, the Central Queensland Coal Network (**CQCN**), and our ability to continue to maintain and invest efficiently in a long term sustainable and safe rail network and coal industry development that meets our customers' growing needs.

This Draft Decision is contrary to the primary objective of the *Queensland Competition Authority Act 1997* (**QCA Act**) which is to promote the economically efficient operation of, use of and investment in, significant infrastructure by which services are provided, with the effect of promoting effective competition in upstream and downstream markets. Crucially, the Draft Decision appears to adopt a position that this objective is best served by minimising the cost of the below rail service, rather than by enabling the below rail service to be provided in a way that allows supply chain throughput to be maximised.

As a result of the QCA's focus on cost minimisation, the Draft Decision creates an environment in which service standards available to users are likely to be lower as a consequence of reduced operational flexibility, and this, in turn, would ultimately be expected to impact supply chain throughput.

The QCA Act provides for the QCA to make its judgements on Aurizon Network's UT5 proposal based on the application of the criteria set out in the QCA Act. The QCA has discretion in the process by which it evaluates proposals against these criteria and forms its judgements. In its evaluation, the QCA has not reached a balanced conclusion in a range of areas as it does not recognise the inherent market risks associated with the provision of a below-rail coal service. The Draft Decision, if it is to be reflected in a Final Decision, would under-compensate Aurizon Network for its investment in maintaining a safe, reliable coal chain network and delivering a service that optimises network efficiency to deliver on our customers' requirements.

The Draft Decision does not correctly assess Aurizon Network against commercial requirements or the environment in which it operates. The Draft Decision has created a benchmark entity for the purposes of setting the Weighted Average Cost of Capital (**WACC**) using an entity with a BBB+ credit rating. However, when assessed against the credit metrics from commercial rating agencies, the Draft Decision fails the Standard and Poor's (**S&P's**) BBB+ threshold for the first three years of the regulatory term and fails Moody's Investor Services (**Moody's**) Baa1 rating for the entire regulatory term.

Being able to offer flexibility in our planned maintenance and capital works program is one of the key attributes resulting in the success of the central Queensland coal supply chain within the competitive global market. The Draft Decision's maintenance practices and accompanying maintenance allowance outline that cost efficiency should be prioritised over flexibility. This outcome results in the flexibility previously provided throughout past regulatory terms, no longer being a viable practice, specifically since the UT5 regulatory term commenced on 1 July 2017 and is retrospectively applied upon receipt of the Final Decision.

Aurizon Network contends that the Draft Decision adopts a downward bias in its evaluation of a number of revenue positions. In most of these circumstances, the QCA has applied the lowest possible revenue outcome identified in its assessment process.

Overall, it appears that the QCA has focussed on each cost and individual revenue building block in isolation and has not appeared to review the overall reasonableness of its Draft Decision.

The consideration of reasonableness is important as it should factor in, not just the impact to the regulated entity, but also the impact to the broader supply chain and the competitive markets in which they operate, thus meeting the objective of promoting upstream and downstream competition.

Aurizon Network's key concerns with the Draft Decision are:

- the overall reasonableness of the QCA's proposed Maximum Allowable Revenue (**MAR**) of $3.893bn, a reduction of $1 billion from the MAR proposed by Aurizon Network;
- a WACC of 5.41%, compared with a proposed WACC of 6.78% submitted by Aurizon Network. This is an outlier when compared with other regulatory decisions;
- a reduction in maintenance allowance of $104m, whilst maintaining an asset which is 20% larger than in the 2016 Access Undertaking (**UT4**) regulatory period and the QCA expecting an additional 130 million tonnes (**mt**) more (or 15%) higher in aggregate than UT4; and
- core policy items, specifically disputes, remain outstanding after successive Access Undertaking reviews.

We remain committed to working with our stakeholders to find workable solutions that appropriately address the regulatory, commercial and operational risks imposed on future coal chain investments as a result of the Draft Decision.

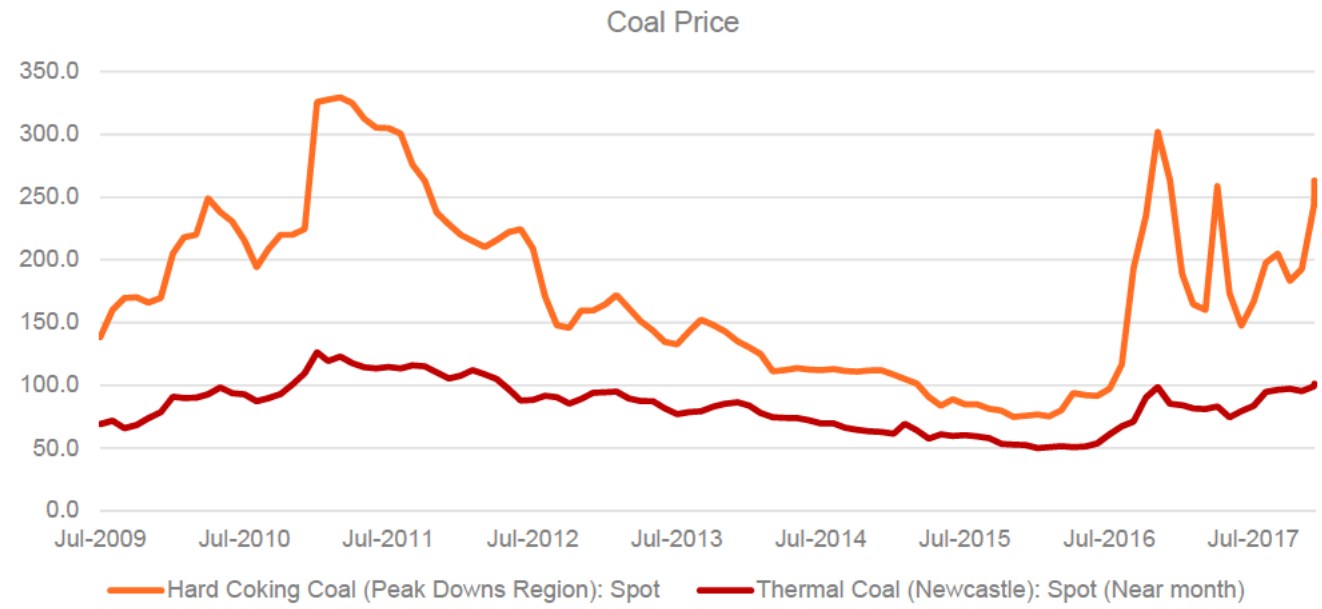
Coal Market Outlook

Strengthened price conditions but investment remains low

As outlined in Aurizon Network's UT5 proposal, volumes railed across the CQCN are subject to demand for seaborne coal and the supply response by producers in Central Queensland. Aurizon Network holds the view that the opportunity remains for Australian coal supply growth, driven by continued urbanisation in developing Asia combined with the relative quality (and cost effective extraction/transport) of export coal. This outlook is subject to political, economic and environmental factors in demand centres, primarily Asia, in addition to investment by coal producers in Central Queensland.

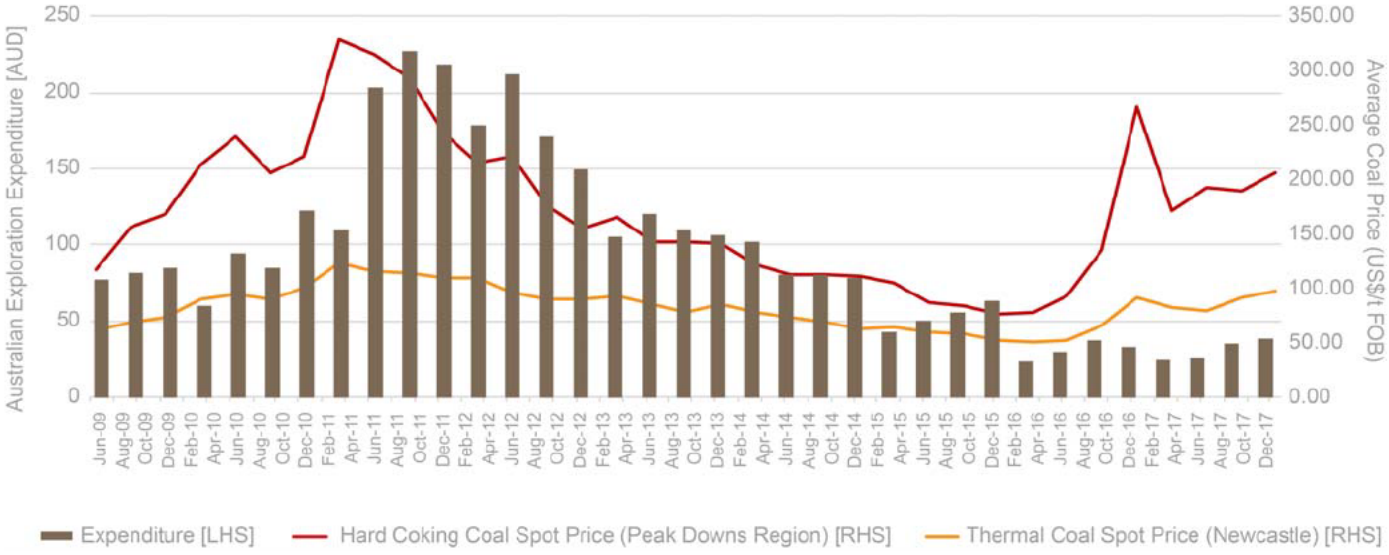
Coal prices have recovered considerably from difficult trading conditions throughout 2015 and early 2016 (as can be seen from Figure 1) resulting in some mining assets in Central Queensland resuming production from previously being put into care and maintenance. However, the level of investment by Australian coal producers in both exploration and capital expenditure, remains at historically low levels (as shown in Figure 2 and Figure 3).

Figure 1 Coal daily price movements – hard coking coal and thermal coal – 2009 to 2017 ($USD per tonne)



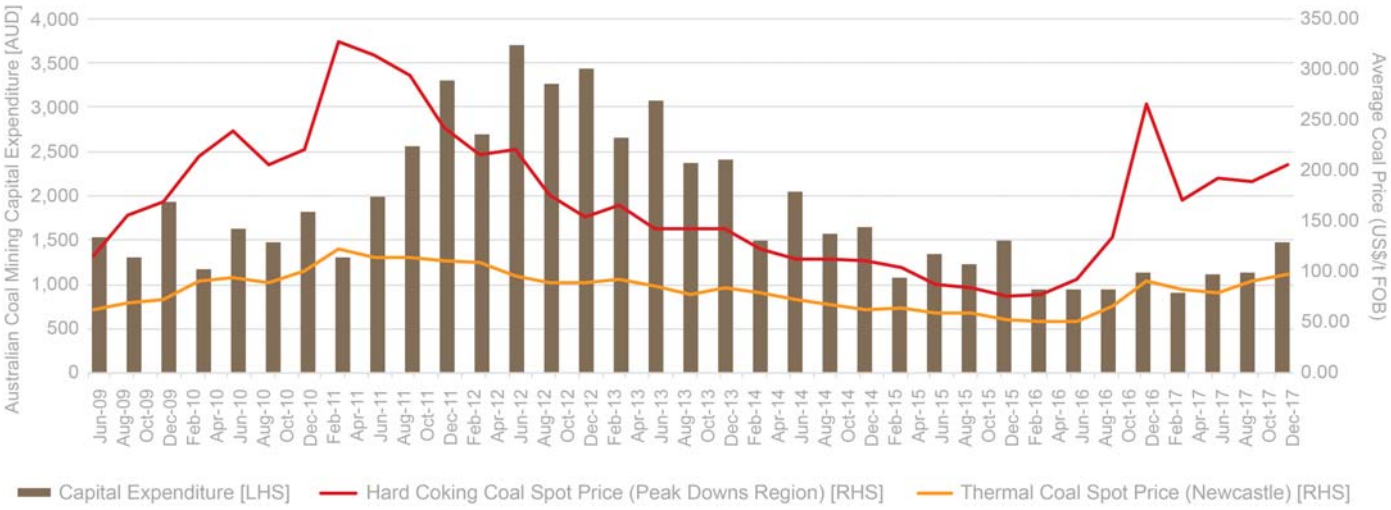
Source: Platts, Intercontinental Exchange

Figure 2 Australian Coal Exploration Expenditure (& Coal Prices) – 2009 to 2017



Source: ABS Mineral and Petroleum Exploration (Cat 8412.0), Platts, Intercontinental Exchange

Figure 3 Australian coal mining capital expenditure ($A million) – 2009 to 2017



Source: ABS Private New Capital Expenditure and Expected Expenditure (Detailed Industries), Australia, Quarterly, (Cat 5626.0), Platts, Intercontinental Exchange

Other coal supply chains are returning or increasing supply to the international marketplace. Figure 4 below presents seaborne volumes for major coal exporting nations between March 2016 and December 2017. Outside of Australia, export volume that had previously been shuttered during periods of lower coal prices has been incentivised through coal prices to return to the seaborne market. In the instance of the United States (second largest export nation after Australia), metallurgical coal export volume was 36% higher in 2017 (+13mt) compared to the previous year. The largest thermal coal export nation, Indonesia, exported an additional 6% of volume in 2017 (+21mt)[1] compared to the previous year. Notwithstanding the impact of Tropical Cyclone Debbie, the cautious approach to investment in Australian supply by coal producers combined with the volume response from competing supply nations is placing downward pressure on the Australian market share in seaborne markets.

[1] Australian Bureau of Statistics, United States Import and Export Merchandise Trade Statistics, CEIC.

Figure 4 Seaborne Export Volume (Major export nations) – 2016 to 2017

Source: Australian Bureau of Statistics, United States Import and Export Merchandise Trade Statistics, CEIC.

The CQCN environment, customer base and customer demands are changing

The Draft Decision, through its focus on cost minimisation rather than supply chain efficiency, is expected to result in conditions that are unlikely to benefit users of the CQCN network. If the QCA Final Decision reflected the Draft Decision, Aurizon Network is unlikely within the allowances provided to be able to deliver a rail service that meets its customer's demands for ever increasing reliability and flexibility.

The demands that customers place on the access provider change over time as the customers seek to respond to changing market conditions. In the early 2000's, in an environment of sustained low coal prices, the key priority for access seekers was cost minimisation. This changed from the mid 2000s as prices grew rapidly, with the key priority becoming capacity availability. In order to capitalise on higher prices, Aurizon Network customers requested additional built capacity through the construction of new infrastructure within the CQCN.

The current market environment, however, is changing. Aurizon Network's customer base, has seen more 'junior miners' purchasing mining operations from larger companies within the CQCN. In this changing environment, Aurizon Network's customers are seeking alternative, less capital-intensive solutions, to generate additional coal production to take advantage of elevated coal prices. Larger mining companies are seeking operational changes to increase capacity witminimal capital outlay, and junior miners are seeking low capital solutions to allow them to commence railing and subsequently start generating cashflow.

Recognising this priority, Aurizon Network is working with all Access Holders to seek more flexible ways of obtaining and facilitating access and capacity within the CQCN, with examples of where Aurizon Network has introduced flexibility including:

> Aurizon Network, through collaboration with customers, sought to develop Access Undertaking obligations and processes that allow Access Holders to readily transfer their access rights within their respective portfolios. This has seen an increase in transfers from 35 in 2015 to 80 in 2017, an increase of 56%;
> working with customers to find alternative capacity options, such as longer and heavier trains;

- focussing on the delivery of Information Technology (**IT**) solutions that benefit the entire network, including projects such as the Advance Planning and Execution software to assist with the facilitation and optimisation of the approximate 27,000 trains that operate within the CQCN per year;
- operating the network to achieve greater reliability combined with increased flexibility. This has been facilitated through an effective maintenance regime which:
  - embeds flexibility through judicious use of planned possessions in order to maximise available capacity; and
  - places a priority on operation of train services in accordance with the daily schedule in order to maximise system capacity and throughput.

Flexibility is of particular value given the high volatility in the coal price, as it allows these companies to respond to price peaks through additional ad-hoc railings.

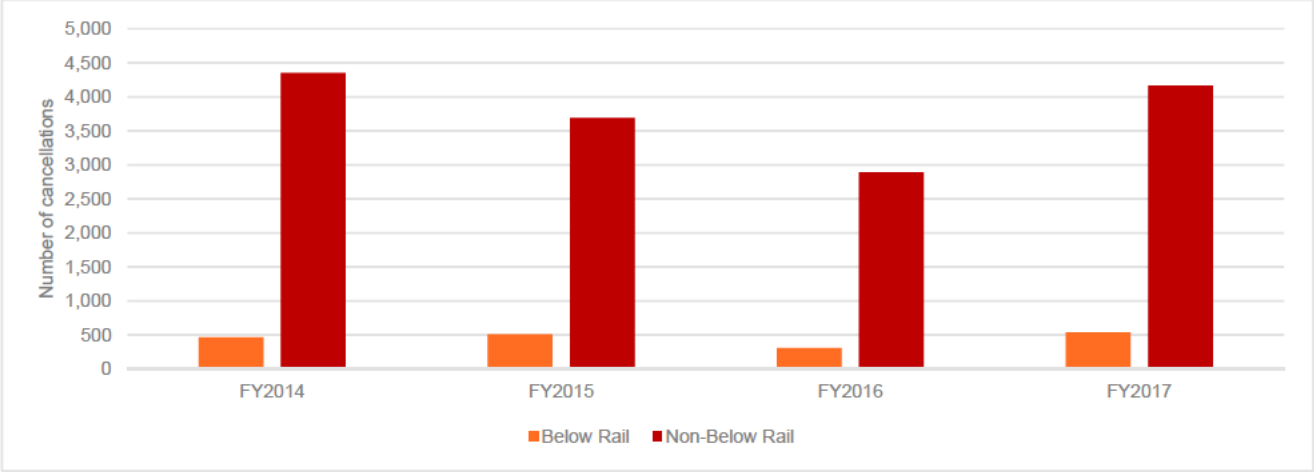
Using a simple example with an electrified Goonyella train which currently carries 10,390 tonnes of metallurgical coal, at the spot price of $233 per tonne on 1st March. This train would provide Aurizon Network with $3.11 per net tonne (based on FY18 tariffs) for facilitating the running of this train service, which would ultimately be managed under the regulatory revenue cap arrangement. However, the miner would receive an additional $2.4m in revenue.

The proactive and innovative approaches delivered by Aurizon Network continue to provide users with reliable performance, and therefore a high degree of operational certainty. To provide this innovation, the access provider will incur additional operational costs to develop and implement these changes. The value that this level of certainty provides cannot be viewed lightly, as it allows stakeholders to plan not only their daily operations in a more efficient manner (i.e. stock pile management, ship ordering, mine maintenance), but also supports the longer term efficient use of the supply chain by facilitating efficient capital allocation decisions (e.g. rollingstock, outloading facilities) given the confidence users have in the ongoing reliability delivered by Aurizon Network.

Aurizon Network's UT5 proposal continues to focus on asset renewals, maintenance and operations processes. Aurizon Network contends that, in maintaining the network, it should continue to offer a flexible approach to maximise supply chain throughput as this provides the most efficient use of the entire supply chain infrastructure.

The flexible method of delivery by Aurizon Network has been proven to deliver sustained, reliable below rail performance across the CQCN. Figure 5 shows the number of service cancellations due to below rail causes has been persistently low for several years now, and as a direct result of Aurizon Network's investment in maintaining the network to a standard that clearly benefits users.

Figure 5 CQCN performance – number and cause of service cancellations – FY2014 to FY 2017



Source: Aurizon Network

Summary of Aurizon Network's Response

We maintain that the UT5 proposal submitted to the QCA on 30 November 2016 struck a reasonable balance between the interests of users and the need to maintain a safe, reliable and high performing rail network over the short and long term.

Aurizon Network's UT5 proposal for the MAR and Reference Tariffs of $4,892m over the four year term was based on minimal change from the QCA's approved UT4 revenue positions and reasonable forecasts of the efficient cost of providing access to the safe and reliable network managed by Aurizon Network. The MAR provided a rate of return on Aurizon Network's Regulatory Asset Base (**RAB**) that reflected the regulatory and commercial risks prevailing in the supply of services to the coal market. Aurizon Network maintains that an assessment of risk must take into account demand volatility, the nature and industry in which our customer base operates and the external risk assessments applied by ratings agencies and corporate bond markets, and have regard to the risks longer than the regulatory term.

The QCA has reached a preliminary view that Aurizon Network's UT5 total allowable revenue should be around 20% lower, at $3,893m.

Following our assessment of the Draft Decision, we are concerned that the proposed changes, if they are reflected in the Final Decision, would be likely to result in outcomes that would not allow Aurizon Network or its customers to meet their respective needs. Aurizon Network contends there are material anomalies in the Draft Decision, including but not limited to:

- The QCA implies that Aurizon Network's CQCN is the lowest risk regulated asset in Australia given its decision that it should earn the lowest return amongst Australian regulated assets. We cannot reconcile the QCA's decision that Aurizon Network's Weighted Average Cost of Capital (**WACC**) should be 5.41%, compared to 6.3% recommended by the Australian Competition and Consumer Commission (**ACCC**) just 8 months prior for the government-owned Hunter Valley Coal Network (**HVCN**), a similar asset serving the Australian coal industry and an asset which many of our customers regard as having a lower risk profile.[2]
- The Draft Decision reflects a clear approach by the QCA to drive maintenance to the lowest possible cost regardless of the impact on supply chain throughput and additional costs to other components of the supply chain. The QCA believes that we should spend less than in the UT4 term even though we have an additional $1bn in assets to maintain, and the QCA themselves have forecast 15% volume growth over the 4 years of UT5.
- There are policy matters that cannot be compelled by the QCA under its legislation. This includes having broad discretion on the scope and jurisdiction of disputes, imposing a Standard User Funding Agreement (**SUFA**) framework with consequential obligations and imposing a right for third parties to fund expansions of the CQCN in priority to Aurizon Network.

[2] ACCC (2017) Draft Decision – Australian Rail Track Corporation's 2017 Hunter Valley Access Undertaking, April, p.134.

This Draft Decision is an example of what regulators should clearly not do which, as expressed earlier by the Productivity Commission, is to 'go to the wire' in seeking to strip monopoly rents.[3] This focus on immediate cost of service provision serves to lessen operational flexibility and undermine Aurizon Network's willingness to invest in maintaining and expanding the capacity of the network, at the short and long term detriment of the supply chain.

Key drivers of our UT5 proposal remain valid

The UT5 proposal was developed using UT4 as a key point of reference but the QCA's Draft Decision moves away from its own UT4 Final Decision

Aurizon Network's 2017 DAU (UT5) proposal highlighted the significant investment by industry in the development of the (then) just completed 2016 Access Undertaking (**UT4**). Therefore, with a view to providing as much regulatory certainty as possible to all stakeholders and facilitate an efficient and timely process for approval of UT5, Aurizon Network only made incremental changes from UT4 in its UT5 proposal.

This approach saw a range of revenue allowances, such as Ballast Undercutting and approaches to corporate overheads, adopting the QCA's approved UT4 position within the UT5 proposal. These allowances and approaches were verified by independent consultants employed by the QCA. Although Aurizon Network did not support all of the methodologies to develop these allowances, we accepted them for the purpose of expediting UT5. In terms of policy items, there continues to be a number of positions from UT4 that Aurizon Network considers problematic, however Aurizon Network only sought to limit the scope of changes to nine aspects within its UT5 proposal.

The only substantial changes proposed by Aurizon Network involved revised approaches to calculating our cost of capital and forecast inflation methodologies to better align allowances with the risk profile of the business. This reflected a genuine attempt by Aurizon Network to work towards a timely approval of UT5.

In contrast, the Draft Decision re-opens and diverges from many aspects (specifically maintenance and operational costs) that have been the subject of significant investigation, debate and consultation across several years and multiple regulatory processes, and which the QCA had accepted only a matter of months previously in the context of UT4. This approach adds considerable regulatory risk into Aurizon Network, as there is no certainty of a consistent approach to reviewing Access Undertakings.

The Draft Decision significantly under-estimates the risk exposure of Aurizon Network's asset base such that the Aurizon Network is not able to earn a risk-appropriate return on its investment

We believe that the inherent risks that Aurizon Network's assets are exposed to are significantly higher than what the Draft Decision proposes.

[3] Gary Banks (then Chairman), Productivity Commission (2012) *Competition Policy's regulatory innovations: quo vadis?*, Speech prepared for the ACCC Regulatory Conference 2012, Brisbane, 26 July and the Economists Conference Business Symposium, Me bourne 12 July 2012.

The Draft Decision proposes a significantly lower WACC (5.41%) to that submitted by Aurizon Network (6.78%) and is not only below what we believe to be considered appropriate for the risk profile of the business, but is also lower than any other recent regulatory decision for any other infrastructure network in Australia.

The effect of the Draft Decision to set a WACC of 5.41% is, for example, commensurate to assessing Aurizon Network's risk profile as similar to the risks incurred by the Water NSW – Murray Darling Basin (WACC 5.5%). We do not believe the risk profile of Aurizon Network is akin to a regulated water utility.

The CQCN is exposed to significantly higher long term risk as a consequence of its exposure to international demand and coal price determinants. The CQCN is also subjected to substitution risk with end customers in 2017 seeking increased coal supplies from other global supply chains including the USA and Indonesia.

Any regulatory decision where a benchmark entity is used containing credit tests applied by the ratings agencies, must contain the metrics that the regulated entity is assessed against in the commercial world.

In many aspects, this Draft Decision is an outlier in terms of decisions by other regulators. Recognising that Aurizon Network operates in a competitive market for attracting investment funds, a consistent approach is important to ensure a proper allocation of capital occurs and capital distortion is minimised.

The effect of a considerably lower WACC is to under-compensate the business for its risk exposure and reduce the willingness of Aurizon Network to continue to invest in maintaining existing and adding new capacity to the rail network. The WACC outcome also makes it substantially difficult for Aurizon Network to attract investors, in an environment where investment in the coal industry is becoming more difficult.

The QCA accepts the need for a consistent approach to forecast inflation but the result will under-compensate Aurizon Network

We support the Draft Decision that is minded to accept Aurizon Network's proposal to apply the same forecast rate of inflation to index the RAB roll-forward and to deduct inflationary gain from nominal revenues.

However, we note that the QCA has rejected the use of a break-even inflation rate. In reaching its Draft Decision on forecast inflation, the QCA has not had regard to the relative reliability of alternate methods over a term of four years and the conclusions that it has reached are inconsistent with other regulators who have considered this same issue. The Draft Decision implies that, in real terms, the risk free rate is materially negative at -0.46%. There is no evidence in Australian debt markets that supports the assertion that real interest rates are negative – this is simply the result of the QCA adopting an inflation forecast that is internally inconsistent with its estimate of the risk free rate.

The net effect of the QCA's proposed estimate, if left unchanged in the Final Decision, would be to under-compensate Aurizon Network for the effect of inflation in the context of the risk free rate applied in the Draft Decision and likely reduce its overall revenue allowance in real terms.

A real reduction in operating costs constrains Aurizon Network's ability to effectively manage the rail network and respond to emerging priorities

Aurizon Network has responded to volatile market conditions by continuously challenging its internal structure and processes to drive productivity. The operating allowance component of Aurizon Network's UT5 proposal of $855m was developed in line with the approach approved by the QCA under UT4 and based on the most current information available at that time.

The Draft Decision reduces Aurizon Network's operating cost allowance by $112m across the UT5 regulatory period, through a combination of measures, including changes to cost allocation methodologies, imposition of 'step down' changes to more recent base year costs and an unbalanced approach to the treatment of identified incremental cost increases (which have been rejected) and identified opportunities for cost savings (which have been reflected as a reduced operating cost allowance).

In aggregate, the QCA's assessment no longer permits Aurizon Network to recover efficient costs for providing below rail coal services. We are also concerned that the Draft Decision deviates from previously accepted points or principles established by the QCA for UT4. Aurizon Network faces real escalating costs and does not have the ability to absorb significant shortfalls resulting from changes in regulatory decision-making.

The QCA's persistent forensic approach to examining cost proposals is not well aligned with the principles of incentive based regulation which is designed to establish a cost allowance and then allow Aurizon Network freedom to deploy resources so as to most effectively manage its business, address emerging priorities and to benefit financially if it is able to outperform that cost allowance.

A real reduction in the recovery of maintenance costs will require changes in operational practices that will reduce the flexibility of the coal supply chain

We note that the Draft Decision is to not accept Aurizon Network's proposal to recover a maintenance cost allowance of $921m for maintaining the declared service over the UT5 regulatory period. The QCA has instead proposed a lower maintenance cost allowance of $817m. This is despite Aurizon Network's proposal being well aligned with the approved UT4 outcomes.

This Draft Decision is concerning for several reasons:

- Despite proposing a volume forecast for the UT5 regulatory period that is approximately 130mt (or 15%) higher in aggregate than UT4, there has been no volume adjustment to the allowances or consideration of the further impacts associated with these tonnages.
- In reaching its conclusions, we believe that the QCA has not taken into account the full range of information available to it and, in some instances, has incorrectly interpreted the information that was provided to it as part of our UT5 proposal and during the detailed maintenance review completed in compliance with the s185 notices issued to Aurizon Network in April 2017.[4]
- We have identified several fundamental errors within the analysis prepared by the QCA's consultants. In addition, there are instances where the consultants have made subjective or arbitrary adjustments to Aurizon Network's operational data, which are claimed to be reflective of an 'efficient' rail operator. The basis upon which these adjustments are justified is entirely unsubstantiated.
- The consultants conclude that Aurizon Network's maintenance practices are inefficient, but they do not provide evidence of the observed practices of a "more efficient" railway operator operating in similar circumstances to support this position. Instead, the consultants rely on their own generic "rail experience and knowledge".[5]

Of most concern is that the QCA and its consultants have applied a methodology of maintenance cost minimisation, without consideration of the benefits that more flexible maintenance approaches have in terms of efficient overall operation of the supply chain. The QCA's cost minimisation approach will create an environment which is likely to result in significant additional costs being incurred throughout the supply chain.

Volumes – a positive outlook on the back of growing volumes but limited scope to earn revenues

Aurizon Network's outlook profile was based on a modest ramp up in volumes reflective of the current investment in coal supply.

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4 http://www.qca.org.au/getattachment/81fc9995-5be7-4566-969e-ef782d4b2837/Stakeholder-Notice-7-Information-Update.aspx.

5 GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, Appendix C, p.7.

Since Aurizon Network's UT5 proposal was lodged in November 2016, market conditions have strengthened, but not to the extent contemplated by the QCA. The QCA has taken a more bullish outlook of projected volume growth, anticipating increased production from a number of new or recommissioned mines. However, we consider the QCA's projected volumes do not take into account the availability of port capacity or the likely volume ramp up profiles.

The impact of increased volumes allowance with an insufficient commensurate increase in costs for servicing those additional volumes means Aurizon Network would again be under-compensated for the costs associating with delivering below-rail services.

Aligning the Draft Decision with maintaining the CQCN

Being able to offer flexibility in our planned maintenance and capital works program is one of the key attributes of what makes Aurizon Network a leading rail network owner. This flexibility means that, during maintenance activities and capital works programs, we have been prepared to vary work times and scope during the planning stage and on the day of operations, so that we could flexibly meet our customers' requirements. This flexibility ultimately maximises the throughput of coal services for our customers. However the QCA considers that the cost incurred to provide flexibility is an inefficient practice and to address this, Aurizon Network should not adjust its maintenance practices to facilitate throughput of the supply chain, but instead should prioritise seeking the most efficient cost for providing the maintenance activity.

In short, Aurizon Network should not allow Train Services to interrupt the maintenance activities that it has planned to take place during Planned Possessions.[6]

We have assessed the QCA's position thoroughly and if it were to be a Final Decision, it would more than likely result in a growing proportion of expenses associated with adhering to our existing maintenance practices being unfunded.

The effect of the QCA's assessment is that, if our prior maintenance practices were to be continued, there would be a significant shortfall in maintenance cost allowance, with substantial consequences for Aurizon Network's ability to generate sufficient revenue to meet its efficient costs for this period owing to the retrospectivity of the Draft Decision (i.e. as it applies from 1 July 2017). In effect, revenue will be generated at the level of the Draft Decision, whilst Aurizon Network incurs the cost of maintaining the Network in line with an approach that provides significant throughput benefits to the supply chain. The QCA and its consultants have advocated a view that Aurizon Network's well-established maintenance regime is now out of line with the QCA's view of 'efficient' practices.

Aurizon Network is committed to operating and maintaining a safe, reliable network. We continue to believe that the customer responsive practices we have previously adopted and included within our UT5 proposal are still the most appropriate way to maintain the Network, as these ultimately benefit the supply chain through a strategic focus on throughput maximisation which in-turn benefits the broader economy. We are therefore proposing in response to this Draft Decision, that Aurizon Network should continue to deliver CQCN maintenance activities in a manner which facilitates greater supply chain throughput. Accordingly, our response provides for a maintenance allowance in-line with the maintenance delivery practices we have previously adopted (and submitted UT5 upon), and does not include any reductions in coal tonnage volumes which would likely result from Aurizon Network aligning with the operating practices suggested by the QCA and its consultants.

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[6] GHD Advisory (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, p.18.

Testing the reasonableness of overall outcomes

In our view, the QCA assessments in both of its MAR and Policy Draft Decisions are not reasonable.

In an attempt to progress towards an agreed final Access Undertaking, we have relied on testing the reasonableness of the overall outcomes that the QCA is proposing in relation to key aspects of our revenue and policy proposals in order to identify where we believe the QCA is incorrect in its assessment.

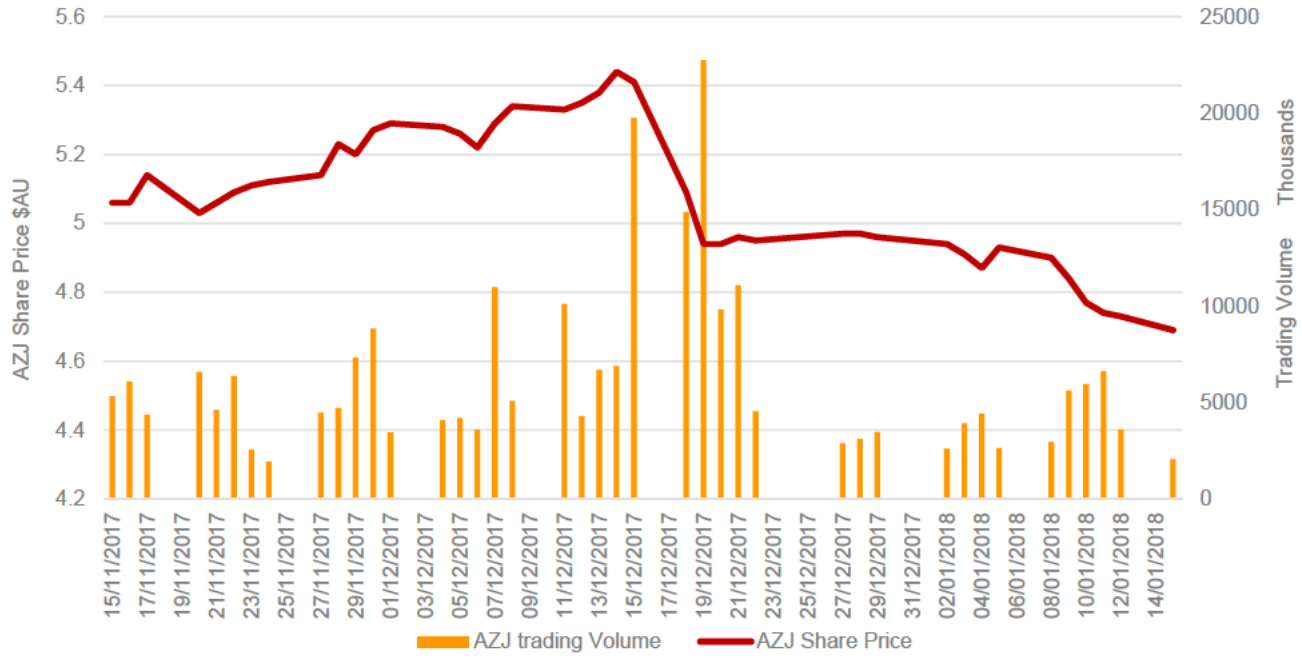
It is clear that the QCA has relied on consultants' advice on individual elements of the UT5 proposal and has adopted a downward bias in its evaluation of Aurizon Network's revenue positions. This approach draws it away from, in aggregate, meeting any test of reasonableness. The result is that the Draft Decision places it as an outlier, when compared with decisions of other regulators. In our view, the QCA has not evaluated proposals in a balanced and reasonable manner, which has resulted in a misalignment of decisions across the revenue and policy aspects of UT5.

At its most basic level, the QCA's view of the commercial, investment and regulatory risks to which Aurizon Network is exposed is inconsistent with existing market practice. We continue to assess how the Draft Decision impacts the Aurizon Network business and further changes in operating practices and business decisions may be necessary to align with a Final Decision. Any such changes would be likely to have a further negative impact on volumes. This translates into lost revenues for the complete supply chain including miners, train operators and the broader Queensland economy.

The impact of the Draft Decision on the market value of Aurizon Network was evident in the Aurizon Holdings' share price before and after the release of the Draft Decision. Prior to and post the Draft Decision's release, there were no material information releases relevant to the non-network parts of Aurizon Holdings or macro-economic data. Therefore, outside of general market movements, the Draft Decision would have been the sole determinate of any share impact. It is also reasonable to make inference, based upon the Aurizon share price movement, regarding whether the Draft Decision is commensurate with the return expectations of investors.

The impact to Aurizon's share price is outlined in Figure 6 below.

Figure 6 QCA Draft Decision Impact on Aurizon Holdings' Share Price



Source: ABS Private New Capital Expenditure and Expected Expenditure (Detailed Industries), Australia, Quarterly, (Cat 5626.0), Platts, Intercontinental Exchange

Therefore, Aurizon Network contends that the material reduction in AZJ's share price of 5.9% from close of business on 15 December 2017 and market close on 18 December 2017 was largely attributable to the Draft Decision's misalignment with market and investor expectations. This compares to the Australian Securities Exchange 200 which rose during this trading period.

Since the fall can be solely attributable to the information provided within the Draft Decision, this 5.9% fall in overall Aurizon Holdings value, equates to a fall in Aurizon Network's capital value of 11.6% based upon Aurizon Network's contribution to the Aurizon Holdings Group's EBIT.

Response outline

Aurizon Network's Response to the Draft Decision is structured as follows:

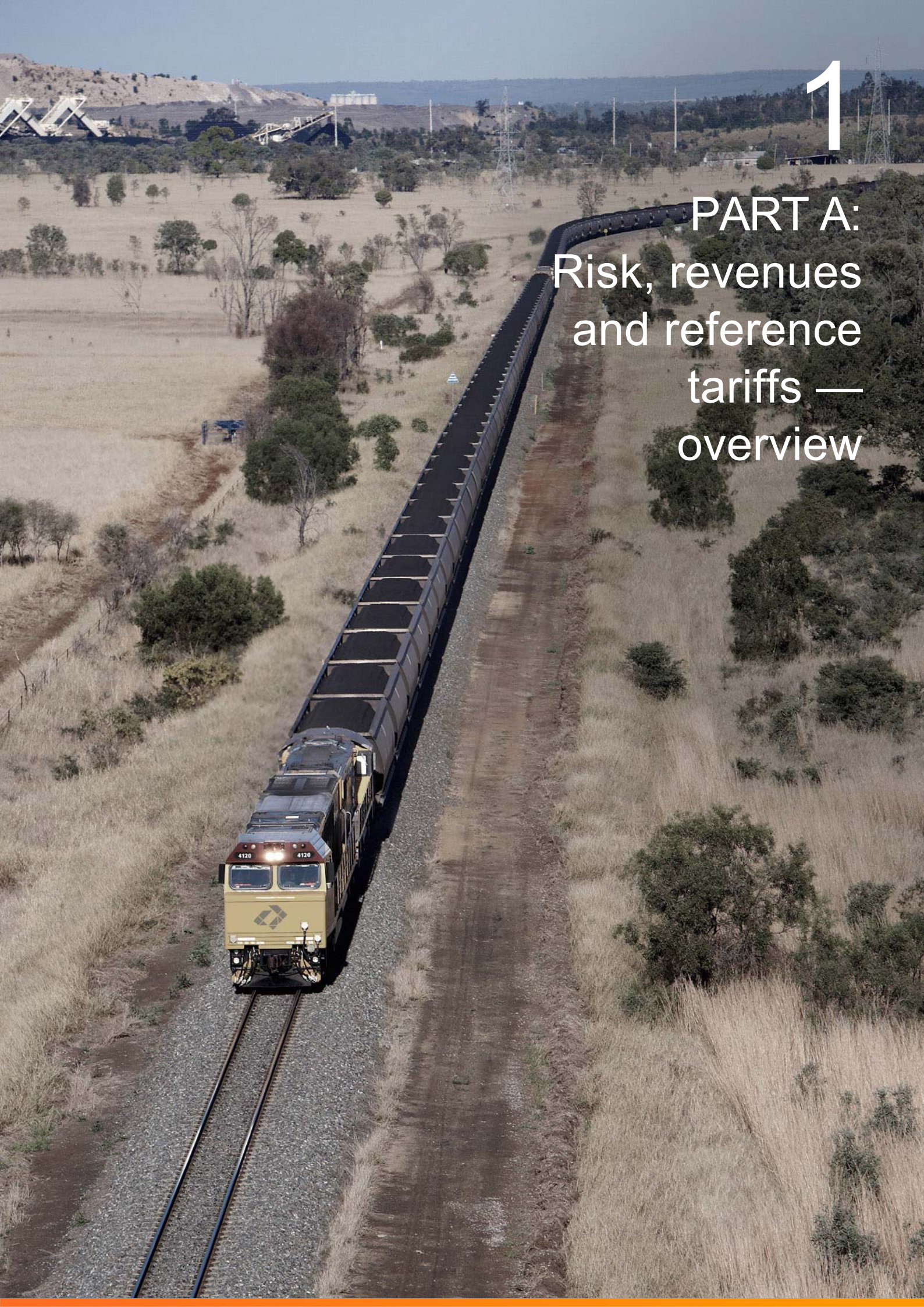
Part A – Risk, revenues and reference tariffs

- An overview of the risk, revenues and reference tariffs (chapter 1);
- Risk and the regulatory framework (chapter 2);
- The Regulatory Asset Base (RAB) and depreciation (chapter 3);
- Inflation forecast and RAB indexation (chapter 4);
- Rate of Return (chapter 5);
- Forecast volumes (chapter 6);
- Operating cost allowance (chapter 7);
- Maintenance cost allowance (chapter 8);
- Schedule F – Reference Tariffs and Take-or-pay (chapter 9).

Part B – Draft access undertaking provisions

Part B responds to the QCA's assessment of Aurizon Network's 2017 DAU including and proposed amendments and is structured as follows:

- An overview of draft access undertaking provisions (chapter 10);
- Preamble and Intent and Scope (chapter 11);
- Ringfencing (chapter 12);
- Negotiation Framework (chapter 13);
- Access agreements (chapter 14);
- Pricing Principles (chapter 15);
- Available capacity allocation & management (chapter 16);
- Capacity and supply chain management (chapter 17);
- Network development and expansions (chapter 18);
- Connecting with private infrastructure (chapter 19);
- Reporting, compliance and audits (chapter 20); and
- Dispute resolution and decision making (chapter 21).



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PART A: Risk, revenues and reference tariffs — overview

1. Part A – Risks, Revenues and Reference Tariffs – Overview

This chapter presents an overview of Aurizon Network's response to the Draft Decision on allowable revenues and reference tariffs. This overview should be read in conjunction with the remainder of our response.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 1 QCA Draft Decision and Aurizon Network's Response – UT5 – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply allowable revenues and reference tariffs as outlined in Appendix B of this Draft Decision.	1.1	Disagree
The proposed reduction in the total maximum allowable revenue over the UT5 undertaking period is $999 million, for the reasons outlined in this Draft Decision.		Disagree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU modelling assumptions relating to commissioning dates, revenue timing and working capital allowance.	1.2	Agree
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking to determine reference tariffs and allowable revenues for the 2017 DAU period is to apply the working capital amounts shown in Table 6 and Table 7.		Disagree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU approach to estimating tax expense and tax depreciation relating to the regulatory asset base. However, the QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs based on tax expenses for the QCA's proposed allowances for operating and maintenance costs and interest tax expense, calculated using the approved benchmark gearing ratio and cost of debt.	1.3	Agree with amendment
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU tariff structure and calculation methodology to determine the reference tariff components.	1.4	Agree
However, the QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise the reference tariffs, by system, based on the proposed allowable revenues and reference tariffs outlined in this Draft Decision.		Disagree

1.1 Overview - Aurizon Network's Position

1.1.1 Aurizon Network's submission (2017 DAU)

Aurizon Network submitted its UT5 proposal, in compliance with the QCA Initial Undertaking Notice. Aurizon Network's proposal was developed in line with the QCA Act's requirements and provided a reasonable revenue outcome that was based upon the appropriate risk profile and practices that would benefit the members of the supply chain. As part of this submission, Aurizon Network invited the QCA to meet with key Aurizon Network staff to clarify any matters.

In February 2017, Aurizon Network engaged with industry stakeholders to develop collaborative positions on a range of policy items. This subsequently led to agreement on a number of matters that were confirmed within the submission made to the QCA in March 2017.

In March 2017, Aurizon Network started to receive written requests for information from the QCA, to help clarify and understand the positions put forward by Aurizon Network in its November 2016 submission. Aurizon Network provided ongoing responses to these information requests. In April 2017 the QCA issued Aurizon Network with three notices to compulsorily produce information, under s185 of the QCA Act. Again, Aurizon Network complied with these notices and suggested a schedule of maintenance workshops with key Aurizon Network staff to help clarify the information provided.[7]

In September 2017, Aurizon Network submitted further evidence to support its original revenue positions. This was submitted as Aurizon Network believed that it was important to highlight where new information had become available as a consequence of regulatory or market developments which was relevant to the QCA for any UT5 decision. This new information should have been considered by the QCA as part of its Draft Decision on UT5. Examples of this new information included outcomes from legal proceedings, market data and QCA Final Decisions on related matters.

1.1.2 QCA Draft Decision

The Draft Decision is to refuse to approve the UT5 proposal submitted by Aurizon Network.

1.1.3 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network cannot agree with the Draft Decision. The material differences in the individual allowances, coupled with the outstanding policy issues, are likely to result in outcomes that Aurizon Network contends would be detrimental to the economically efficient operation and long term investment in the coal export supply chain.

1.1.4 Summary of Aurizon Network's response

The table below summarises Aurizon Network's position on the MAR building blocks for the UT5 regulatory period. A comparison is made between these values and the Draft Decision and Aurizon Network's submitted UT5 position.

[7] Aurizon Network (2017) Letter to the QCA – Notice to produce information under s185 of the QCA Act – Aurizon Network response and Request for extension, 12 May.

Table 2 Building Block – Aurizon Network's response to QCA Draft Decision ($m)

Building Blocks	Aurizon Network 2017 DAU	QCA Draft Decision	Aurizon Network Response to Draft Decision	Rationale for variance between Aurizon Network's Response and original submission
Return on Capital (WACC)	1,592	1,289	1,677	• Proposed nominal WACC increased from 6.78% to 7.03% as a result of changed market rates and an updated placeholder averaging period. Note: while the nominal WACC has increased, the real WACC (which has been adjusted for inflation) decreases from 5.49% to 4.62%.
Depreciation (less Inflation)	1,141	899	936	• Revised the 10-year forecast rate of inflation from 1.22% to 2.30%, reflecting changes to market rates and revised methodology
Maintenance Cost	921	817	928	• Uses FY17 as base year in line with the Draft Decision, adjusted for anomalies and is based upon Aurizon Network's recommended maintenance practices designed to minimise supply chain disruptions
Operating Cost	855	743	867	• Uses FY16 as the base year in line with the Draft Decision with updated cost allocation methodology, such as information technology costs
Tax	329	140	300	• Revised estimate of Gamma to 0.31 (from 0.25) in line with Australian Tax Office statistics
Total MAR	**4,838**	**3,888**	**4,708**	
Capital Carryover	54	5	49	
Total adjusted MAR	**4,892**	**3,893**	**4,757**	
Avg Tariff $/nt	**$5.36**	**$3.86**	**$4.90**	• Average reference tariff over the term of UT5

Totals may not add due to rounding.

The underlying parameters proposed by Aurizon Network for the return on capital building block are summarised as follows:

Table 3 Building Block – parameters – Aurizon Network's response to QCA Draft Decision

WACC parameter	UT5 submitted	UT5 QCA DD	UT5 Response to DD
Risk free rate	2.13%	1.90%	2.76%
Avg period	June 2016	June 2017	January 2018*
Capital structure (% debt)	55%	55%	55%
Market risk premium	7.0%	7.0%	7.5%
Asset beta	0.55	0.42	0.55
Equity beta	1.0	0.73	0.967
Debt risk premium	2.47%	2.00%	1.64%
Debt issuance & hedging costs	0.262%	0.233%	0.200%
Gamma	0.25	0.46	0.31
Return on equity	9.13%	6.99%	10.01%
Post tax Nominal (vanilla) WACC	**6.78%**	**5.41%**	**7.03%**
Rate of Inflation	1.22%	2.37%	2.30%
Post Tax Real (vanilla) WACC	**5.49%**	**2.97%**	**4.62%**

* Aurizon Network proposes that the averaging period will be updated to a date closer to the QCA making its Final Decision.

Table 4 summarises Aurizon Network's revised MAR building blocks for each year of the UT5 regulatory period.

Table 4 Aurizon Network – Response – UT5 MAR – by year ($m)

MAR Building Blocks	FY2018	FY2019	FY2020	FY2021	Total UT5
Return on Capital	421	424	419	414	1,677
Depreciation (less Inflation)	221	226	239	249	936
Maintenance Costs	219	228	237	244	928
Operating Costs	208	213	221	225	867
Tax (less imputation credits)	71	71	77	81	300
Total MAR	**1,139**	**1,162**	**1,194**	**1,212**	**4,708**
Capital carryover	12	12	12	13	49
Total Adjusted MAR	**1,151**	**1,175**	**1,207**	**1,225**	**4,757**

Totals may not add due to rounding.

Aurizon Network's response on proposed allowable revenues for each coal system across the UT5 regulatory period is presented in Table 5.

Table 5 Aurizon Network – Response – UT5 MAR – by coal system ($m)

System	FY2018	FY2019	FY2020	FY2021	Total UT5
Blackwater	517	519	535	553	2,125
GAPE	147	153	154	154	608
Goonyella	412	417	427	425	1,681
Moura	44	54	57	59	214
Newlands	31	32	33	34	129
Total UT5 undertaking period	**1,151**	**1,175**	**1,207**	**1,225**	**4,757**

Totals may not add due to rounding.

1.2 Allowable revenues and reference tariffs

Summary of Draft Decision 1.1

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply allowable revenues and reference tariffs as outlined in Appendix B of this Draft Decision.
- The proposed reduction in the total maximum allowable revenue over the UT5 undertaking period is $999 million, for the reasons outlined in this Draft Decision.

Aurizon Network does not support the Draft Decision that total allowable revenues should be set at $3,893m, which are $999m less than Aurizon Network's UT5 proposal.

The QCA's preliminary view is that Aurizon Network should spend less than the approved UT4 allowances despite an increase in the value of our asset base of approximately $1bn and forecast tonnage growth of 15% over the UT5 term.

For the reasons set out in this response submission, we believe that the Draft Decision contains material anomalies and will not encourage efficient investment in, and use of, below-rail coal network services. It is likely to create an environment which under-compensates Aurizon Network for its long term investments in maintaining a safe, reliable coal chain network and delivering a service that optimises network efficiency and throughput to meet our customers' requirements.

1.3 Modelling approach

Summary of Draft Decision 1.2

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU modelling assumptions relating to the commissioning dates, revenue timing and working capital allowance.
- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking to determine reference tariffs and allowable revenues for the 2017 DAU is to apply the working capital amounts in Table 6 and Table 7.

Approach to modelling

We note the Draft Decision is firstly to accept Aurizon Network's key modelling assumptions used to develop its Revenue Proposal for the UT5 regulatory period. These assumptions are listed below.

Table 6 Aurizon Network – UT5 Approach to modelling

Assumption	UT5	Consistent with UT4 Final Decision?
Capital expenditure	Start of year of commissioning	Yes
Revenue timing	Mid-year	Yes
Working Capital allowance	Included	Yes

Source: Aurizon Network (2016) UT5 submission to the QCA, p.112.

The QCA accepted that these assumptions are consistent with regulatory practice. The QCA also accepted that working capital is required for a business like Aurizon Network which is characterised by significant cash flow timing differences, and that Aurizon Network should be allowed to earn a return on this capital in a manner similar to investments in network assets.

Working capital allowance

The QCA has proposed a working capital allowance of $11.2m based on the Draft Decision Revenue proposal. Working capital is a modelling output. It is a function of (i.e. 0.30% as per UT4 Final Decision) free cash flow, operating and maintenance allowances.

Aurizon Network's proposes a working capital allowance of $13.2m for the UT5 regulatory period based on its response to Draft Decision revenue proposal. No changes are proposed to the methodology in calculating the working capital allowance.

1.4 Approach to regulatory tax expenses and tax depreciation

Summary of Draft Decision 1.3

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU approach to estimating tax expense and tax depreciation relating to the regulatory asset base.
- However, the QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs based on tax expenses for the QCA's proposed allowances for operating and maintenance costs and interest tax expense, calculated using the approved benchmark gearing ratio and cost of debt.

The Draft Decision accepted Aurizon Network's proposed tax depreciation as calculated using its tax asset base, standard tax asset lives and remaining tax asset lives for taxation purposes.

Due to the timing with Aurizon Network's original UT5 proposal, it contained the actual tax depreciation up until FY2015 and a forecast for future years. Since submitting the proposal, the FY2016 capital claim has been approved by the QCA and Aurizon Network has submitted the FY2017 capital claim. Therefore, Aurizon Network has updated the tax depreciation in this response submission for the FY2016 and FY2017 information.

Aurizon Network has completed the revised tax depreciation based upon the submitted and approved methodology.

1.5 Reference Tariff Proposal

Summary of Draft Decision 1.4

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU tariff structure and calculation methodology to determine the reference tariff components.
- However, the QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise the reference tariffs, by system, based on the proposed allowable revenues and reference tariffs outlined in this Draft Decision.

1.5.1 WIRP reference tariff proposal

Aurizon Network supports the Draft Decision regarding the cessation of the WIRP Blackwater capital deferrals in UT5.

The QCA considered it is ***not appropriate to continue to defer revenues as this compounds Aurizon Network's asset stranding risks beyond those envisaged in the WIRP access conditions***.[8] (emphasis added)

The QCA stated that, ***The Draft Decision to approve Aurizon Network's proposals in regard to deferrals is considered appropriate in respect of s. 138(2)(a) - the object to promote the economically efficient investment in significant infrastructure. It is also in the legitimate business interests of Aurizon Network that revenue deferrals are minimised (s. 138(2)(b))***.[9] (emphasis added)

The QCA have accepted the methodology applied by Aurizon Network to arrive at the method for allocating the deferred capital to remaining WIRP customer groups. However, the QCA have updated the methodology and deferral allocators to take into consideration new customer information that was not available at the time Aurizon Network submitted UT5. As outlined in the Draft Decision on volumes, the QCA did not include Cook (now owned by Bounty Mining Pty Ltd) in the volume forecasts for the UT5 regulatory period. The Draft Decision agreed with the Aurizon Network position that the balloon loop should be allocated to the remaining WIRP contracted parties that are railing and using that infrastructure. [redacted]

Table 7 QCA Draft Decision for allocating the deferred capital to remaining WIRP customers groups (%)

Non-Electric	WIRP pricing groups		
Capital expenditure to be allocated	WIRP Blackwater	WIRP Rolleston	Existing Rolleston
WIRP balloon loop	15.8	64.5	19.7
Blackwater duplications	15.8	64.5	19.7
Bauhinia North		100	
North Coast line	15.8	64.5	19.7

Source: QCA (2017) Draft Decision, p.9.

Aurizon Network accepts the inclusion of the WIRP deferral but proposes an amendment to the QCA Draft Decision allocations to the remaining customer groups in Table 7. Aurizon Network notes that the allocation of the deferral has been made on a different basis to the methodology used for allocating the original WIRP capital costs to the pricing groups. The original allocation did not include a share of the Blackwater duplications and North Coast line to

[8] QCA (2017) Draft Decision, p.36.
[9] QCA (2017) Draft Decision, p.38.

Existing Rolleston. Existing Rolleston only received an allocation of the Balloon loop. Aurizon Network proposes that the allocation of the deferral to remaining users should be as per Table 8. This is then consistent with the original capital allocations for the existing Rolleston customer group.

Table 8 Aurizon Network – Response to QCA Draft Decision for allocating the deferred capital to remaining WIRP customers groups (%)

	WIRP pricing groups		
Capital expenditure to be allocated	WIRP Blackwater	WIRP Rolleston	Existing Rolleston
WIRP balloon loop	15.8	64.5	19.7
Blackwater duplications	19.7	80.3	
Bauhinia North		100	
North Coast line	19.7	80.3	

WIRP Moura Capital Deferrals

In addition, Aurizon Network proposes as part of this response to the Draft Decision the cessation of the WIRP Moura capital deferrals. The Moura capital deferrals represent the WIRP Moura East and West upgrades required to rail volumes from the Baralaba mine. In Aurizon Network's UT5 submission, capital deferrals relating to WIRP Moura continue to be deferred as it was uncertain whether there would be volumes from the Baralaba mine over the UT5 regulatory period. Cockatoo Coal, who owned Baralaba mine entered voluntary administration on 16 November 2015. Baralaba mine was placed into care and maintenance in February 2016. The Draft Decision accepted Aurizon Network's submission to continue the WIRP Moura deferral.

However, [redacted] the QCA have included volume forecasts over the UT5 period for the Baralaba mine. Aurizon Network supports the QCA's inclusion of volume forecasts for Baralaba. [redacted]

With the inclusion of volume forecast for Baralaba mine, the Moura capital deferrals should cease. Baralaba Coal will benefit by using the WIRP Moura East and West upgrades to rail the forecast tonnes. The Moura West upgrades on the Moura Short Line are required to facilitate railings from the Baralaba mine. The Moura East work includes upgrading the earthworks underneath the railway track in several locations on the Moura Short Line, which will be used by Baralaba Coal. This work included both reinstating the previously closed (red boarded) track, [redacted]

[redacted] The commencement of tonnes being railed from Baralaba Mine is the appropriate time to cease this deferral. There are no other known future activities in the Moura system that would make it more appropriate to cease the deferrals at any future date. Aurizon Network in its response to the Draft Decision has ceased the deferral from FY2019. Aurizon Network notes that this results in a socialised Moura price with the inclusion of the deferred capital.

Table 9 WIRP Pricing Outcome

Non Electric	FY2018	FY2019	FY2020	FY2021
WIRP Blackwater	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price
Rolleston	System Premium	System Premium	System Premium	System Premium
WIRP Moura	n/a	Socialised Moura Price	Socialised Moura Price	Socialised Moura Price

Electric	FY2018	FY2019	FY2020	FY2021
WIRP Blackwater	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price
Rolleston	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price	Socialised Blackwater Price

For detailed Reference Tariffs Refer Schedule F of the 2017 DAU.

1.5.2 Byerwen NAPE reference tariff proposal

Byerwen NAPE Capital Deferrals

Byerwen NAPE capital deferrals relate to the GAPE project capital allocation relating to the Byerwen mine. The Byerwen NAPE capital has been deferred since the commencement of the GAPE project as the Byerwen mine was not railing. Aurizon Network's UT5 submission continued the deferral of the Byerwen NAPE capital as there were no tonnes being railed from the mine at the time of the UT5 submission. The Draft Decision accepted Aurizon Network's proposal for the continuation of the Byerwen NAPE capital deferrals.

With the Byerwen rail loop commissioning in January 2018, volumes are now being railed during the UT5 term.

The Byerwen mine connects via the Northern Missing Link and rails to the Abbot Point Coal Terminal. Byerwen to Abbot Point will pay a GAPE Reference Tariff for all services. [redacted] Aurizon Network is therefore proposing as part of this response to the Draft Decision the cessation of the Byerwen NAPE capital deferrals from FY2018 and the deferred capital be included in the GAPE system. There is no ongoing requirement for this deferral due to the commencement of railing [redacted] for Byerwen.

Table 10 Byerwen NAPE Pricing Outcome

Non Electric	FY2018	FY2019	FY2020	FY2021
Byerwen NAPE *	Socialised GAPE Price (Excluding AT3 Reference Tariff)	Socialised GAPE Price (Excluding AT3 Reference Tariff)	Socialised GAPE Price (Excluding AT3 Reference Tariff)	Socialised GAPE Price (Excluding AT3 Reference Tariff)

For detailed Reference Tariffs Refer Schedule F of the 2017 DAU.

* The GAPE AT3 Reference is calculated based on the capital incurred for Goonyella System Enhancements (GSE) only. Customers that rail from Goonyella to Abbot Point pay an AT3 tariff as they use this GSE infrastructure. Byerwen only rails on the NML and Newlands system and does not pay any GSE contribution. Therefore, Byerwen mine will be paying the socialised GAPE Reference Tariffs, excluding the AT3 Reference Tariff.

1.5.3 Other revenue adjustments

Since Aurizon Network submitted its UT5 revenue proposals to the QCA on 30 November 2016, there have been several key QCA approvals that have occurred that are not included in the Draft Decision but which will need to be appropriately factored into the QCA's Final Decision on reference tariffs. The known adjustments at the time of this Draft Decision response includes:

- the impact of Cyclone Debbie and associated flooding;
- FY17 pricing approvals;
  - On 14 December 2017, the QCA approved Aurizon Network's FY17 revenue adjustment claim, as amended on 5 December 2017, for a net recovery of $39.1m;[10] and
- any true-ups associated with the difference between transitional tariffs and the UT5 revenue outcome.
  - On 9 November 2017, the QCA approved transitional tariffs for the period from 1 January 2018 to 30 June 2018.

[10] QCA (2017) Aurizon Network's 2016-17 Revenue Adjustment—Decision Notice, 15 December.

2

Risk and the regulatory framework

2. Risk and the Regulatory Framework

This chapter examines Aurizon Network's risk profile and the impact of the Draft Decision on investments in the provision of below-rail coal services for the UT5 regulatory period.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 11 QCA Draft Decision and Aurizon Network's Response – Risk and Regulatory Framework – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA has given consideration to Aurizon Network's exposure to risk, including how risk is addressed within the regulatory framework and its 2017 DAU. This includes an assessment of the various risk mitigation, allocation and compensation arrangements proposed within Aurizon Network's 2017 DAU. The QCA's Draft Decision provides Aurizon Network with a return on investment commensurate with the regulatory and commercial risks relative to the provision of the declared service.	2.1	Aurizon Network disagrees with the QCA's conclusion that the total allowable revenue amount set out in the Draft Decision, and in particular, the proposed post tax nominal WACC of 5.41%, provides a return on investment commensurate with the risk of providing the declared service during the UT5 regulatory period.

2.1 Overview – Aurizon Network's Position

The Draft Decision includes an assessment by the QCA of the risk profile associated with providing the declared service pursuant to UT5. On the basis of this assessment, the QCA concluded that the Draft Decision provides Aurizon Network with a return on investment commensurate with the commercial and regulatory risks.

Aurizon Network:

- has serious concerns with various aspects of the QCA's approach and the Draft Decision;
- does not agree with the proposed rate of return calculation that underpins the proposed rate of return of 5.41%. Aurizon Network contends that the Draft Decision does not consider that, in competitive debt and equity markets, such a rate of return will promote economically efficient investment in the CQCN. Therefore, Aurizon Network does not consider that this aspect of the Draft Decision has regard to Aurizon Network's legitimate business interests and the interests of access seekers; and
- does not agree that the proposed rate of return in the Draft Decision satisfies the statutory requirement that the price for access generates expected revenue that is at least enough to meet the efficient costs of providing access to the service, and a return on investment commensurate with the regulatory and commercial risks involved.

The assessment of the return on investment commensurate with the regulatory and commercial risks necessarily requires consideration of the overall effects of the Draft Decision on the incentives of the firm and the likely outcomes in terms of efficient utilisation and investment in the rail infrastructure. The rate of return is not mutually exclusive of other building block components which are relevant to the assessment of risk, including:

- the cash flow implications of overstating the value of imputation credits and the consequences from overstating inflation in a low risk free environment;
- the short and long term risks of meeting current and future demand in the most efficient manner for the supply chain and the prospect that degradation of the asset condition could be compounded through higher maintenance requirements and further under-compensation in future regulatory periods; and
- the consequences of the Draft Decision on Aurizon Network's capacity to efficiently raise capital over the regulatory period and in future regulatory periods.

These factors and uncertainties, associated with the under-compensation of efficient costs, further increase the overall risk of providing the declared service. The relative narrow focus of the commercial and regulatory risks

considered within the Draft Decision in terms of both cash flow volatility and the short term emphasis on cash flows impacts from regulation, leads to a disproportionate assessment of risk. This assessment has consequentially led the QCA to the conclusion that Aurizon Network has a comparable risk profile to that of regulated energy and water utilities due to the limited weight given to longer term risks. It is these longer term risks, that are of significant influence to the required rate of return and what makes essential service utilities the incorrect benchmark for the estimation of that return.

The assessment of long term risks is highly dependent on the demand profile for coal carrying train services, where demand is primarily dependent on metallurgical coal production (and export). Although Aurizon Network recognises the relative scarcity of hard coking coal and the prevalence of the product through exports from the Port of Hay Point (includes both Hay Point and Dalrymple Bay Coal Terminal's), this dominance of product is not shared equally across all export terminals in Central Queensland.

The predominant focus on metallurgical coal, can result in errors in assessing the longer term risk of providing the declared service. A significant value of the RAB is exposed to thermal coal demand, which holds different demand and supply dynamics compared to metallurgical coal.

Aurizon Network supports the QCA's approach in considering the overall risk profile in determining whether the requirements of s.168A of the QCA Act have been reasonably satisfied. It is therefore necessary to determine whether a return is commensurate with the commercial and regulatory risks to have regard to the reasonableness of the overall return against comparable returns of similar businesses. Aurizon Network also considers the Draft Decision's assessment of the required return on equity fails to give any weight to industry comparators that share similar operational, commercial and regulatory characteristics, such as railways and gas transmission pipelines but relies extensively on the short term buffering effects of regulation to support the sole use of regulated electricity and water businesses to assess the required rate of return. Aurizon Network does not agree with the QCA's use of these businesses as comparators.

In this respect, the Draft Decision does not include an evaluation of the overall reasonableness of the return against actual return outcomes of comparable coal export supply chain infrastructure which are also typically contracted on ship/take-or-pay principles.

Similarly, a reasonableness test would also involve consideration of whether return outcomes from the Draft Decision are calibrated against the returns of the relevant comparator businesses. This would necessarily require the Draft Decision's rate of return to compare favourably to those regulated essential services for which Aurizon Network has been compared. As shown in Figure 16 (Chapter 5), a comparison of rates of return for regulated services demonstrates that this test is not satisfied. The proposed rate of return does not accord with the survey evidence prepared by Deloitte which supported the conclusions that:[11]

- post tax equity returns for regulated assets with firm long term contracts have attracted post tax equity returns between 7% and 9.5%; and
- investment banks surveyed were of the view that investors would consider Aurizon Network to be a higher risk investment than utilities.

Aurizon Network also notes that where there is a judgement required on a variable or parameter in the cost of capital formation and the value of imputation credits, the Draft Decision has consistently adopted values close to, or at the lower bound of the QCA's estimates. The aggregate of these component decisions in connection with the cost of

[11] Deloitte (2017) Required Returns for Infrastructure Assets – Market Based Evidence, A report prepared for Aurizon Network, September.

capital is to reduce the rate of return to a level which cannot be reconciled with return outcomes for comparable businesses or the current prevailing market conditions. This is evident in the following example of the inputs to the real pre-tax cost of equity and value of imputation credits against the Draft Decision.

Table 12 Position of Draft Decision on Cost of Equity in Range of Feasible Outcomes

Parameter	Lower Bound	Upper Bound	Draft Decision
Term of Risk Free Rate	1.90%	2.41%	1.90%
Asset Beta	0.42	0.59^	0.42
MRP	6.5% (Ibbotson)	8.17% (Cornell)	7.0%
Gamma	0.47 (equity ownership)	0.31 (tax statistic)	0.46
Inflation	2.37%	1.62%	2.37%
Post Tax Nominal ROE	6.63%	11.01%	7.00%
Real Pre-tax ROE	4.93%	9.24%	5.29%

^ Note: The Incenta asset betas have been estimated using a value for gamma of 0.47. Therefore the Incenta asset betas will need to be adjusted upward to reflect the appropriate gamma value to be used in the re-levering formula.

A further issue relevant to the assessment of Aurizon Network's risk is that the earnings outcomes over the last five years have been distorted through successive transitional tariff arrangements and true-up processes which are not representative of the underlying forward looking risks. This renders any EBIT, EBITDA and ROA comparisons as being unreliable for assessing underlying business risks. However, Aurizon Network notes that this data is used within the Draft Decision to make inferences on risk.

Aurizon Network acknowledges that amendments to the regulatory framework have occurred through successive access undertakings which have allowed for the recovery of costs not included in the original regulatory allowance that are necessarily recovered from its customers. However, these changes to the regulatory framework largely arise due to mispricing of risk and subsequent under-compensation in the regulatory framework for assuming risks that:

- are not directly within the control of management such as demand risk, or are likely to be subject to forecast error or be upward biased such as the volume forecasts in the Draft Decision; or
- are effectively asymmetric and non-systematic and therefore not included in regulatory allowances; or
- have been administratively reframed to improve the efficiency of cost recovery (i.e. material change in circumstances).

Nevertheless, Aurizon Network considers that the overall effect of these measures in terms of the overall return is negligible and that the Draft Decision:

- does not reflect investor return on equity expectations as reflected in market surveys and in Aurizon's share price movements;
- overstates the effect of the risk mitigation measures in the regulatory period on return expectations; and
- understates the significance of long term demand and regulatory risk on the return expectations.

Aurizon Network considers the uncertainty and risks beyond the current regulatory period are more pertinent to the determinants of systematic risks. This is largely consistent with beta estimation methods and price formation from valuations which are determined over the duration of the regulatory period by the discounting of future cash flows, not earnings expectations in a single year of the regulatory period.

2.1.1 Investor Return Expectations

The return on equity provided by the Draft Decision is not consistent with market return expectations on the basis that it is:

- not an expected outcome as evident in the movement of Aurizon's share price following the release of the Draft Decision;
- not considered advantageous by a range of equity analysts; and
- not commensurate with the return expectations reflected in market surveys and independent expert reports.

Aurizon Network notes the QCA's observation that there are limitations in using Aurizon's share price to consider the extent to which Aurizon Network is exposed to fluctuations in coal market conditions as that price is subject to many factors. We support this observation but note that, in the absence of any material release of information relevant to the non-network parts of the enterprise or macro-economic data, it is reasonable to make inferences regarding whether the Draft Decision is commensurate with the return expectations of investors. In this regard, Aurizon Network notes that:

- AZJ made an information disclosure at 10.45am on 15 December 2017 restating business segment costs for changes in structure;
- the Draft Decision was released close of business on 15 December 2017;
- AZJ made an information disclosure in relation to UT5 prior to the market opening on 18 December 2017;
- there was sufficient time between the Decision's release and the market opening to avoid market over-reaction; and
- there were no relevant macroeconomic indicators released between the market closing on 15 December and the market opening on 18 December.

Therefore, Aurizon Network contends that the material reduction in AZJ's share price of 5.9% from close of business on 15 December and the market closing on 18 December was largely attributable to the Draft Decision's misalignment with market expectations. This equates to a fall in Aurizon Network's capital value of 11.6% based upon Aurizon Network's contribution to the Aurizon Holdings Group's EBIT. This compares to the ASX200 which was up 41 points over the same period.

The share price response to the Draft Decision is reflected in the observations by equity analysts in the week following the release of the Decision as demonstrated in the following statements by RBC Capital Markets:[12]

> *We support management's view that the draft UT5 decision on WACC is particularly harsh given other WACC determinations for either similar assets (Hunter Valley coal network) and lower risk utility assets in Australia. The QCA determination on WACC in many respects represented them 'cranking the handle' of a historical methodology but adjusted for a low (4 year) risk free rate, a lower equity beta of 0.73, lower debt costs somewhat offset by a higher MRP. Nonetheless, the output is to deliver a post tax nominal WACC of just 5.4% which we consider far too low for this type of asset.*

[12] RBC Capital Markets (2017) Aurizon Holdings Limited, Beautiful one day, horr ble the next, December 18.

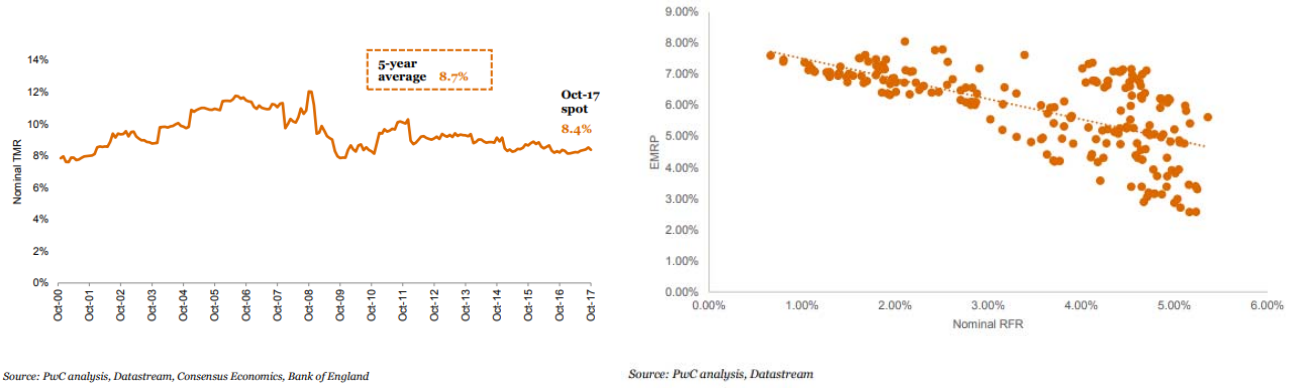
Finally, we note that the QCA has rejected the evidence presented by E&Y in relation to independent expert views on the required market return. The basis for this rejection sits not with the reasonableness of the conclusions but on the presumption that the market expectations are not relevant to the determination of the required return on equity for investors in Aurizon Network, with the Draft Decision stating:[13]

> *In contrast, the QCA applies the WACC to a specific RAB value to determine efficient revenues and prices for a defined regulatory period (i.e. typically five years). The RAB is not revalued each regulatory period but is rolled forward over successive regulatory periods, accounting for inflation, new capital expenditure and disposals, and depreciation. The RAB is generally not subject to short-term market forces and remains relatively stable over time.*

This position is difficult to reconcile with the process in which all parameters relevant to the return on equity are estimated, including the measurement of asset beta which is a function of price movement. In this regard, returns are determined by the movement in Aurizon's share price and the discount rates employed by the market in valuation models. It is therefore incongruent that the determination of the return on equity can be independent on how market expectations are formed. That is, if the observed and expected total market return is relatively stable and invariant to changes in the risk free rate as suggested by E&Y's survey of expert reports, then it is necessary for the expected return on equity estimation to be consistent with those conditions in order for the requirement that the rate of return be commensurate with the commercial and regulatory risks of providing the service to be satisfied. Therefore, it is incorrect to dismiss the evidence presented by E&Y on the basis that the RAB remains stable over time.

Aurizon Network considers that the conclusions by E&Y are further supported by the analysis of PWC[14] whose report to OFWAT showed a relatively stable total market return and the negative relationship between the equity risk premium and the risk free rate in the UK.

Figure 7 Risk-free rate and EMRP relationship from implied DDM and Monthly DDM outputs (2000-2017)



Source: PWC Economics (2017)

Aurizon Network requested Frontier to evaluate the relationship between the risk free rate, implied Dividend Discount Model (**DDM**) and total market return for Australian listed equities from the Australian Energy Regulator (**AER**) dataset.[15] The analysis in the figure above demonstrates a stronger inverse relationship between the risk free rate and the equity market risk premium.

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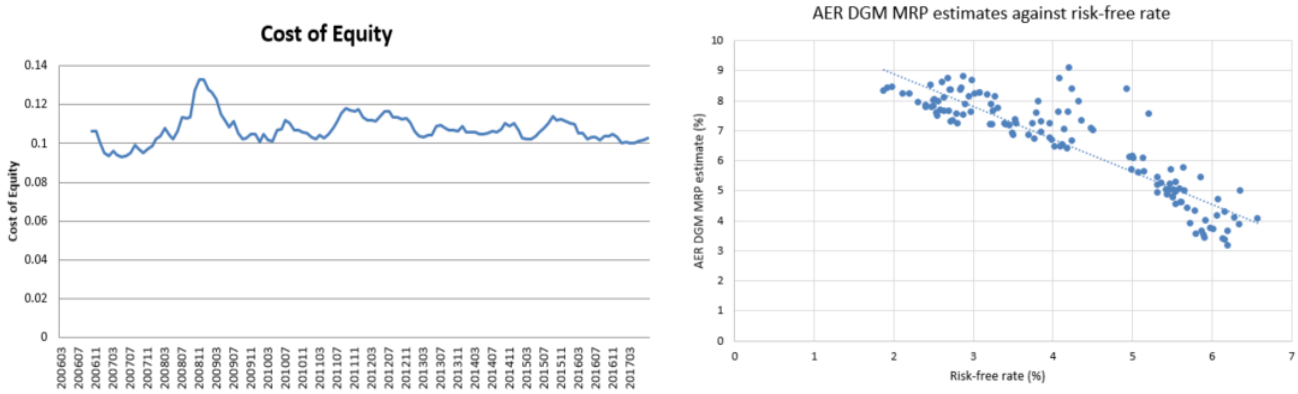
13 QCA (2017) Draft Decision, p.130.

14 PWC Economics (2017) Updated analysis on cost of equity for PR19, A report prepared for OFWAT, December.

15 Frontier Economics (2018) Response to the UT5 draft decision on the market risk premium, Report Prepared for Aurizon Network, March, p. 10.

Figure 8 Cost of equity and EMRP relationship (2000-2017)



Source: Frontier Economics (2018)

This suggests that the marginal adjustments made by the QCA to the equity market risk premium since UT3 do not correspond to the market expectations for total market returns with changes in the nominal risk free rate over time and by consequence, the return on equity is not commensurate with the expected returns on the market. The statistical relationship between the risk-free rate and the equity market risk premium also indicates that the use of an equity market risk premium of 7.0% with a risk-free rate of 1.90% is not representative of market expectations. Aurizon Network also notes that the increase in the Market Risk Premium (**MRP**) from 6.5% to 7.0% is not an increase in the MRP for changes in market risk but an adjustment to ensure consistency with the term of the risk free rate. The practical effect being that the Draft Decision does not increase the MRP between UT4 and UT5, had the MRP in UT4 been determined with reference to a four year risk free rate.

2.1.2 Risk Mitigation in the Current Regulatory Control Period

Aurizon Network contends that any assessment of risk needs to have regard to factors that extend beyond the current regulatory period. This is important in order to reflect investor expectations and to align regulatory decisions with the objectives of the QCA Act which are designed to promote economically efficient investment in, and use of, below rail infrastructure. Without a longer term view, there is a risk that investment in latter regulatory periods could be discouraged if investment in mining and coal chain infrastructure was to be considered uneconomic.

The assessment in Chapter 2 of the Draft Decision places significant emphasis on various risk mitigation or transfer mechanisms within UT5 and previous undertakings, to support the proposition that Aurizon Network's risk profile is comparable to energy utilities. Aurizon Network considers that these measures are likely to have an immaterial effect on the empirical basis for the required rate of return and do not justify the QCA's Draft Decision to treat Aurizon Network's risk profile as comparable to energy utilities.

The regulatory framework addresses three key risks relevant to the term of a single regulatory control period. These risks, their relevance and materiality are discussed in this section.

Demand Risk

In contrast to the contract-based pricing frameworks supported by ship-or-pay obligations typically prevailing in supply chain infrastructure, UT5 assumes short term earnings risk where the take or pay is not sufficient to cover any revenue shortfall. This amount of shortfall is also impacted by deductions for Network Cause and system capacity losses arising from force majeure events. Additionally, this take or pay protection does not extend to the provision of overhead power system services. The impact of these measures will be evident in relevant financial metrics and will be subject to downside volume risk. To the extent that the relationship between ROA/EBIT and real Gross Domestic Product (**GDP**) growth is a driver of systematic risk as relied upon in Incenta's beta analysis then annual revenue volatility will be correlated with these measures. It is therefore not a basis for justifying that the comparison of Aurion Network's business to those of energy utilities.

Aurizon Network acknowledges that this volatility is reduced as part of the annual price reset process which allows prices to be recalibrated to revised forecasts. However, this process merely seeks to replicate the revenue profile

associated with a fixed price path and ship or pay contracts typically observed in supply chain export infrastructure such as gas pipelines and ports. As such this mechanism involves the transfer of risk between users and not between Aurizon Network and users when compared to contract based pricing.

Aurizon Network notes that demand risk is largely outside of the control of Aurizon Network's management with below rail delays and cancellations representing only a small proportion of system losses. In this respect demand risk is most efficiently allocated to users of the service and cannot reasonably be allocated to Aurizon Network as the access provider.

The revenue associated with the AT1 tariff is also excluded from take-or-pay and the revenue cap. In this regard, AT1 is intended to reflect the costs of those maintenance activities that are variable with gross tonnes. However, in practice there can be considerable lag between changes in volumes and changes in maintenance activity levels. Therefore, in periods of low volumes maintenance costs can be high while revenue recovery from the AT1 tariff is low.

Input Cost Risk

The Draft Decision points to the mechanisms in the regulatory framework which serve to align revenue with costs that have the effect of 'buffering' the cash flows from economic conditions. However, Aurizon Network notes that these mechanisms are not as significant as relied on by the QCA in terms the relativity of the risks being mitigated relative to other risks which have a more significant influence on beta. The two predominant mechanisms associated with cost pass-through are:

> force majeure events; and
> electricity cost pass through.

In relation to force majeure events Aurizon Network acknowledges that since 2010 there has been an unprecedented number of extreme weather related events which have caused infrastructure damage and loss of system availability. However, the costs associated with these events are relatively immaterial as a proportion of the total cost base. Since 2010, Aurizon Network has sought recovery of cyclone related damage, with recovered revenues representing only 0.6% of Total Actual Revenue earned over that period. Aurizon Network also notes that there were no weather related incidents in the period between the commencement of regulation in 2008 to when the review event provision was introduced that would have met the review event threshold of $1m.[16] Therefore, it is not reasonable to draw inferences on risk through a number of discrete unprecedented observations on significant low probability events.

The pass through costs associated with electricity prices are not relevant to the consideration of the risk of providing the declared service as the supply of electricity is not included within the declaration. However, the framework also includes pass through of Transmission Network Service Provider costs. Aurizon Network notes that these costs vary due to the changes in the regulated prices of its service provider and it is typical for these costs to be included in the retail electricity price. As Aurizon Network is unable to negotiate the price of a regulated service then it is reasonable for these costs to be passed through to consumers of the service.

Inflation Risk

Inflation is addressed in the regulatory framework through a number of mechanisms including adjustments to the maintenance and operating cost allowances. However, the extent to which these mechanisms insulate Aurizon Network from price risk are highly dependent on how the firm's costs and use of inputs are aligned to the regulatory decision and the relevant index. In this regard, there are numerous issues with the various escalation measures used by the QCA which may actually increase exposure to escalation risks, including:

[16] Finity Consulting (2008) Review of Self Insurance Program: QR Limited Central Queensland Coal Network, August, p.98.

- the Wage Price Index to be used in UT5 is the Queensland Average. There is a substantial likelihood that this is not representative of the employment classifications and regional skill shortage across key areas of Aurizon Network's business, including professional services; and
- the composition of the Consumer Price Index and other components of the Maintenance Cost Index (**MCI**) is not representative of the basket of goods and services procured for the provision of the declared service. For example the CPI basket is representative of household expenditure and includes items and weightings that are not relevant to business input costs.[17]

Importantly, these are broad macro indices which incorporate overall changes in productivity. The imposition of efficiency or productivity dividends when coupled with these indices without a robust empirical assessment of total factor productivity measures against the likely performance of the escalator will lead to a divergence of the cost allowance from the efficient costs of providing the service.

Aurizon Network also notes that costs are typically passed through in workably competitive markets. That is, where there is a change in input costs common to all market participants who use that input, then any change in the cost of those inputs will be reflected in the price of the output of those participants in a workably competitive market. Therefore, the cost escalation provisions are also intended to reflect outcomes from workably competitive markets.

In addition, the Draft Decision misunderstands the purpose of the MCI. The MCI was not introduced to reduce Aurizon Network's exposure to cost or risk but to reduce the forecasting complexity of determining the CPI ± X adjustments required to be applied to the major cost components as part of the regulatory decision making process.

It is also important to note that these measures only address changes in costs and not changes in the quantities or mix of inputs used in providing the service.

However more fundamentally, the regulatory framework has not compensated for changes in inflation with respect to the value of invested capital over the term of the regulatory period. This is a key difference between the CQCN regulatory framework and that of the electricity and water compactors which typically include intra-period inflation adjustment in their price/revenue paths.

The use of the forecast-forecast inflation method proposed in UT5 further increases the exposure to inflation risk when targeting a nominal rate of return. The Draft Decision does not assess such a material difference in approaches to CPI inflation risk when assessing the asset beta of the CQCN relative to the comparators. However, given the systemic under-compensation to Aurizon Network is assuming inflation risk under the Draft Decision, and in prior regulatory determinations, the UT5 proposal has been amended to implement a forecast-actual approach.

2.1.3 Risk Exposure in the Future Regulatory Control Periods

Aurizon Network considers that the Draft Decision either did not adequately assess or otherwise it excluded the relevant following risks in determining the required rate of return:

- long term demand risks and exposure to thermal coal;
- interest rate and refinancing risks;
- revenue and price reset risks; and
- regulatory risks to future earnings.

Demand risks

As stated in section 2.1.2, Aurizon Network contends that any assessment of risk needs to have regard to factors that extend beyond the current regulatory period. This is important in order to reflect investor expectations and to align regulatory decisions with the objectives of the QCA Act which are designed to promote economically efficient investment in, and use of, below rail infrastructure. Without this longer term view, there is a risk that investment in

[17] For example, Food and Beverages, Alcohol and Tobacco and Clothing and Health Services are not significant cost inputs to Aurizon Network.

latter regulatory periods could be discouraged if investment in mining and coal chain infrastructure was to considered uneconomic.

The Draft Decision primarily addresses long term asset stranding risks from the perspective of Aurizon Network's exposure to metallurgical coal, noting that metallurgical coal producers within the CQCN are favourably positioned on the cost curve. Aurizon Network acknowledges that:

- demand for the Goonyella system is primarily metallurgical coal;
- there are substantial cost differentials in supply chain logistics costs between Goonyella and other ports which provide strong long term demand for the Goonyella coal system; and
- there is a reasonable belief that additional reserves will be developed over time to replace metallurgical production in the Goonyella system as mines expire.

However, Aurizon Network does not consider it reasonable or appropriate to extend the risk profile associated with the track infrastructure access in the Goonyella system to the remainder of the coal network. The following table shows the proportion of coking coal exported by coal system and the relative proportion of the value of the RAB.

Table 13 Coal Export Volumes (000s) and RAB Values ($ millions) by Export Port (FY17)

Export Port	Thermal Coal	Hard Coking Coal (HCC)	Semi Soft Coke and PCI	% HCC	FY21 RAB Value	RAB for HCC
Abbot Point	10,999	10,184	4,224	40%	1,018	407
Gladstone	24,137	22,430	22,378	32.5%	2,870	934
Hay Point	14,570	75,313	16,422	70.8%	1,846	1,308
Total	**49,706**	**107,928**	**43,024**	**54%**	**5,735**	**2,649**

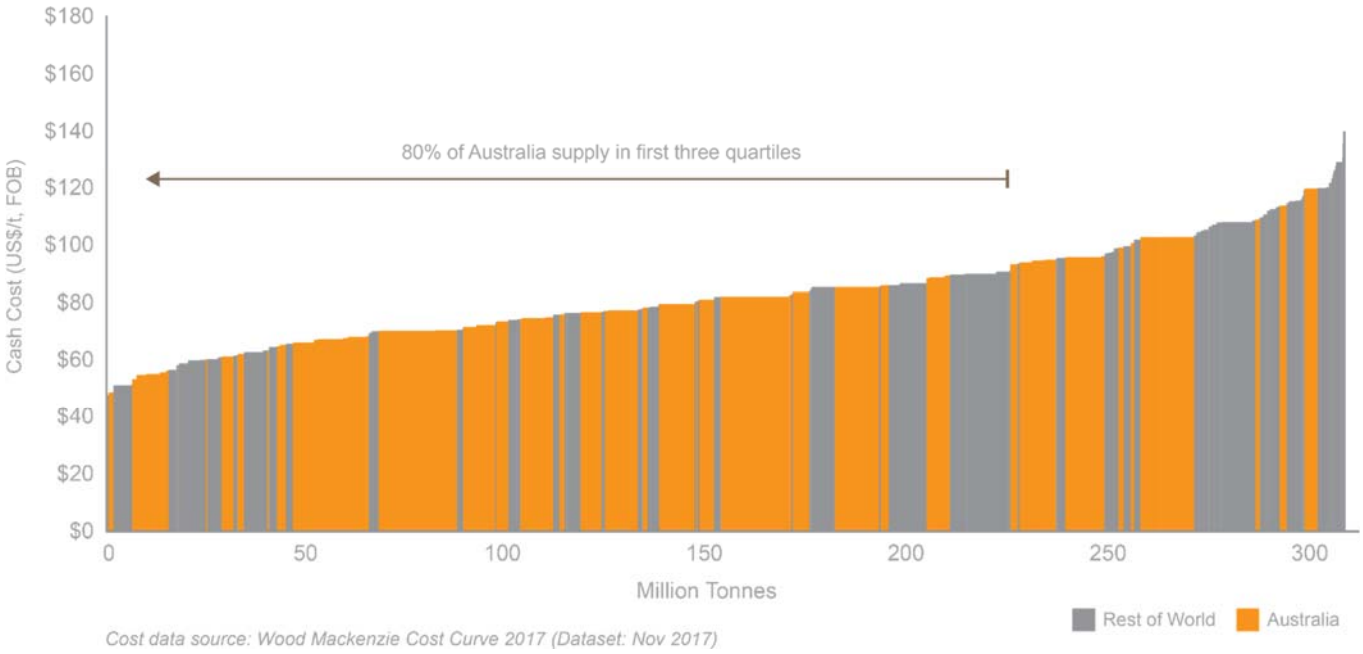
Source: Aurizon analysis of ABS Data, Port reports and Draft Decision. Totals may not add due to rounding.

Aurizon Network recognises the relative scarcity of hard coking coal and the prevalence of the product through exports from the Port of Hay Point (includes both Hay Point and Dalrymple Bay Coal Terminal's (**DBCT**)). However, this dominance of product is not shared equally across all export terminals in Central Queensland with only a third of exports at the Port of Gladstone considered hard coking coal. Aurizon Network does not consider that the demand and asset stranding risk analysis in the Draft Decision is representative of the underlying long term supply and demand risks.

In terms of cost position, Australia's metallurgical coal supply is considered more competitive compared to Australia's thermal coal supply, with 80% of production sitting in the first 3 quartiles of the global seaborne cost curve compared to 65% of production for thermal coal. This can be seen in the following two figures.

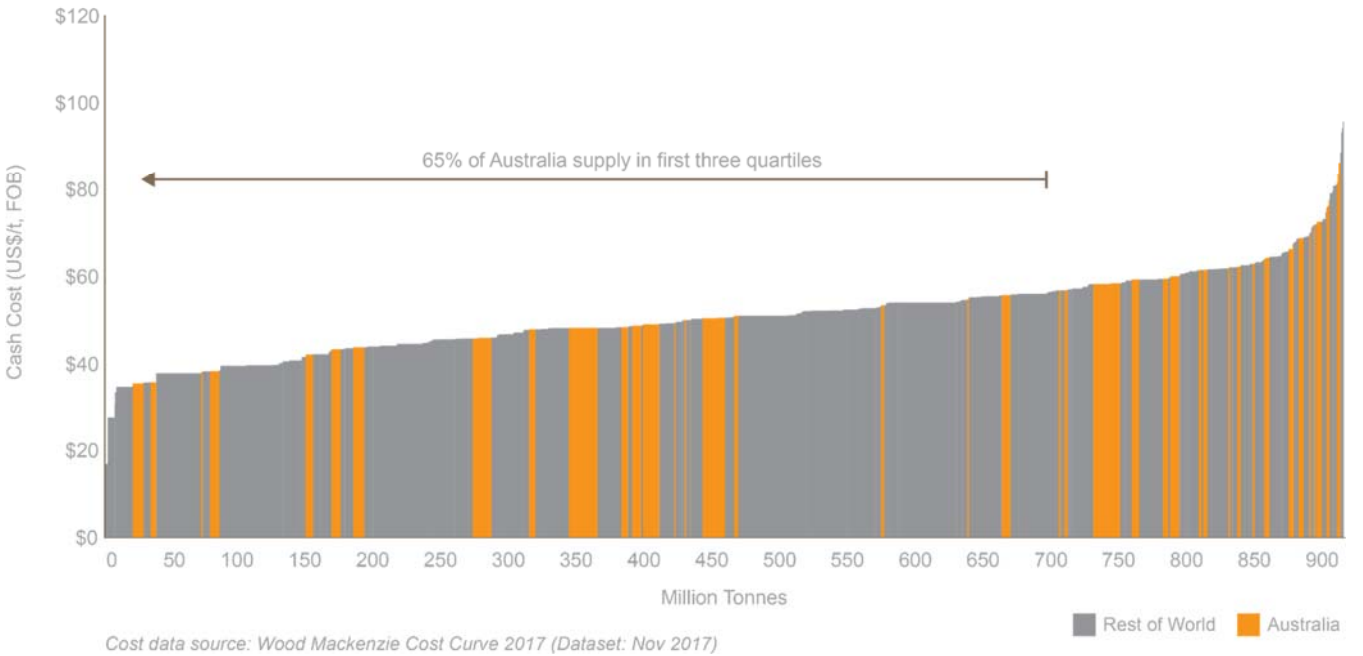
Figure 9 Global seaborne metallurgical coal and thermal coal (energy adjusted)

Global Metallurgical Seaborne Cost Curve (FOB)



Cost data source: Wood Mackenzie Cost Curve 2017 (Dataset: Nov 2017)

Global Thermal Seaborne Cost Curve (Energy Adjusted, FOB)



Cost data source: Wood Mackenzie Cost Curve 2017 (Dataset: Nov 2017)

The development of future metallurgical coal deposits are also likely to predominantly occur within the Hay Point geographical catchment given the inherent qualities of the coal within that region and the material cost and product advantages associated with exporting through the Hay Point terminals. This is evident in the location of the Queensland coking coal projects published in Resources and Energy Quarterly and reproduced in the table below.

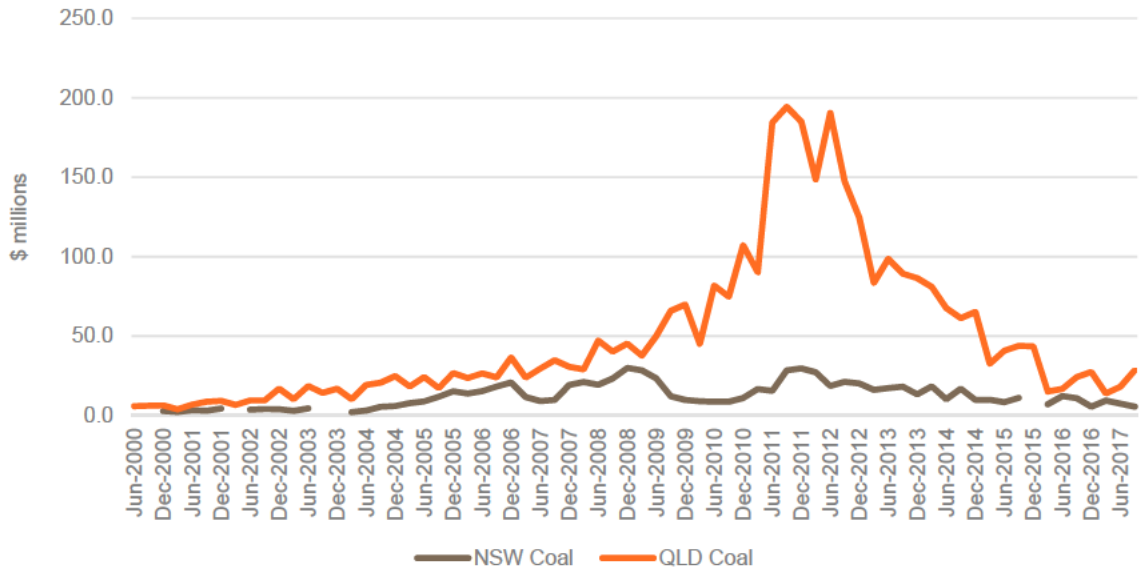
Table 14 Resources and Energy Major Projects List (Queensland Coking and Hard Coking Coal)[18]

Project	Company	Location	Capacity
Belview	Stanmore Coal	10 km E of Blackwater	n/a
Colton	New Hope Coal	11km N of Maryborough	0.5
Eagle Downs (Peak Downs East underground)	Aquila Resources and Vale	25 km SE of Moranbah	4.5
Grosvenor underground	Anglo American	8 km N of Moranbah	5
Moranbah South	Anglo American and Exxaro Resources Limited	10 km southeast of Moranbah	18
Saraji East	BHP and Mitsubishi	30 km north of Dysart	7
Talwood	Baosteel Resources Australia	35 km N of Moranbah	3.6
Vermont East/Wilunga	Pembroke Resources	75 km NE of Clermont	4
Wards Well	BHP Billiton Mitsubishi Alliance (BMA)	29km SW of Glenden	5
Washpool coal project	Aquila Resources	60 km NE of Emerald	2.9

Source: Office of the Chief Economist, Department of Industry, Innovation and Science.

The uncertainty of future demand for thermal coal is also evident in coal exploration expenditure. Figure 10 shows the material contraction in coal exploration expenditure in both Queensland and New South Wales (**NSW**). The expenditure in NSW is more closely aligned to the long term demand expectations for thermal coal and has shown no increase with the increased margins for thermal coal.

Figure 10 Coal Exploration Expenditure in Queensland and New South Wales – 2000 to 2017 ($m)



Source: ABS Catalogue 8412.0 Table 5 December 2017

The importance and relevance of exploration expenditure and mine development in mitigating asset stranding risks is a relevant consideration to the commercial risk of investing in export infrastructure. Investors in linear infrastructure for a single trade exposed commodity will require a risk premium to assume the associated mine development risks so as to mitigate long term stranding risks.

[18] https://industry.gov.au/Office-of-the-Chief-Economist/Publications/ResourcesandEnergyQuarterlyDecember2017/index.html

As noted in Aurizon's 2017 Sustainability Report, Aurizon Network acknowledges that climate change is affecting a wide range of industries around the world, resulting in financial implications. Transition risks, related to energy policy, regulation, technology and market shifts (that are necessary to achieve the transition to a low-carbon economy) will affect the demand for commodities. In the instance of thermal coal, the International Energy Agency (**IEA**) forecasts in their central scenario (*New Policies)* a reduction in steam (thermal) coal traded volumes from 756 million tonne coal equivalent (mtce) in 2017 to 721mtce in 2040. This compares to growth in coking coal over the same period from 292mtce to 306mtce. Furthermore, recent policy decisions by Australian banks have primarily impacted lending to thermal coal projects rather than coking coal.

However Aurizon Network also holds the view that:

> *in a carbon constrained environment, higher quality coal (lower ash and high energy), which Australia supplies, will be favoured and will increase Australia's participation in global trade. In a scenario where trade volume maintains IEA's 2DS projection and where Australia gains ten percentage points (compared to 2014 participation) in the respective metallurgical and thermal coal global trade markets, Australia export volume would reduce by just 5Mtce in 2030 (-2% compared to 2014), representing a compound annual growth rate of – 0.1% across the period.*[19]

Notwithstanding this view, investors in Aurizon Network will take into consideration a range of long term uncertainties when determining the required return on invested capital. These uncertainties are likely to include:

- the impact of exploration expenditure and its correspondence with the development of new mines and the conversion of resources into marketable reserves;
- the potential for increased competition between Australian coal export supply chains, including the risk of development of other coal export supply chains;
- the relative competitiveness of coal export terminal pricing and the incentives for mine development;
- unexpected changes in environmental and energy policy which accelerates transition to renewables within markets which underpin the IEA assumptions for thermal demand;
- changing energy market dynamics which increased the preference for non-fossil fuels; and
- accelerated rates of technology change which increases the rate of displacement of existing less efficient thermal plants with energy substitutes.

The transmission of these uncertainties to the requirement for increased returns on coal export infrastructure can be demonstrated through the following illustrative mechanism for technology change:

- risk that rate of technology change in non-thermal generation will reduce demand for thermal coal
- prospective increase in asset stranding risk for new mine developments;
- reduced investment and exploration expenditure in mining projects;
- reduced thermal coal production in higher cost export supply chains;
- increased risk of recovery of investment in export supply chain infrastructure; and
- increased risk premium required to attract capital to investment in thermal coal exposed infrastructure.

While the regulatory framework includes an accelerated depreciation profile this assumes a rolling 20 year remaining life for new investment this is largely offset through asset appreciation and the increasing need for asset renewals capex in later regulatory periods. This backloaded depreciation profile differs considerably to the straight line methods used in toll roads and North American gas pipelines. This is largely evident in the immaterial movement in the opening and closing values of the RAB over the UT5 period. Aurizon Network considers the Draft Decision overstates the extent to which accelerated depreciation mitigates asset stranding risks outside of the Goonyella system. In this regard the annual depreciation rate is in the order of 5%. However, this is offset by the escalation of

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[19] Aurizon (2017) Sustainability Report, p. 26 http://www.aurizon.com.au/~/media/aurizon/files/sustainability/sustainability%20report%20chapters/2017/aurizon_sustainability_report_2017_3_future_of_coal.pdf

the asset base in line with out-turn inflation and asset renewals expenditure which are anticipated to grow over time as the historical lumpy investment in asset improvement capex (i.e. concrete sleepering and 30TAL upgrades) reaches the end of its useful life.

Whilst Aurizon Network has access agreements in place which provide revenue protection measures through take or pay and relinquishment fees, these arrangements do not necessarily mitigate long-term stranding risks as:

- the term of the existing access agreements are not sufficiently long in duration to address those risks;
- the ability to obtain take or pay coverage is highly dependent on system capacity being constrained such that a producer places considerable value on scheduling certainty. In the event of a sustained decline in the demand for coal then producers will be commercially incentivised to reduce contract volumes in order to reduce take or pay exposure, given the relative control exercised over the supply chain by ports through ship berthing;
- the coverage provided by the relinquishment fee is essentially capped at 50% of the exposure which effectively reduces the term of the contract to 50% of its financial benefit. Similarly, relinquishment fees are transferred directly to users of the service through price reductions via the revenue cap and not returned to shareholders;
- the revenue cap framework exposes Aurizon Network to counterparty credit risk as it requires Aurizon Network to recognise revenue it is entitled to earn not what it receives. In this regard, if an access holder relinquishes capacity and defaults in the payment of the relinquishment fee, Aurizon Network contends these amounts may not be recoverable. Similarly, security arrangements are limited to 6 months of access charges and therefore do not extend to the full payment of the relinquishment fee.

With the exception of the Goonyella system, the remaining systems are highly dependent on the output from a small number of mines with the top three mines in each system being responsible for the following FY17 proportion of system totals:

- Moura—100% with the largest mine responsible for 73% of total system volumes;
- Blackwater—60% of total system volumes; and
- Abbot Point—64% of total system volumes.

The implications associated with dependence on a small number of operating mines for the majority of the revenue recovery is evident in the following example which estimates the Moura tariff impacts associated [redacted] mine in that system.

Table 15 Moura Tariff Impacts from closure of most significant mine

	AT3 ($/ 000ntk)	AT4 ($ per nt)
Moura (FY18)	9.61	1.59
Moura (FY18) less [redacted] Volumes	30.79	4.57

This concentration ratio increases the exposure to optimisation risks associated with the loss of one or more major producing mines in a single coal system.

This summary has demonstrated that there are a number of risks to which Aurizon Network and its equity investors are exposed beyond the term of the regulatory period with demand and asset stranding risks increasing in materiality beyond 2030. These risks are also largely consistent with those identified in the Hunter Rail Access Task Force (**HRATF**) submission to the ACCC regarding the proposed 2016 Hunter Valley Access Undertaking as reflected in the following statements:[20]

[20] HRATF (2016) Submission to the ACCC on ARTC 2016 Hunter Valley Access Undertaking, March, p. 28.

- The Hunter Valley contains some of the lowest cost marginal producers of coal in Australia and they are thus better equipped to deal with market challenges;
- Aurizon operates several different coal systems with limited cross system traffic, with each individual coal system having lower volumes and less diversification of users than the Hunter Valley;
- Aurizon's coal systems are each located in remote regional Queensland, and are geographically dispersed;
- Aurizon access agreements have a term of 10 years with a right to renew, meaning that for an individual user the total future volume contracted to Aurizon will decline each year until renewal;
- Aurizon faces the risk that the QCA may remove from its RAB the value of infrastructure which is deemed no longer to be required; and
- Aurizon's depreciation profile is not based on weighted average mine life.

Financing Risks

Aurizon Network notes that a material difference between the regulatory framework for the CQCN and regulated water and energy utilities is the differences in estimating the cost of debt with the UT5 retaining the 'on the day approach' compared with the comparator groups whose regulatory frameworks include 'trailing average cost of debt' methods.

The 'on the day approach' involves significantly greater financing risks than the 'trailing average approach' as there are greater risks that:

- the firm will not be able to raise debt at the costs assumed by the regulator;
- that the firm will not be able to complete financing activities during the averaging period;
- any regulatory estimation error is incurred for the entire regulatory period and is not offset by any under or overs in refinancing only a portion of the debt pool;
- the volume of debt financing required is not supported by sufficient market liquidity.

In relation to the last point, Aurizon Network reiterates the comments by E&Y in support of the refinancing risks that:[21]

> *There has been a progressive trend of financiers and investors reducing appetite and allocations for exposures to fossil fuel related companies (with increased appetite for Environmental, Social and Corporate Governance ("ESG") related investments), which needs to be offset by companies exposed to fossil fuel industries (such as Aurizon Network) targeting a higher quality credit rating. For example, in its 2017 Climate Change Action Plan Westpac announced it would be implementing tighter criteria for financing any new coal mines. More broadly across the big four banks, corporate and project finance lending to the coal sector has fallen significantly from $3.1bn in 2015 to $99m in the first half of 2017.*

Furthermore, the impact of the trailing average approach was summarised recently by the AER in its review of inflation in the regulatory framework by stating:[22]

> *We moved to the trailing average debt portfolio because it better aligned the regulatory debt allowance with incurred debt costs, and so reduced both interest rate risk and refinancing risk. Our expectation was (and remains) that these risks were larger in magnitude than the inflation risk which in current circumstances is likely to be small and symmetric. Submissions from most stakeholders (in the 2013 Better Regulation guideline development process) focused on the ability of a trailing average portfolio to ameliorate these risks, above any discussion of potential inflation risk. Further, Spark Infrastructure did not appear to contest that the 2013 debt changes reduced risk exposure for equity holders in total. The Spark Infrastructure submission notes that 'stakeholders generally' accepted that the predominant effect would be the reduction*

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[21] E&Y (2017) Appropriateness of the External Credit Ratings, September, p.14.

[22] Australian Energy Regulator (2017) Regulatory Treatment of Inflation: Final Position, December, pp. 94-95.

in exposure for equity holders because the change to a trailing average portfolio aligned debt costs with those they incurred.

Aurizon Network submits that that the Draft Decision assessment of risk and beta has not included this among the matters relevant to providing a return on investment commensurate with the commercial and regulatory risk of providing the declared service.

Reset Risks

In contrast to investors in infrastructure assets such as toll-roads, airports and gas transmission pipelines which are subject to long term stable cash flows under long term contractual and pricing frameworks supported by long term efficient financing arrangements, the regulatory framework increases investor exposure to systematic risk through the price reset process.

As interest rates are highly correlated with macroeconomic variables such as inflation and economic activity, then equity returns will also be subject to the business cycle. For example, in a recession, it is expected that aggregate demand declines and there is excess capacity in the economy which translates to low inflation. The response from central banks is to decrease interest rates to stimulate economic activity. The regulator will determine the cost of equity for the regulated firm having regard to the prevailing rates and thus reduce the return on equity. This cyclical revenue risk is amplified by the QCA's application of a four year risk-free rate which is more volatile and representative of short term macroeconomic conditions and not the long term return expectations of investors in regulated infrastructure as discussed in Chapter 4.

The Draft Decision does not evaluate the extent to which the regulatory framework exposes Aurizon Network and investors in the CQCN to increased exposure to the business cycle.

Regulatory Risks

Investors in regulated infrastructure place significant value in the reduction of regulatory risks. In this regard, Aurizon Network notes that the access regime under the QCA Act represents significantly greater regulatory risks than those of any of the relevant beta comparator groups.

An important aspect of the regulatory framework is the lack of prescriptive detail and the exposure to economic hold-up or regulatory opportunism associated with the presence of regulatory discretion. This largely arises as the QCA Board is not static such that it is rarely the same board between regulatory periods. As no regulator is bound by previous decisions whether the constitution of the board has changed or not, this gives rise to a particular risk of inconsistent decisions from period to period. While there is the prospect of inconsistent decisions in all regulatory frameworks over time this is less prominent in prescriptive rules based regimes. A significant factor in the asset beta of regulated water and energy utilities is the relative stability of the regulatory framework underpinned by institutional arrangements where the rules are developed through open consultation independently of the regulatory decision-maker. While the recent changes to the *Competition and Consumer Act 2010 (Cth)* removes application of limited merits review for decisions made by the AER, the effect of this change in regulatory accountability terms is likely to be immaterial given the expected increased use of judicial review under rules based regulation.

These factors which reduce the firm's exposure to regulatory risks are simply not applicable to access regulation under Part 5 of the QCA Act. The Draft Decision does not evaluate the inherent impacts of the regulatory framework on the premium required by equity investors between discretionary and rules based regulatory regimes. In this regard Aurizon Network submits that the rate of return determined in the Draft Decision does not provide a return on investment commensurate with the regulatory risks. Nor does the Draft Decision consider key differences in the regulatory and commercial risk profile between the CQCN and the water and electricity utilities (e.g. different customer bases) which make them unsuitable comparators to determine the return on equity.

Similarly, Aurizon Network does not consider it to be reasonable, or practically feasible, to incorporate arrangements into the Access Undertaking to address how asset stranding associated with network fragmentation should be addressed. In this regard Aurizon Network notes that the arrangements under the National Electricity Rules (NER) allow for optimisation of assets where an asset no longer contributes to the objectives of the National Electricity

Market (NEM). However, in practical terms while a sunk prescribed component of the network retains either a load or supply, it will continue to contribute to those objectives with the costs being retained in the common user charges. So, while there is some optimisation risk at the margins for connection assets this is negligible in comparison to the system level risks associated with a significant loss of volumes on prices for remaining users within the CQCN.

Aurizon Network considers the most efficient approach to addressing asset stranding risks requires consideration of the prevailing circumstances. Therein lies the inherent issue with asset stranding in the sense that the circumstances which give rise to this risk being realised are highly uncertain and options available to addressing the problem after it has been realised are extremely narrow. Importantly, Aurizon Network could seek to include arrangements within UT5 to address these risks. However, these mechanisms would not be binding on the regulator in future regulatory periods. While this could be overcome through a binding ruling application under the QCA Act there is a low prospect of this being approved or able to be relied upon if the conditions which ultimately cause the asset stranding risk are not specified in the initial ruling.

Furthermore, Aurizon Network also notes that the mechanisms designed to address asset stranding risks associated with future events in the current undertaking are unlikely to mitigate those risks or provide the regulatory certainty necessary to reduce investor risk premiums. This arises because the declaration is subject to periodic review such that the asset stranding, should it materialise, may occur in periods where the service is not regulated. It is also increasingly probable that to the extent demand has declined to the point where the business is unable to recover its sunk investments, then it is also at increasing risk that the need for regulation to achieve the objectives of efficiency and competition is unnecessary.

3

The regulatory asset base and depreciation

3. The Regulatory Asset Base and Depreciation

This chapter on the RAB and Depreciation aims to achieve the following:

- establish the opening RAB value of $5,926.5m for FY2018 and highlights the basis for deferred capital to be included in this opening asset value for UT5 revenue and pricing;
- proposes a forecast RAB over the UT5 period incorporating a Capital Indicator of $753.3m, depreciation and indexation;
- reconciles the UT4 Capital Indicator and actual capital spend via the Capital carryover; and
- provides for equity raising costs of $11.3m reflective of the UT4 period.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 16 QCA Draft Decision and Aurizon Network's Response – RAB and Depreciation – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking to determine reference tariffs and allowable revenues for the 2017 DAU period is to apply: (a) for the reference tariff calculation, an opening asset value of $5,900 million, based on: (i) accepting Aurizon Network's proposed capital/revenue deferrals (ii) QCA-approved capital expenditure and Aurizon Network's revised forecast capital expenditure for 2016–17 (iii) rolling forward the RAB consistent with the 2016 Undertaking. (b) RAB values over the UT5 period based on: (i) a capital indicator of $778.3 million (in mid-year values) over the UT5 period (ii) forecast average inflation of 2.37 per cent (iii) depreciation charges based on the methodology used in previous QCA decisions. The QCA requires Aurizon Network's 2017 DAU be amended so it reflects the RAB values over the UT5 period and depreciation charges outlined in Table 12 and Appendix D.	3.1	Disagree
The QCA's Draft Decision is to approve Aurizon Network's approach of determining the opening asset value of the RAB to determine reference tariffs and allowable revenues for the 2017 DAU. The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply an opening asset value of $5,900 million, to determine reference tariffs and allowable revenues for the 2017 DAU period, based on: (a) accepting Aurizon Network's capital/revenue deferrals to exclude investment associated with WIRP Moura and NAPE (b) using QCA approved capital expenditure claims for 2013–14, 2014–15 and 2015–16 and Aurizon Network's revised claim for 2016–17 (c) rolling forward the RAB, adjusting for actual depreciation and inflation, where available (d) including revised equity raising costs in the RAB for approved capital expenditure for 2013–14, 2014–15 and 2015–16, and Aurizon Network's revised claim for 2016–17.	3.2	Agree with amendments

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve the capital indicator and methodology for interest during construction. The QCA proposes that an incentive based ex ante approval process be considered for renewals capital expenditures for UT6.	3.3	Agree with amendment
The QCA's Draft Decision is to approve Aurizon Network's proposed approach to depreciation charges, including the asset lives in Appendix E. The QCA's proposed Draft Decision depreciation amounts are calculated taking account of relevant input information (as presented in Table 20).	3.4	Agree

3.1 Overview - Aurizon Network's Position

We note that the Draft Decision is to accept the majority of Aurizon Network's RAB proposal with changes to capital deferral allocation and capital carryover calculations.

Following our assessment of the Draft Decision, Aurizon Network has sought to adjust the WIRP allocation methodology to be consistent with the original capital allocations.

In relation to the capital carryover calculations, we do not support the QCA's proposed changes and outline further our applied framework and revised scope that has been adopted in our responsive position.

Aurizon Network puts forward revised positions on the capital deferrals relating to WIRP Moura and (Newlands to Abbot Point Expansion) NAPE, where these deferrals will cease over UT5 and be included for revenue and pricing purposes during the term. Our reasons and further supporting information of our position is contained within the response to the individual Draft Decision below (see section 3.2). Aurizon Network contends cessation of the WIRP Moura and NAPE deferrals is appropriate in respect of s.138(2)(a) - the object to promote the economically efficient investment in significant infrastructure. It is also in the legitimate business interests of Aurizon Network that revenue deferrals are minimised (s.138(2)(b)).

Aurizon Network also proposes revision to the scope of the Capital Indicator with the only change to the overall value of the proposed Capital Indicator due to the change in methodology for the recovery of corporate overhead relating to the restructured Infrastructure Delivery division (refer section 7.3.3). The purpose of this is to align the Capital Indicator with more up-to-date renewal capital scope over UT5. Our reasons are contained within the response to the individual Draft Decision below (see section 3.3).

3.1.1 Aurizon's Network's submission (2017 DAU)

Aurizon Network submitted to an opening RAB value of $5,964.0m. The opening RAB value included:

> capital expenditure approved by the QCA for FY2014 and FY2015;
> capital expenditure submitted to the QCA for FY2016 (which was under QCA consideration) and a forecast of capital expenditure for FY2017;
> Wiggins Island Rail Project (**WIRP**) capital deferrals relating to the Blackwater system of $235.5m; and
> equity raising costs of $12.1m for capital expenditure incurred over UT4.

As part of that submission, Aurizon Network submitted a UT5 Capital Indicator of $778.3m over the UT5 regulatory term. The Capital Indicator comprised primarily capital renewal projects, with the November 2016 submission indicating over 90% of renewal and the balance to growth projects, primarily relating to Information Technology (IT) projects. As with previous undertaking processes, the Capital Indicator was included to forecast the value of the RAB over the UT5 period.

A Capital Carryover under recovery with a total NPV of $47.7m was escalated at and presented in mid-year terms to be incorporated to the UT5 MAR.

Out of the eight customers who signed up for WIRP capacity, four customers were not railing at the time of submitting UT5.The WIRP Blackwater capital deferrals of $235.5m was proposed to be recovered from the remaining railing WIRP users in the Blackwater system.

Deferrals relating to WIRP Moura and NAPE continued to be deferred in the original UT5 submission due to the volume uncertainty at the time.

On 13 October 2017, Aurizon Network's FY2016 capital expenditure claim was approved by the QCA. Following this approval, Aurizon Network re-submitted to the QCA RAB values[23] incorporating the approved FY2016 capital expenditure. The FY2017 capital expenditure claim has been submitted but is yet to be approved by the QCA.

3.1.2 QCA Draft Decision

Summary of Draft Decision 3.1

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking to determine reference tariffs and allowable revenues for the 2017 DAU period is to apply:
  - (a) for the reference tariff calculation, an opening asset value of $5,900 million, based on:
    - (i) accepting Aurizon Network's proposed capital/revenue deferrals
    - (ii) QCA-approved capital expenditure and Aurizon Network's revised forecast capital expenditure for 2016–17
    - (iii) rolling forward the RAB consistent with the 2016 Undertaking.
  - (b) RAB values over the UT5 period based on:
    - (i) a capital indicator of $778.3 million (in mid-year values) over the UT5 period
    - (ii) forecast average inflation of 2.37 per cent
    - (iii) depreciation charges based on the methodology used in previous QCA decisions.
- The QCA requires Aurizon Network's 2017 DAU be amended so it reflects the RAB values over the UT5 period and depreciation charges outlined in Table 12 and Appendix D.

We note that the Draft Decisions are to accept Aurizon Network's proposals in relation to:

> the opening RAB value for UT5;
> equity raising cost;
> the value of the Capital Indicator;
> ceasing the capital deferrals for WIRP Blackwater; and
> a continuation of the WIRP Moura and NAPE deferrals.

The QCA has proposed changes to:

> The calculations and allocations of the WIRP Blackwater capital deferrals, which is based upon information received in March 2017, outlined that Cook Colliery (Cook Mine) a WIRP Blackwater customer, was to enter voluntary administration. The QCA considered it reasonable to exclude Cook Mine in coal volume forecasts for the UT5 regulatory period and therefore excluded Cook from the deferrals allocation, due to it not railing WIRP

[23] Request for Information from the QCA on 17 October 2017 - Opening asset value (updated for recent actual information).

coal tonnes. The QCA has therefore allocated the WIRP capital deferrals to the remaining three WIRP customers that are forecast to rail during the UT5 period.

- The calculation of Aurizon Network's Capital Carryover where the key change is the alignment of WIRP actual capital expenditure with the year in which the revenue was recovered. This resulted in a $43.3m (prior to mid-year conversion and escalation) reduction in the Capital Carryover compared to Aurizon Network's UT5 submission.

3.1.3 Aurizon Network's assessment of QCA Draft Decision

Following our assessment of the Draft Decision, Aurizon Network does not support the QCA's WIRP Blackwater deferral allocations and the calculation of the capital carryover balance. Aurizon Network has also sought to cease the revenue deferrals from the Moura and Gape systems.

Also Aurizon Network proposes a change to the scope of the Capital Indicator. Our reasons are contained within the response to the individual Draft Decision below (see section 3.3).

3.2 Opening RAB value as at 1 July 2017

Summary of Draft Decision 3.2

- The QCA's Draft Decision is to approve Aurizon Network's approach of determining the opening asset value of the RAB to determine reference tariffs and allowable revenues for the 2017 DAU.
- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply an opening asset value of $5,900 million, to determine reference tariffs and allowable revenues for the 2017 DAU period, based on:
  - (a) accepting Aurizon Network's capital/revenue deferrals to exclude investment associated with WIRP Moura and NAPE
  - (b) using QCA approved capital expenditure claims for 2013–14, 2014–15 and 2015–16 and Aurizon Network's revised claim for 2016–17
  - (c) rolling forward the RAB, adjusting for actual depreciation and inflation, where available
  - (d) including revised equity raising costs in the RAB for approved capital expenditure for 2013–14, 2014–15 and 2015–16, and Aurizon Network's revised claim for 2016–17.

The Draft Decision approved Aurizon Network's approach for determining the opening value of the RAB, subject to several amendments as noted above. The QCA's revised opening asset value derivation is set out in the table below.

Table 17 QCA Draft Decision on the RAB, 2017-18 to 2020-21 ($m, nominal)

	FY2018	FY2019	FY2020	FY2021
1. Non-electric				
Opening asset value	5,213.7	5,222.7	5,203.7	5,159.7
Plus capital indicator	208.6	179.8	165.0	162.9
Plus indexation	128.5	128.0	127.2	126.1
Less depreciation	328.1	326.8	336.2	340.5
Closing asset value	5,222.7	5,203.7	5,159.7	5,108.3
2. Electric assets				
Opening asset value	686.3	673.6	659.9	644.3
Plus capital indicator	10.4	10.4	10.4	10.4
Plus indexation	16.5	16.2	15.9	15.5
Less depreciation	39.7	40.3	41.8	43.4
Closing asset value	673.6	659.9	644.3	626.9
Total opening asset values	**5,900.0**	**5,896.3**	**5,863.6**	**5,804.0**

Source: QCA (2017), Draft Decision, Table 12, p.31.

While Aurizon Network supports the QCA's acceptance of our methodology for determining the opening value of the RAB. However, we do not support the adjustments that the QCA has proposed in its Draft Decision (e.g. Moura capital deferral and capital carryover). We have detailed this with the relevant sections of this response.

Table 18 Aurizon Network – Response – RAB, 2017-18 to 2020-21($ million, nominal)

	FY2018	FY2019	FY2020	FY2021
1. Non-electric				
Opening asset value ^	5,240.1	5,331.0	5,292.7	5,229.8
Plus capital indicator	205.8	171.4	158.4	154.0
Plus indexation	125.3	126.6	125.4	123.8
Less depreciation	330.4	336.3	346.6	353.5
Closing asset value	5,240.9	5,292.7	5,229.8	5,154.2
2. Electric assets				
Opening asset value	686.4	668.5	655.4	638.8
Plus capital indicator	5.6	11.4	9.6	11.9
Plus indexation	15.9	15.6	15.3	15.0
Less depreciation	39.4	40.1	41.5	43.1
Closing asset value	668.5	655.4	638.8	622.6
Total opening asset values	**5,926.5**	**5,999.5**	**5,948.1**	**5,868.6**

Totals may not add due to rounding.

^ The opening asset value for FY2019 includes capex associated with the Byerwen NAPE system (which commenced railings in early 2018) and in recognition of cessation of the capital deferrals for Moura.

3.2.1 Capital Deferrals

WIRP Blackwater Capital Deferrals

Aurizon Network supports the Draft Decision regarding the cessation of the WIRP Blackwater capital deferrals in UT5. The QCA considered that it is appropriate for Aurizon Network to cease capital/revenue deferrals for WIRP Blackwater, which are capitalised using the approved WACC. We note that the volume ramp-up remains lower than expectations due to market conditions.

The QCA considered it is ***not appropriate to continue to defer revenues as this compounds Aurizon Network's asset stranding risks beyond those envisaged in the WIRP access conditions***.[24] (emphasis added)

The QCA stated that the, ***The Draft Decision to approve Aurizon Network's proposals in regard to deferrals is considered appropriate in respect of s. 138(2)(a) - the object to promote the economically efficient investment in significant infrastructure. It is also in the legitimate business interests of Aurizon Network that revenue deferrals are minimised (s. 138(2)(b))***.[25] (emphasis added)

Deferral allocation

WIRP train services commenced railing in April 2015. WIRP infrastructure in the Blackwater system is being utilised by WIRP users. Aurizon Network proposes to recover the deferred capital investment relating to WIRP from railing WIRP users within the Blackwater system. Aurizon Network's Deferral allocation approach is based on the GTKs of each customer's WIRP contract positions, to the extent that WIRP users are forecast to rail during the UT5 period. The Deferred capital is allocated among railing WIRP users.

The QCA have accepted the methodology applied by Aurizon Network to arrive at the deferred capital. However, the QCA have updated the methodology and deferral allocators to take into consideration new customer information that was not available at the time Aurizon Network submitted UT5.

In the Draft Decision the QCA stated that, in March 2017, there was uncertainty as to whether Cook Mine would continue to operate to WICET during the UT5 period as the mine owner Caledon entered voluntary administration. As outlined in the QCA Draft Decision on volumes, the QCA did not include Cook in volume forecasts for the UT5 regulatory period.

[redacted]

WIRP Moura Capital Deferrals

The Moura capital deferrals represent the WIRP Moura East and West upgrades required to facilitate volumes from the Baralaba mine. In Aurizon Network's UT5 submission, capital deferrals relating to WIRP Moura continued to be deferred as it was uncertain whether there would be volumes from the Baralaba mine over the UT5 regulatory period. Cockatoo Coal, who owned Baralaba mine entered voluntary administration on 16 November 2015. Baralaba mine was placed into care and maintenance in February 2016. The QCA Draft Decision accepted Aurizon Network's submission to continue the WIRP Moura deferral.

However, [redacted] the QCA have included a tonnage forecast over the UT5 period for the Baralaba mine.[26] Aurizon Network supports the QCA's

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[24] QCA (2017) Draft Decision, p.36.

[25] QCA (2017) Draft Decision, p.38.

[26] AZJ.AX – Half Year 2018 Aurizon Holdings Ltd Earnings Call, 11 February 2-18. A copy of the transcript is available at https://www.aurizon.com.au/~/media/aurizon/files/investors/documents%20and%20webcasts/2018/interim%20results/azj-au_transcript_2018-02-11.pdf.

inclusion of volume forecasts for Baralaba. [redacted]

With the inclusion of volume forecast for Baralaba mine, the Moura capital deferrals should cease. Baralaba Coal will be using the WIRP Moura East and West upgrades to rail the forecast tonnes. The Moura West upgrades on the Moura Short Line were required to facilitate railings from the Baralaba mine. The Moura East work included upgrading the earthworks underneath the railway track in several locations on the Moura Short Line, which will be used by Baralaba Coal.

Aurizon Network in its response to the Draft Decision has ceased the deferral from FY2019, in line with its response on the volume forecasts for Baralaba mine. [redacted]

Byerwen NAPE Capital Deferrals

Byerwen NAPE capital deferrals relate to the GAPE project capital allocation relating to the Byerwen mine in the Newlands system. The Byerwen NAPE capital was deferred since the commencement of the GAPE project as the Byerwen mine was not railing. Aurizon Network's UT5 submission continued the deferral of the Byerwen NAPE capital as there were no tonnes being railed from the mine at that time. The Draft Decision accepted Aurizon Network's proposal for the continuation of the Byerwen NAPE capital deferrals.

With the Byerwen rail loop commissioning in January 2018, volumes are now being railed during the UT5 term.

The Byerwen mine connects via the Northern Missing Link and rails to the Abbot Point Coal Terminal. Byerwen to Abbot Point will pay a GAPE Reference Tariff, railings commenced in Q1 CY2018. [redacted] Aurizon Network is therefore proposing as part of this response to the QCA Draft Decision the cessation of the Byerwen NAPE capital deferrals from FY2018 and the deferred capex be included in the GAPE system. There is no ongoing requirement for this deferral due to the commencement of railing [redacted] for Byerwen.

3.2.2 Equity raising cost

Aurizon Network supports the Draft Decision which accepts Aurizon Network's equity raising cost proposal.

Table 19 Aurizon Network – Response – equity raising cost ($m, nominal)

System	Aurizon Network response
Blackwater	7.7
Goonyella	2.9
Moura	0.4
Newlands	0.2
Total	**11.3**

Total may not add due to rounding.

3.2.3 Capital Carryover

Aurizon Network submitted for UT5, its capital expenditure carryover account to reflect the Net Present Value (**NPV**) of the difference between revenues Aurizon Network was entitled to earn from the capital indicator, against its revenue entitlements for actual capital expenditure incurred, during the UT4 period.

Aurizon Network's proposal included a total carryover balance at 1 July 2017 of $47.7m under-recovery.

The Draft Decision rejected this proposal and proposed a revised carryover balance of $4.4m under-recovery. The key drivers of differences between the QCA and Aurizon Network's proposal involves the treatment of WIRP capital expenditure incurred in FY2015. While Aurizon Network's UT5 proposal recognised actual WIRP capital expenditure in FY2015, the Draft Decision deferred the capital expenditure to FY2016 (including one year of WACC escalation).

Table 20 QCA Draft Decision – Capital Carryover – 1 July 2017 ($ 000)

System	Non-electric	Electric	Total
Blackwater (incl Rollestone & Minerva)	(5,953.6)	800.2	**(5,153.4)**
Goonyella (incl Hail Creek & Vermont)	2,764.5	10,205.1	**12,969.6**
Moura	2,782.9	-	**2,782.9**
Newlands	1,436.6	-	**1,436.6**
GAPE (incl GSE)	(7,690.2)	-	**(7,690.2)**
Total	**(6,659.9)**	**11,005.3**	**4,345.4**

Source: QCA (2017) Draft Decision, p.42.

Aurizon Network does not support the QCA's WIRP Blackwater calculation within the capital carryover. The rationale to defer the WIRP capex for RAB inclusion was due to limited railings on the WIRP infrastructure. Aurizon Network position remains that the capital should be included within FY15, due to both the WIRP Blackwater customers utilising the infrastructure from April 2015, and the QCA approving the WIRP capital to enter into the RAB as part of the QCA approved FY15 capital claim.

Following the update of the FY2016 capital expenditure claim to the actual FY2016 QCA approved capital expenditure and updating the forecast FY2017 capital expenditure to reflect the capital claim submitted to the QCA on 31 October 2017, Aurizon Network has updated the relevant tax depreciation for the FY2016 and FY2017 to reflect this updated position.

Table 21 Aurizon Network – Response – Capital Carryover – 1 July 2017 ($ 000)

System	Non-electric	Electric	Total
Blackwater (incl Rollestone & Minerva)	30,804.6	3,588.0	**34,392.7**
Goonyella (incl Hail Creek & Vermont)	1,957.8	10,794.4	**12,752.2**
Moura	2,524.2	-	**2,524.2**
Newlands	1,112.8	-	**1,112.8**
GAPE (incl GSE)	(7,789.9)	-	**(7,789.9)**
Total	**28,609.5**	**14,382.4**	**42,992.0**

3.3 Capital Indicator

Summary of Draft Decision 3.3

- The QCA's Draft Decision is to approve the capital indicator and methodology for interest during construction.
- The QCA proposes that an incentive based ex ante approval process be considered for renewals capital expenditures for UT6.

3.3.1 Scope of the Capital Indicator

Aurizon Network submitted a forecast capital indicator of $778.3m (mid-year values) over the term of UT5. The Draft Decision accepts Aurizon Network's Capital Indicator.

Table 22 and Table 23 below are Aurizon Network's UT5 Capital Indicator estimates as approved under the QCA's Draft Decision.

Table 22 Aurizon Network – 2017 DAU (UT5) – Capital Indicator by year ($m)

UT5 Capital Indicator – Nov 2016					
Traction power - electric	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**Total UT5**
Blackwater	3,788,428	3,788,428	3,788,428	3,788,428	15,153,711
Goonyella	6,922,643	6,922,643	6,922,643	6,922,643	27,690,573
Total electric assets	**10,711,071**	**10,711,071**	**10,711,071**	**10,711,071**	**42,844,284**
Non electric	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**Total UT5**
Blackwater	82,663,952	69,774,544	63,340,709	65,708,400	281,487,606
Goonyella	95,297,312	81,308,998	73,776,256	68,198,869	318,581,434
Moura	9,293,525	7,845,147	7,114,055	7,137,469	31,390,195
Newlands	26,902,526	25,680,626	25,176,012	26,218,577	103,977,741
Total non-electric assets	**214,157,315**	**184,609,315**	**169,407,032**	**167,263,315**	**735,436,976**
Total UT5 CI (Nov 16)	**224,868,386**	**195,320,386**	**180,118,103**	**177,974,386**	**778,281,260**

Table 23 Aurizon Network – 2017 DAU (UT5) – Capital Indicator by major program

Asset group / Program	$ 000 total	Per cent
Civil structures (bridges, culverts and pipes)	233,681	30
Civil track excluding rail	219,276	28
Rail Renewal	95,428	12
Signalling and Control Systems	85,524	11
Strategy and other, including NAMS	66,384	9
Traction power	42,844	5
Telecommunications	35,145	2
Total	**778,281**	

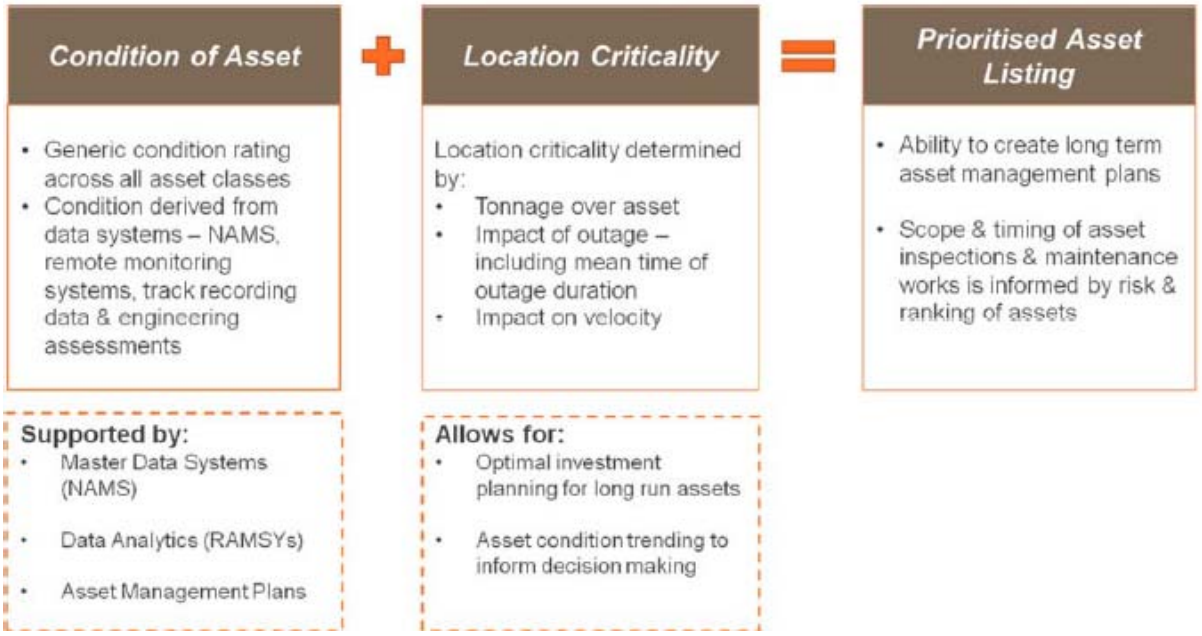
Totals may not add due to rounding.

Aurizon Network's Capital Indicator is only a forecast of capital spend and actual capital is only included into the RAB subject to an ex-post assessment of prudency by the QCA. However, it is important that the Capital Indicator

be representative of its intended scope to minimise system level price impacts through the capital carryover mechanism, which impacts tariffs during the next regulatory term. Aurizon Network considers this response to the Draft Decision as an opportunity to revise the scope of the 30 November 2016 UT5 Capital Indicator to a scope that is more relevant and up-to-date.

Aurizon Network has applied a detailed framework to develop the scope for the Capital Indicator. This framework is presented below.

Figure 11 Asset Based Management



The UT5 Capital Indicator is largely based on asset renewal requirements. Aurizon Network has revised the annual allocation and system splits of the asset renewal requirements (reflected in the UT5 Capital Indicator) based on the latest available information generated by the location criticality assessment in Figure 11. These revised splits are presented below.

Table 24 Aurizon Network's capital indicator by major asset group / program

Asset group / Program	$ 000 total	Per cent
Civil structures (bridges, culverts and pipes)	244,140	32
Civil track excluding rail	172,037	23
Rail Renewal	127,630	17
Signalling and Control Systems	90,114	12
Strategy and other, including NAMS	66,482	9
Traction power	39,847	5
Telecommunications	13,064	2
Total	**753,313**	

Totals may not add due to rounding.

Through its increased focus on asset management, Aurizon has developed its Scope Condition & Location Criticality model utilised to prioritise asset renewal scope across the CQCN. This model assigns a specific condition rating to all assets based on age, physical condition and degradation trends. Each asset is also assigned a criticality score

based on its physical location within the network, the amount of tonnage an asset is exposed to, the effect of its failure on network performance and the time to rectify from failure (lead time). These conditions and criticality scores are combined to calculate a particular assets prioritisation score.

This model allows for all assets to be compared and measured regardless of asset class using a consistent methodology. This model was first applied to structure based assets in FY2016 and has been rolled out across all asset classes over FY2017. As such, the level of analysis and defined scope for future years is better known at the time of this submission, in comparison to when Aurizon Network submitted UT5 in November 2016. The change in spend profile both within systems and across asset classes is a reflection of the updated data available within the Scope Condition & Location Criticality Model. We encourage the QCA and/or its consultants to review this model as part of the next stage of deliberations in reaching a Final Decision.

Aurizon Network's revised Capital Indicator also includes a reduction for the following amounts. These amounts relate solely to the corporate overheads of the Infrastructure Delivery division, which from 1 July 2017 are within Aurizon Network.

Table 25 Aurizon Network – Response – corporate overhead allowance in Capital Indicator

	FY2018	FY2019	FY2020	FY2021	Total UT5
Corporate overhead allowance	6,091,935	6,211,118	6,332,683	6,332,683	**24,968,419**

It has been proposed in section 7.3.3 that a consistent methodology for the recovery of corporate overheads in relation to this division be applied as for all other divisions within Aurizon Network. This has resulted in a proposed increase to the corporate overhead allowance.

The table below presents Aurizon Network's proposed Capital Indicator reflecting the revised scope.

Table 26 Aurizon Network – Response – Revised scope – Capital Indicator by year

UT5 Capital Indicator					
Traction power - electric	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**Total UT5**
Blackwater	2,599,776	4,983,052	4,195,027	6,230,086	18,007,940
Goonyella	3,227,248	6,772,537	5,728,687	6,102,085	21,830,558
Total electric assets	**5,827,025**	**11,755,589**	**9,923,714**	**12,332,170**	**39,838,498**
Non electric	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**Total UT5**
Blackwater	95,379,464	77,764,630	72,716,493	77,325,498	323,186,086
Goonyella	89,553,127	74,584,555	70,144,094	67,069,716	301,351,492
Moura	9,057,438	14,524,100	12,829,324	8,605,868	45,016,730
Newlands	13,159,879	10,480,394	8,171,794	6,308,450	38,120,517
GAPE ^	5,799,518				5,799,518
Total non-electric assets	**212,949,426**	**177,353,679**	**163,861,706**	**159,309,533**	**713,474,342**
Total UT5 CI	**218,776,450**	**189,109,268**	**173,785,420**	**171,641,703**	**753,312,841**

Totals may not add due to rounding.

^ GAPE system includes capital expenditure relating to the Havilah culverts upgrades project, which is part of the Goonyella to Abbot Point Expansion (GAP50) scope. Aurizon Network's FY2017 Capital claim submission (which is currently under QCA consideration) also included capital expenditure relating to the Havilah culverts upgrade. The FY2017 capex claim submission provides details on the Havilah culverts upgrade.

Aurizon Network supports the QCA's approval of Aurizon Network's Capital Indicator and proposes that the Final Decision similarly accepts Aurizon Network's $753.3m Capital Indicator, incorporating the revised scope.

After UT5 was submitted, Aurizon Network developed a more detailed renewal forecast for FY2018, which Aurizon Network presented to stakeholders as part of Aurizon Network's Annual Maintenance symposium on 13 March 2017. Aurizon Network will continue to keep stakeholders informed on renewals spend via a similar forum planned for March 2018 and through other regulatory reporting requirements.

Ex-ante assessment of capital in UT6

Over the term of UT4 and retained within UT5, Aurizon Network has provided greater transparency in relation to where it spends the renewal capital. Stakeholders have been provided with two annual maintenance presentations that outline the forward looking capital program and all submissions throughout the UT5 process have re-iterated this forward looking plan.

Within the Draft Decision, the QCA have proposed that Aurizon Network consider an incentive based ex ante approval process for renewals capital expenditure in UT6. To consider such a process, access holders, access seekers, train operators and access providers, must all fully understand the risks associated with adopting this approach. Prior to considering such a change in approach to capital renewals, Aurizon Network would seek to engage with all stakeholders to communicate these risks.

3.3.2 QCA Draft Decision on volumes

The Draft Decision did not accept Aurizon Network's UT5 proposal in relation to volumes. The volumes forecast contained in the Draft Decision is on average 11% higher than Aurizon Network's proposal.

The QCA has relied on market outlook forecasts by their consultant Resource Management International and their individual mine forecasts including the assumptions relating to mines returning from care and maintenance or expanding operations.

Aurizon Network is taking a reasonable approach by not seeking a volume adjustment for the Capital Indicator in line with any changes to the volume forecast provided within our response submission. If, however the QCA sought to significantly increase the volume forecast greater than Aurizon Network's, then Aurizon Network would seek to amend the Capital Indicator to take this change into account.

The main reasons for maintaining the current Capital Indicator include:

- the smoothed Capital Indicator – the Capital Indicator is primarily a smoothed average annual capital spend of Aurizon Network's forward looking long term asset renewal requirements constrained by track access, resources and funding. Hence, changes in near term volumes will have less impact on immediate capital requirements than on annual maintenance requirements, though the longer term need for asset renewal will increase, especially where maintenance effort does not keep pace with increased volumes as detailed below.
- maintenance allowance uplift – Aurizon Network is seeking an increase from the Draft Decision for the Maintenance allowance as a result of the QCA's volume increase. If the rail network is maintained to accommodate the increase in volumes, there will be less immediate pressure on asset renewals as outlined above.

Accordingly, Aurizon Network will not be proposing any increase to the Capital Indicator to align to its revised volumes given the maintenance allowance uplift being sought.

3.4 Depreciation

Summary of Draft Decision 3.4

- The QCA's Draft Decision is to approve Aurizon Network's proposed approach to depreciation charges, including the asset lives in Appendix E.
- The QCA's proposed Draft Decision depreciation amounts are calculated taking account of relevant input information (as presented in Table 20 of Draft Decision).

Aurizon Network's methodology for calculating the return of capital (depreciation) for the UT5 regulatory period is consistent with the methodology approved by the QCA in its UT4 Final Decision, which is the 20 year rolling depreciation. This approach reflects straight line depreciation where the physical life of assets is capped at 20 years for depreciation purposes and reset at the commencement of each regulatory period.

Aurizon Network supports the Draft Decision to approve our approach to depreciation calculation and the asset lives in Appendix E of the Draft Decision. For clarity the asset lives in Appendix E are the QCA's endorsed UT4 asset lives which have been applied for the UT5 period as well.

Aurizon Network's response position is set out below.

Table 27 Aurizon Network – Response – depreciation by system ($m, nominal, mid year value)

System	FY2018	FY2019	FY2020	FY2021	Total
Blackwater	161	159	164	174	659
Goonyella	110	110	113	107	440
Moura	13	16	17	18	64
Newlands	13	16	17	18	64
GAPE	61	63	64	66	254
Total	**357**	**364**	**375**	**383**	**1,480**

4

Inflation forecast and RAB indexation

4. Inflation Forecast and RAB Indexation

This chapter examines issues related to the treatment and estimation of inflation for the purpose of indexation of the Regulatory Asset Base (RAB) and operating cost allowances.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 28 QCA Draft Decision and Aurizon Network's Response – Forecasting Inflation – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply a forecast inflation rate of 2.37% per annum for the 2017 DAU regulatory period. For the purpose of forecasting inflation embedded in reference tariffs and maximum allowable revenues (excluding maintenance and operating cost escalation), the QCA considers that the Reserve Bank of Australia (**RBA**) forecast approach, using a geometric mean, provides the best unbiased estimate for inflation for the 2017 DAU regulatory period. The QCA proposes to use the midpoint of short term RBA forecasts, where available, and the midpoint of the RBA target band for the years which forecasts are not available.	4.1	Disagree. RBA forecasts are not the best unbiased estimate over the short term (1 – 4 years) but are the best estimate unbiased estimate over the long term (5 – 10 years)
The QCA is minded to approve the Aurizon Network 2017 DAU proposed indexation of the RAB using forecast inflation for the roll-forward process, which aligns with the forecast inflation used to develop reference tariffs and maximum allowable revenues. The QCA is willing to consider alternative approaches, including, but no limited to: (a) using forecast inflation to determine reference tariffs and using actual inflation to roll-forward the RAB for the purposes of setting new reference tariffs for a future regulatory period (b) align actual inflation with the reference tariffs and the RAB roll-forward by the use of a true up adjustment at the end of the regulatory period. This would be achieved by an ex post adjustment to reflect the difference between the actual inflation rate and the ex-ante forecast rate.	4.2	Adopt a forecast-actual model with intra-regulatory period inflation adjustment subject to use of ten year risk free rate and unbiased inflation with a positive real risk free rate.

Our response to the individual Draft Decisions is set out below.

4.1 Forecasting Inflation

Summary of Draft Decision 4.1

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply a forecast inflation rate of 2.37% per annum for the 2017 DAU regulatory period.
- For the purpose of forecasting inflation embedded in reference tariffs an maximum allowable revenues (excluding maintenance and operating cost escalation), the QCA considers that the RBA forecast approach, using a geometric mean, provides the best unbiased estimate for inflation for the 2017 DAU regulatory period.
- The QCA proposes to use the midpoint of short term RBA forecasts, where available, and the midpoint of the RBA target band for the years which forecasts are not available.

4.1.1 Overview – Aurizon Network's Position

Aurizon Network does not support Draft Decision 4.1.

We note that the estimation of the unbiased inflation forecast is inherently linked to the term of the risk free rate. Aurizon Network's proposal for UT5 was based on:

> the use of a 10 year term for the nominal risk free rate; and
> estimation of the break even inflation rate derived from indexed bonds.

Draft Decision 5.2 rejects Aurizon Network's proposed use of the 10 year term for the nominal risk free rate and requires the term to maturity to be consistent with the term of the regulatory period. As discussed in section 5.2 of this response submission, Aurizon Network maintains the view that the 10 year risk free rate is necessary to provide a return on investment commensurate with the commercial and regulatory risks of providing the service. In addition, we are proposing a market averaging period which more closely aligns to the timing of the Final Decision for the reasons outlined in section 5.5.6 of this response submission.

Therefore, our response to Draft Decision 4.1 is structured in two parts addressing:

> the estimate of inflation relevant to the QCA's use of a four your term for the risk free rate; and
> the most reliable unbiased estimate of inflation relevant to the use of a 10 year term.

Aurizon Network proposes a 10 year inflation forecast of 2.30% for the placeholder averaging period of 20 days up to and including 31 January 2018.

4.1.2 Inflation Forecasts for Four Year Term

For the avoidance of doubt, Aurizon Network does not support the use of term matching but it is necessary to respond to the Draft Decision's rejection of the use of Break Even Inflation (**BEI**) in the context of the Draft Decision to apply a four year risk free rate.

Aurizon Network's UT5 proposal included an estimate placeholder rate of inflation of 1.22% which had been estimated using the BEI derived from nominal and indexed bond yields. This approach was adopted, as this method produced a more reliable and unbiased estimate of inflation commensurate with market expectations in the current low interest rate environment.

The Draft Decision rejects the use of BEI on the basis that:

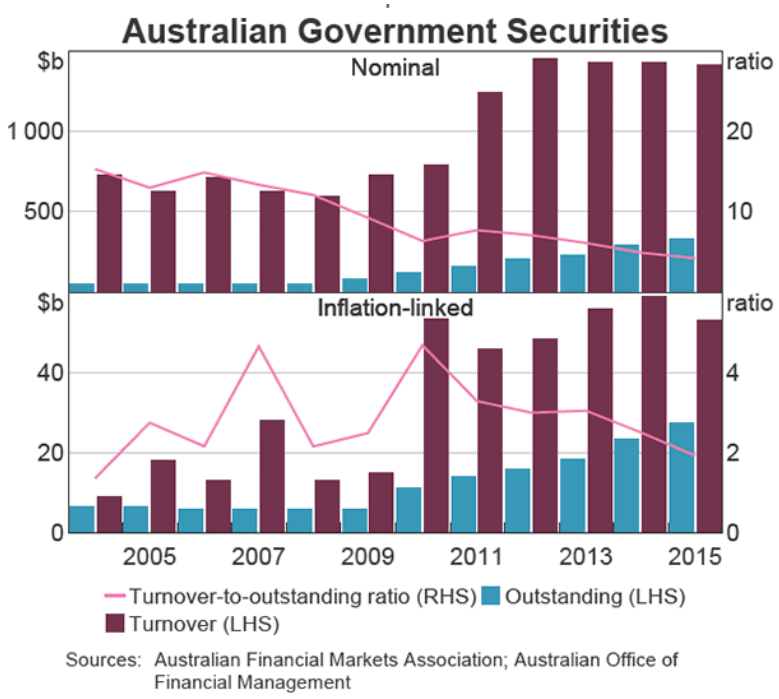
> there are potential sources of bias in the break-even method, including liquidity premiums in the indexed bond market;
> there is an inflation risk premium built into the nominal bond which may be positive or negative; and

> the interaction of the inflation risk bias and the liquidity bias make the net effect difficult to evaluate.

The QCA's conclusions are comparable to those of the AER's recently completed review on the regulatory treatment of inflation, who evaluated the use of the BEI approach over a term of ten years.[27] Aurizon Network acknowledges the issues identified by the AER with respect to the reliability of the use of BEI for estimating ten year inflation forecasts. However, the AER did not assess the materiality or existence of these biases with respect to a four year term given the prevailing approach to estimating the nominal risk free rate is to use a 10 year term for which long term inflation forecasts are necessary. Therefore the conclusions from this analysis are not directly relevant to the Draft Decision's use of a four year term.

Aurizon Network considers that it is unclear from the Draft Decision as to whether rejecting the use of a break-even inflation rate has had regard to the reliability of this method over a term of four years. The only commentary to the consideration of medium term inflation forecasts is the reference to the study by Finlay and Wende (2012) which evaluated Australian data over the period of 1992 – 2010 for terms of 5 and 10 years. However, this data sample is not relevant to the market averaging period and there have been substantial changes in the market for indexed bonds since that period as shown in Figure 12. The Draft Decision does not complete an assessment on whether the results from this study would be replicated using current market data.

Figure 12 Australian Government Securities[28]



The Draft Decision also includes no consideration of other measures of inflation, such as inflation swaps, in order to evaluate whether the RBA forecast method is unbiased, or relevant to the task of determining the 'market estimate' of inflation embedded in the nominal risk free rate. Aurizon Network has evaluated recent regulatory decisions, including those of IPART and ERA to assess the reasonableness of using the BEI method over a four year term given the materiality of the difference between the BEI and RBA forecast approach as shown in the following

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[27] Australian Energy Regulator (2017) Final Position Paper – Regulatory Treatment of Inflation, December, https://www.aer.gov.au/networks-pipelines/guidelines-schemes-models-reviews/review-of-expected-inflation-2017

[28] Reserve Bank of Australia (2016) Bulletin: Measure of Inflation Expectations in Australia, December.

comparison between the Draft Decision and the Economic Regulatory Authority of Western Australia (**ERA**) decision on the Dampier to Bunbury Pipeline[29] which also applies a term matching approach to the risk free rate.

Table 29 Comparison of Draft Decision to ERA Approach with Term Matching

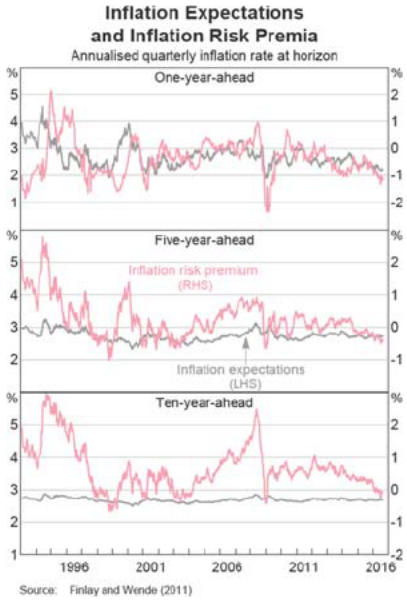
	Draft Decision with RBA Average	Draft Decision with BEI	ERA Decision on DBP using BEI
4 Year Break even inflation rate		1.62%	1.43%
QCA RBA Forecast	2.37%		
Nominal 4 Year Risk Free Rate	1.90%	1.90%	1.80%
Real Risk Free Rate	**(0.46%)**	**0.28%**	**0.36%**

Note: Real rates are obtained from (1 + n)/(1 + inf) – 1

Inflation Risk Premium in Nominal Bonds

An estimate of the inflation risk premium in nominal bond yields across different maturities was included in the RBA Bulletin for the December 2016 quarter. While there are some issues associated the reliance on the Consensus Economics forecasts, as opposed to other measures such as inflation swaps, to estimate the inflation risk premium there is a clearly observable difference in both the quantum and volatility of the 10 year risk premium compared to the 5 year premium.

Figure 13 Inflation expectations and inflation risk premia



Source: RBA Bulletin – December Quarter, Measures of Inflation Expectations in Australia, 2016.

We also note that NSW Treasury has questioned whether any such inflation risk premium in the nominal bonds would be expected to be material as stated in its submission to IPART:[30]

> *The inflation premium is the premium demanded by investors bearing the risk of inflation in nominal bonds. This premium will overestimate inflation. The liquidity premium is the premium demanded by investors that hold inflation linked bonds versus more liquid nominal bonds. As the AOFM has committed to a robust*

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[29] Economic Regulatory Authority of Western Australia (2016) Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016-2020 – Appendix 4 Rate of Return, p.189.

[30] NSW Treasury (2016) "Response to request for submissions on IPART's issues paper, "Review of our WACC method", 18 August, p.6.

linker market comprising 10-15% of their stock of bonds outstanding, any liquidity premium would likely be small. Regardless of the premiums inherent in inflation-linked bonds, the inflation linked bonds give a direct measure of where issuers can raise funds in the inflation market. Use of the BEI allows the utilities to recover their efficient costs which include costs from investor biases.

The Draft Decision includes no consideration of whether an inflation risk premium is present in the nominal Commonwealth Government Securities (**CGS**) bonds used to interpolate the four year yield, and if so whether it is material.

Liquidity Premium in Indexed Bonds

The Draft Decision responds to Aurizon Network's UT5 proposal that the indexed bond market has become more liquid with the observation that:

> nominal bond liquidity has also increased;
> the number of nominal bonds on issue substantially exceeds that of indexed bonds; and
> nominal bonds have a higher turnover and higher liquidity than indexed bonds.

The conclusion that the nominal bonds on issue will exceed indexed bonds and be more liquid is not an unexpected one. However, the Draft Decision does not establish how the ratio of nominal to indexed bonds is relevant to the existence of a liquidity premium in indexed bonds that is sufficient to impair its utility in deriving an estimate of expected inflation.

The Draft Decision reports measures of turnover and liquidity from the Australian Financial Market Report produced by the Australian Financial Markets Association (**AFMA**) but does not state whether this is the average of all indexed bonds on issue or what the liquidity ratio is of the two issued indexed bonds relevant to interpolating a four year yield which the Independent Pricing and Regulatory Tribunal (**IPART**) concluded:[31]

The real interest rates for the inflation-linked bonds maturing in 2020 and 2022 indicate a reasonably liquid market (the right-hand panel of the figure). This suggests we could use these bonds to estimate inflation rates for 3- to 5-year periods.

The QCA's concerns on liquidity are contradictory to the conclusions in other regulatory reviews, including:

IPART's current WACC review which states:[32]

Our analysis for this review suggests that inflation-linked bond liquidity is currently lower than liquidity in the nominal bond market. However, we consider that bond market liquidity is currently sufficient, if judgement is applied, to produce an estimate of inflation using the BEI method for 3-5 year regulatory period.

ERA's 2013 rate of return guidelines, which also assumes a five year term for the nominal risk rate and inflation, states:[33]

It has been suggested that a bias exists in the Treasury bonds approach, due to investors demanding an inflation premium to compensate for being exposed to the uncertainty around the future inflation rate. Another criticism of this approach is the relatively small quantity of Treasury indexed bonds, with maturities every five years, on issue. This is in contrast to the large quantity of CGS currently on issue. As a consequence, the interpolation of Treasury indexed bonds is significantly less accurate than the corresponding interpolation for CGS. However, the Authority considers that, on balance, the implied bond

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31 IPART (2017) Final Report: Review of our WACC Method, February, p.105.

32 IPART (2017) Final Report: Review of our WACC Method, February, p.76.

33 ERA (2013) Explanatory Statement for the Rate of Return Guidelines.

approach produces more accurate estimates, now that the liquidity of index bonds has improved and apparent liquidity premiums have subsided.

The Draft Decision makes reference to the liquidity of indexed bonds in noting:

> *Based on data for 2015-16, the liquidity ratio of nominal bonds was 18 compared to a liquidity ratio of 8.6 for indexed bonds. From 2014-15 to 2015-16, the turnover in indexed bonds increased by 13 per cent, while turnover in nominal bonds increased by 32%. The general evidence shows that the volume of indexed bonds is much lower and turnover is substantially less liquid.*

Aurizon Network submits that while the conclusion on relativity of nominal to indexed bonds is correct that does not form the basis to conclude that indexed bonds are illiquid, only that nominal bonds are more liquid. The Draft Decision does not state what liquidity ratio is required for a market to be liquid or recognise that beyond some point, extra trading adds nothing to market liquidity because the true measure of market liquidity is whether a party can buy or sell a bond without moving the market price against itself. At some point there is enough liquidity for a party to be able to do this and trading above and beyond this level adds little or nothing to the perceived liquidity. These issues are discussed in section 6.3.1 of the CEG report on Estimates of Inflation in which they note trading volumes are not a reasonable measure of liquidity as:

> *Inflation indexed bond yields are protected from unexpected inflation and, therefore, do not respond to inflation news in the same way that nominal bonds do. Put simply, inflation indexed bonds do not need to trade as commonly as nominal bonds in order to achieve the same liquidity because they are simpler products.*

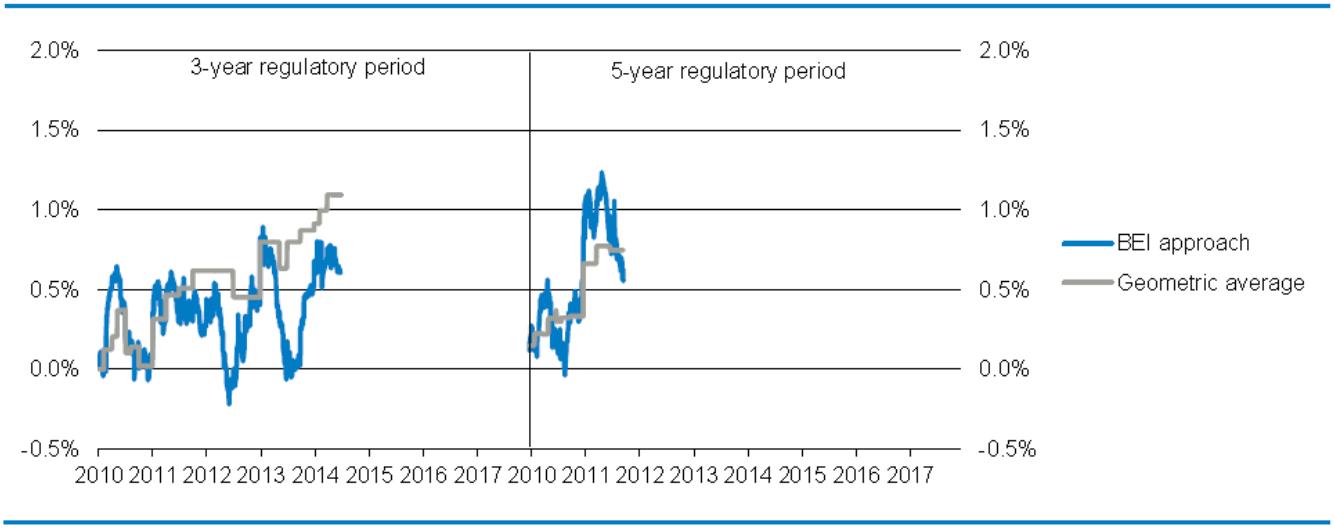
Reliability of BEI in providing unbiased inflation estimates

Aurizon Network submits that in order for the NPV = 0 principle to be satisfied from the perspective of an equity investor it is a necessary condition for the real risk free rate to reflect the market expectations for inflation inherent in the market expectations in the nominal risk free rate. If an equity investor expects to earn a real rate of return then the use of a market based parameter for the nominal risk free rate must me matched against a market based parameter for inflation (i.e. there must be a market value for inflation relevant to that same period). Aurizon Network notes the following comments by NSW Treasury regarding the use of BEI for this purpose:

> *The use of BEIs ensure consistency between real and nominal yields. BEIs reflect the current market expectations which feed directly into the price of debt at the time of the measurement. RBA and Economist forecasts do not reflect market movements and where on the day, debt can be priced. RBA forecasts are only updated once per quarter.*
>
> *The use of BEIs would remove the over/under compensation when inflation expectations remain persistently above or below the mid-point of the RBA target band. Current market conditions have remained below mid-point for an extended period of time. According to the RBA's Statement of Monetary Policy issued August 2017, "Core inflation remains low in many economies and has declined in recent months in some large, advanced economies…" There is evidence that market inflation expectations have diverged from the RBA target and are expected to stay that way for a prolonged period of time.*

The concerns regarding under or overcompensating are demonstrated in IPART's analysis of the difference between actual CPI inflation and the inflation estimates produced by the BEI and geometric average method over the period of 2010-12. The analysis shows that over a three year period the BEI method produces lower forecast errors but the differences are comparable at five years.

Figure 14 IPART's analysis of realised forecast errors using the BEI and geometric average methods (%)[34]



Note: A positive number on the right-hand panel indicates that the model over-estimated inflation.

Other measures for inflation expectations

The Draft Decision is to apply the geometric average of the midpoint of the RBA's short term forecasts for the first two years and the midpoint of the RBA's inflation range of 2-3% for the remaining two years. This is summarised in Table 30.

Table 30 QCA Draft Decision geometric average of RBA inflation forecasts

	FY2018	FY2019	FY2020	FY2021	Average
Lower	1.50%	2.00%	2.00%	2.00%	1.87%
Midpoint	**2.00%**	**2.50%**	**2.50%**	**2.50%**	**2.37%**
Upper	2.50%	3.00%	3.00%	3.00%	2.87%

The Draft Decision argues that RBA forecasts:

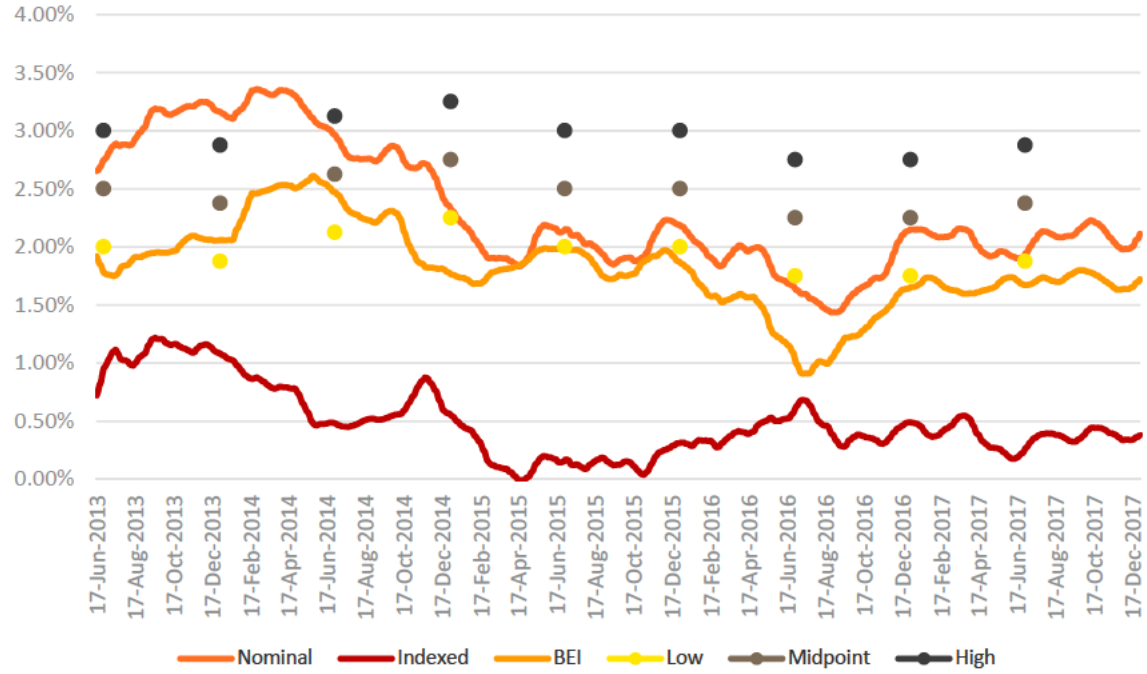
> provide materially better forecasts of actual inflation exhibiting a lower root mean square error;
> are simple, transparent and replicable; and
> provide the best unbiased estimator of inflation.

Aurizon Network acknowledges that various studies have shown that 'long term' inflation expectations are anchored within the RBA's inflation target band and near the midpoint. This is largely associated with the policy stability and credible commitments of the RBA to those targets 'over the long term'. Historical inflation outcomes also show that on average over the 'long term' actual inflation has been consistent with the RBA target inflation band. However, this does not ensure that the RBA forecasts are an unbiased estimator of inflation with respect to the averaging period as shown in the assessment by IPART. If the QCA is to maintain a short term risk free rate then it must also ensure that RBA forecasts are also reliable over the short term.

Figure 15 shows the performance of the BEI with respect to the RBA forecast method and inflation estimates in the May and December statements of monetary policy. This shows that BEI has persistently tracked outside of the RBA inflation forecasts since 2015 suggesting that the RBA forecasts, whilst independent from market participants are also likely to contain inherent biases that are not representative of market expectations.

[34] IPART (2017) Final Report: Review of our WACC Method, February, p.108.

Figure 15 20 day moving average for BEI and geometric average of RBA forecasts



Source: Aurizon Network analysis, AOFM and RBA Statement of Monetary Policy.

The Draft Decision also notes that the RBA method is preferable in that it does not respond to short term surprises in inflation outcomes. However, this is contradictory to the methodology for estimating the nominal risk free rate which will be subject to inflation and other macroeconomic surprises relevant to the averaging period. This is clearly evident in the variation in the BEI in the period of April 2016 to January 2017 where the BEI is highly correlated with the nominal risk free rate but the RBA forecast method is relatively unchanged. That is, the RBA method is simply not responsive enough to changing market conditions to be an unbiased estimate using an on the day approach for short term rates. Similarly, the RBA will not be subject to incurring significant financial losses from forecast error in the same manner as market participants who manage actual inflation risk through indexed bonds and swaps.

Furthermore, as noted by CEG, the Draft Decision does not adequately address the bias implications associated with 'most likely' forecasts as opposed to actuarial mean estimates with the consequence that:

> *market based measures of expected inflation have a critical advantage over simple 'most likely' forecasts as they capture the market's probability weighted assessment of all possible inflation outcomes. This is something that is next to impossible for a single analyst to forecast.*[35]

On balance, Aurizon Network considers that the RBA method cannot be coupled with a short term averaging period in low interest rate and deflationary economic environments and subsequently produce unbiased estimates of inflation.

Aurizon Network engaged CEG to advise on the reasonableness of the RBA forecast method and its alternatives in the context of the use of the forecast-forecast approach. A copy of this advice is provided at Appendix C.

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[35] CEG (2018) Expected Inflation Estimate for Aurizon, March, para. 64.

We also agree with CEG's conclusions that underlying inflation is a more relevant measure of inflation in determining a market estimate of the real risk free rate. When updated to reflect the inflation outcomes and forecasts in the February statement of monetary policy and extending the RBA's forecast of 2.25% in FY20 to FY21, this produces a range for the RBA forecast method of 2.06% to 2.19%. This is consistent with the view of Australian Treasury that underlying inflation:[36]

> *measures the inflationary pressures in the economy that are predominantly due to market forces, i.e. changes in prices that reflect only the supply and demand conditions in the economy.*

Table 31 Updated geometric average of RBA inflation forecasts

	FY2018	FY2019	FY2020	FY2021	Average
CPI Inflation	2.00%	2.25%	2.25%	2.25%	2.19%
Underlying Inflation	1.75%	2.00%	2.25%	2.25%	2.06%

Source: CEG (2018)

CEG also estimate inflation swap rates for the period of June 17 to Jan 18 and establish a range of between **1.91%** to **2.10%.**

In relation to the use of inflation swaps Aurizon Network considers they possess characteristics which make them highly reliable as a market based upper estimate for expected inflation. The bilateral nature of an inflation swap also means that neither party has incentives to misprice the inflation forecast. This is evident in the following RBA comments:[37]

> *Investment and super funds are the largest 'end users' of inflation swaps, together accounting for about 17 per cent of transactions. These funds mostly transact with international investment banks, rather than major domestic banks. All of these findings are consistent with prior market liaison, which suggests that the main end users of inflation swaps are hedgers with long-dated inflation-linked obligations (such as super funds) or corporates who issue inflation-linked debt*
>
> *Market participants have substantial financial resources at stake. This means that they have strong and direct incentives to form accurate expectations for inflation and, as a result, are likely to be well informed.*

Aurizon Network also notes that inflation swaps are likely to represent an upper bound on inflation expectations as noted in by the AER who identified the following issues with inflation swaps and their likely impact on the inflation estimate:[38]

- hedging costs which are likely to result in potential overestimates of expected inflation;
- inflation risk premium which is likely to result in potential overestimates of expected inflation;
- counterparty default risk which could result in overestimates of expected inflation; and
- liquidity premia which is likely to result in potential overestimates of expected inflation.

Aurizon Network agrees with CEG that the most appropriate and overall best estimate for expected inflation under a regime which targets a real rate of return over a four year period is one that reflects the BEI based on CGS yields. In this regard the forecast inflation estimate under a targeted real rate of return over a term of four years is **1.62%** in

[36] https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/MSB/feature/UNDERLY

[37] RBA (2016) Bulletin – Measures of Inflation Expectations in Australia, December.

[38] AER (2017) Final Position: Regulatory Treatment of Inflation, December, pp.56-57.

June 2017 and **1.80%** in January 2018. We note this is also consistent with international practice with NSW Treasury observing:[39]

> *The OFGEM and ORR of the UK use the BEI approach to deflate nominal yields. OFWAT and the UK CAA commissioned CEPA to advise on the approach to the cost of debt and CEPA have recommended using the BEI approach.*

The use of BEI or inflation swaps is also consistent with the financial instruments that might be used by a regulated utility and its customers to manage inflation risk as noted by the Competition Economist Group (**CEG**):[40]

> *Given that inflation swaps are the financial instruments that customers and Aurizon would need to use to manage inflation risk under a nominal regime there is a reasonable basis for believing that the QCA should give some, or even more, weight to inflation swap rates when forming its own point estimate of expected inflation.*

In departing from a market based approach to inflation estimation this involves an unreasonable and inefficient risk management framework as there are no financial instruments that would support managing differences between RBA forecasts and inflation outcomes.

4.1.3 Inflation Forecasts for Ten Year Term

Aurizon Network's approach to estimating the inflation forecast for a ten year term is to adopt an equally weighted average of:

a) Inflation over the first 4 years determined by an average of:

- the four year break even inflation rate;
- the four year inflation swap rate; and
- the four year RBA forecast method applied to underlying inflation for the June averaging period and the RBA forecast of CPI for the January 2018 estimate.

b) Inflation over years 5 to 10 determined as the midpoint of the RBA inflation target.

Aurizon Network has adopted this approach as it recognises that there are potential biases in any individual measure of inflation that when considered in isolation would result in a biased inflation expectation. As these short term forecasts are being coupled with a longer term risk free rate then it would be expected these biases would be balanced over the long term. Therefore, Aurizon Network's considers a reasonable approach to estimating the long term inflation forecast is to take a weighted average of the short term inflation expectation measures and RAB inflation target for the longer term inflation expectation and apply an equally weighted average across both expectations. For avoidance of doubt this method is only appropriate to use if a long term risk free rate exceeds the regulatory term.

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[39] NSW Treasury (2017) Response to request for submissions on IPART's issues paper, "Review of our WACC method", August, p.6.

[40] CEG (2018) An update on inflation expectations, A report prepared for Aurizon Network, February, para. 107.

Table 32 Construction of Ten Year Inflation Forecasts for June 2017 and January 2018 placeholder averaging periods

	Weighting	June 2017	January 2018
Four year break even rate	0.33	1.62%	1.80%
Inflation Swaps	0.33	1.91%	2.10%
Inflation Forecasts	0.33	2.06%	2.19%
Average Four Year Inflation Rate		**1.84%**	**2.01%**
Inflation Forecast Years 5 -10		2.50%	2.50%
Ten Year Inflation Forecast		**2.24%**	**2.30%**

The ten year inflation rate is necessary to align with the term of the risk free rate. However, the operating and maintenance costs are estimated over a four year term. Aurizon Network notes that the economic efficiency implications of forecast error or forecast bias are less pertinent to the issue of operating and maintenance cost indexation where the regulatory framework incorporates ex-post review and adjustment mechanisms to account for actual inflation outcomes. Nevertheless, it is also highly desirable to minimise forecast errors and therefore the materiality of any ex-post adjustments. Accordingly, for the purpose of maintenance and operating cost escalation Aurizon Network has applied an inflation estimate of **1.84%**, representing the average four year inflation rate as at 30 June 2017 (as shown in

Table 32). This estimate has been applied as the operating and maintenance costs are expressed as nominal terms as at 30 June 2017 and are independent of the actual averaging period that is used to determine the market parameters for the cost of capital.

4.2 Indexation of the Asset Base for pricing and roll-forward purposes

Summary of Draft Decision 4.2

- The QCA is minded to approve the Aurizon Network 2017 DAU proposed indexation of the RAB using forecast inflation for the roll-forward process, which aligns with the forecast inflation used to develop reference tariffs and maximum allowable revenues.
- The QCA is willing to consider alternative approaches, including, but no limited to:
  - (a) using forecast inflation to determine reference tariffs and using actual inflation to roll-forward the RAB for the purposes of setting new reference tariffs for a future regulatory period
  - (b) align actual inflation with the reference tariffs and the RAB roll-forward by the use of a true up adjustment at the end of the regulatory period. This would be achieved by an ex post adjustment to reflect the difference between the actual inflation rate and the ex-ante forecast rate.

4.2.1 Overview – Aurizon Network's Position

The regulatory framework in the periods of UT2, UT3 and UT4 used a forecast inflation approach to the building blocks where the regulatory asset base is rolled forward by forecast inflation and that inflation amount is deducted from asset depreciation in the revenue allowance such that cash flows are consistent with achieving a real rate of return over the regulatory period. At the end of the regulatory period the terminal value of the RAB is updated to reflect ex-post inflation outcomes, consistent with the principle of financial capital maintenance. However, no adjustments are made to the fixed costs during the regulatory period to reflect deviations of actual inflation from forecast inflation. This is effectively a hybrid framework which targets neither a real or nominal rate of return.

Aurizon Network's UT5 proposal adopted a targeted nominal return approach which involved setting the allowable revenues with respect to forecast inflation without adjustment of either allowable revenues or the RAB for actual inflation outcomes. This is otherwise known as the forecast-forecast approach. The principle benefit of this approach is that it avoids the need for inflation to be an unbiased estimate and is therefore relevant to market conditions where the QCA's RBA forecast inflation method produces economically inefficient prices associated with a negative real risk free rate.

The prospective alternatives to this forecast-forecast method, as understood by Aurizon Network, include:

a) a forecast-actual approach which involves targeting a real rate of return:

> the use of forecast inflation for escalating the value of the regulatory asset base and determining expected revenues; and
> adjusting the regulatory asset base and revenues for changes in actual inflation (either during the period or and end of period reconciliation)

b) an actual-actual approach which involves targeting a nominal rate of return where:

> the forecast inflation rate expected to prevail in the relevant year of the undertaking is used to escalate the regulatory asset base and determine the expected revenues;
> the regulatory asset base is rolled forward during the regulatory period for actual inflation and the depreciation allowances are adjusted to deduct actual inflation.

The Draft Decision is 'minded' to accept the forecast-forecast approach but is willing to consider alternate approaches. Aurizon Network's position in response to the Draft Decision is that:

- the forecast-forecast approach is both relevant and necessary to avoid the material adverse financial implications of a negative real risk free rate where the RBA forecast is not the best unbiased estimate of inflation;
- a forecast-actual approach with a targeted real rate of return is economically preferable where it is combined with market based measures of inflation which are internally consistent with the nominal yields on CGS;
- an actual-actual approach is dependent on inflation expectations over term of the regulatory period which would need to be supported by a nominal risk free rate of four years. As Aurizon Network does not consider the use of the four year term for the risk free rate as providing a reasonable return on investment consistent with investor expectations and it is not feasible to implement this approach; and
- it is both reasonable and efficient for the approach to inflation to have regard to prevailing economic conditions and to adjust where necessary to ensure the return on investment is commensurate with the commercial and regulatory risks.

In light of the recent regulatory debates on inflation[41], Aurizon Network has given further consideration to what rate of return should be targeted as guided by the matters set out in the QCA Act. Aurizon Network considers that it is appropriate for an initial real rate of return to be the target, whereby the revenue recovered moves in line with inflation, and the RAB is rolled forward between regulatory periods based on actual inflation. Aurizon Network considers that this is consistent with the promotion of economically efficient investment in the CQCN (as investors expect to be compensated for inflation) while also maintaining the real value of the asset base (which investors expect across regulatory periods). Therefore Aurizon Network has amended the 2017 DAU to incorporate a forecast – actual approach to inflation that is:

- based on the 10 year risk free rate;
- uses a forecast for inflation which is the best (composite or discrete) unbiased inflation expectation prevailing at that time (for UT5 this would be the approach outlined in section 4.1.1);
- includes adjustment for updated inflation information in the annual price review processes; and
- rolls forward the regulatory asset base to reflect actual inflation outcomes.

The forecast-actual approach using a four year risk free rate and the RBA inflation forecasts is contrary to Aurizon Network's legitimate business interests and is inconsistent with ensuring prices are commensurate with the efficient financing costs of providing the service.

We note that the ERA provides an appropriate benchmark as it applies a real rate of return target with term matching. As shown in Table 33, there is effectively a 90 basis point spread between the outcomes under the Draft Decision and ERA's decision on the Dampier to Bunbury Pipeline for businesses the QCA assessment on asset beta considers should have a comparable systematic risk profile which demonstrates that the Draft Decision would materially undercompensate equity investors relative to the returns in a portfolio of regulated businesses.

Table 33 Comparison of QCA Draft Decision with ERA DBNGP Final Decision

	QCA Draft Decision	ERA Decision (DBNGP)
Averaging Period	June 2017	June 2016
Term	4 years	5 years
Nominal Risk Free Rate	1.90%	1.80%
Inflation	2.37%	1.43%
Real Risk Free Rate	**-0.46%**	**0.36%**
Equity Beta	0.73	0.7

[41] AER (2017) Regulatory Treatment of Inflation – Final Position, December, pp.63-99.

	QCA Draft Decision	ERA Decision (DBNGP)
MRP	7.0	7.4
Real Post Tax Cost of Equity	**4.51%**	**5.47%**

The Draft Decision also results in a material decline in the real post tax return on equity relative to prior regulatory periods as show in Table 34.

Table 34 CQCN Real Post Tax Return on Equity Outcomes

UT2	UT3	UT4	UT5 Draft Decision
7.91%	7.31%	5.77%	4.51%

The application of a real post tax return on equity of 4.51% may also cause financial distress where the actual inflation outcomes are more closely aligned to BEI. Under a forecast-actual approach Aurizon Network is likely to be required to adjust its gearing requirements to maintain its credit standing if the market expected low inflation to continue. This would pose material uncompensated costs on Aurizon Network as it would be required to obtain equity injections in order to sustain the BBB+ debt rating.

For example, if FFO/debt ratios marginally satisfy the rating agency required thresholds at a WACC of 5.41% with nominal debt then the reduction in the asset value in subsequent years from lower inflation would reduce allowable revenues with a consequential reduction in the FFO/debt ratio without a commensurate reduction in debt (alternatively the fixed debt would lead to a commensurate increase in the actual gearing as it is a higher percentage of a lower RAB).

4.2.2 Forecast-forecast approach

Aurizon Network submits that role of inflation in a nominal rate of return target is not constrained to the objectives of ensuring the value of the regulatory asset base is maintained in real terms. This is also consistent with the depreciation objectives under both the CQCN and the HVCN where deprecation is accelerated in order to mitigate asset stranding risks.

In this regard inflation serves no purpose other than the intertemporal transfer of cost recovery from the current regulatory period to future regulatory periods. In this sense, the choice of inflation is an arbitrary decision having regard to a range of efficient objectives, including:

> maintenance of credit ratings and satisfying financeability tests;
> addressing issues of imperfect capital markets;
> addressing asset stranding risks; and
> efficient intertemporal ramsey pricing.

These issues are discussed in the CEG report at Appendix C to this response submission. Given the position of metallurgical miners on the cost curve, relative price inelasticity and the current commodity prices over UT5, as discussed in Chapters 1 and 2, there is no efficiency grounds to adopt the RBA forecast method and significantly back load the RAB recovery. This is also likely to particularly relevant where asset renewals expenditure in subsequent regulatory periods becomes an increasing proportion of the RAB indexation.

Table 35 QCA Draft Decision – CQCN RAB adjustments – non-electric (by year, $m)

	FY2018	FY2019	FY2020	FY2021
Capex	208.6	179.8	165.0	162.9
Inflation	128.6	128.1	127.3	126.2
Depreciation	(328.3)	(327.0)	(336.4)	(340.8)
Net Change	**8.9**	**-19.1**	**-44.1**	**-51.7**

Source: QCA (2017), Draft Decision, Table 12, p.31.

As noted in section 4.1 above the BEI and inflations swaps are a preferable basis for inflation as they are consistent with financial instruments in the market that can be utilised to manage inflation risks. These risks are more prevalent under nominal rate of return target using the forecast-forecast approach.

Having regard to these factors, Aurizon Network concludes that the BEI is the most appropriate measure of inflation under a forecast-forecast approach. As the regulatory objective of the forecast-forecast approach is to target a nominal rate of return then NPV = 0 principle is satisfied irrespective of the inflation value used.

4.2.3 Forecast-actual approach

As the forecast actual approach targets a real rate of return in order to ensure the NPV = 0 principle is satisfied over the regulatory period then it is a necessary condition under a term matching approach that inflation is reflected as market expectations embodied in the nominal risk free rate.

The Draft Decision notes that the use of the RBA method is consistent with the expectation that the actual inflation rate aligns closely with the best estimate forecast over the *long run*. Aurizon Network notes that the key factor underlying the QCA's application of the term matching principle is that the inflation expectation is the best estimate in the *short run* in order to ensure the NPV = 0 principle is satisfied. It is not reasonable to assume that Aurizon Network could be undercompensated in one regulatory period on the basis that the same approach may result in it being overcompensated in future regulatory periods. Aurizon Network acknowledges that this long term view is more closely aligned to circumstances where a long term approach is also taken with respect to the nominal risk free rate (i.e. the term structure reflect market expectations significantly beyond the regulatory period). These views are consistent with the AER's summary of findings by Sapere that:[42]

> *If the regulatory objectives are to be met, it is necessary to avoid large or persistent errors (bias) in the AER's initial estimate of expected inflation. This sort of error will cause the estimated real rate of return to depart from the 'true' real rate of return. There is no known framework that would avoid this problem and meet the regulatory objectives.*

Therefore, the forecast-actual approach should only be applicable in circumstances where:

- a long term nominal risk free rate is matched with long term inflation expectations: or
- a term matched nominal risk free rate is matched with the BEI.

As discussed in section 4.1.2 Aurizon Network has proposed to adopt the forecast-actual approach with a 10 year nominal risk free rate and the best unbiased estimate of inflation over that 10 year period.

4.2.4 Actual-actual approach

The Draft Decision describes an actual-actual approach in which both reference tariffs (revenues) and the RAB would be subject to actual inflation with the use of a true up at the end of the regulatory period. Aurizon Network considers that the approach outlined within the Draft Decision is not sufficiently clear with respect to its objectives. For instance the Draft Decision assumes that no adjustments are made during the regulatory period and that:[43]

> *with the WACC constant in nominal terms over the regulatory period, the actual real rate of return varies depending on the variation between actual and forecast inflation over the period. Hence, Aurizon Network bears the risk that the real rate of return achieved on an ex-post basis varies form that established at the start of the regulatory period.*

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42 AER (2017) Regulatory treatment of inflation, Final Position, December, p.43.

43 QCA (2017) Draft Decision, p.60.

In relation to the last sentence, a real rate of return achieved over the regulatory period should only vary where the framework objective is a targeted nominal rate of return which appears contrary to the objective adjusting for actual inflation to maintain costs and revenues in real terms. If the objective is a nominal rate of return target then this can be simply achieved through the forecast-forecast method. Similarly, the purpose of adjusting for inflation is to preserve the real value of the investment which would be more closely aligned to a real rate of return target. That, is the purpose of initial inflation forecast is to establish the real rate or return.

Aurizon Network assumes that this is merely a definition issue and the actual-actual approach is targeting a real rate of return such that the expected real rate of return at the start of the regulatory period is consistent with the realised rate of return through the inflation adjustment. However, the Draft Decision does not explain why the adjustment to revenues for actual inflation would occur at the end of the regulatory period via a true-up to the RAB and/or adjustment to next period revenues as opposed to adjusting the revenues over the course of the regulatory period. Aurizon Network recognises that there are lag effects that would need to be addressed in the intra-period adjustment mechanism but these can be accommodated within existing regulatory processes. On this basis Aurizon Network considers that the actual-actual method as described in the Draft Decision of changing both revenues and the asset value is more a variant of the forecast-actual method.

4.2.5 Implementing a forecast-actual approach

As noted at the introduction of section 4.2.1, the current approach under UT4 to adjusting for actual inflation outcomes is to roll-forward the regulatory asset base to determine the opening asset value for the subsequent regulatory period. This approach does not ensure that prices or revenues are maintained in real terms over the regulatory period which is consistent with the overarching efficiency objectives given costs and other inputs to customers reflect the nominal prices prevailing at that time, not the nominal prices set in prior years.

Aurizon Network notes that the Draft Discussion discusses the use of a true-up adjustment at the end of the regulatory period to reflect the difference between the actual inflation rate and the forecast rate of inflation. Aurizon Network does not support this approach as:

- the reliance on an ex-post reconciliation without intraperiod adjustment is inconsistent with the economic rationale of maintaining real prices and revenues; and
- increases uncertainty regarding the potential size of these adjustments on future revenues and prices.

Notwithstanding the objectives of maintaining revenues or prices in real terms Aurizon Network is also mindful that there are also issues around regulatory lag in terms of how revenues or prices would adjust to actual inflation over the term and when timing with which those adjustments would be reflected in prices or revenues. Therefore, Aurizon Network has given consideration to the most administratively efficient approach which achieves the objectives of:

- the business earning a real return on its investments over their economic life; and
- prices and revenues in each year of the regulatory period being maintained in real terms as close as reasonably practical.

In order to align to these objectives Aurizon Network has proposed amendments to Schedule E and Schedule F which modify the annual reference tariff review process and the RAB roll-forward process to incorporate inflation adjustments in the following way:

- annual allowable revenues are initially determined having regard to earning a real rate of return for the placeholder averaging period of January 2018 and that rate is determined with reference to:
  - where a four year risk free rate is employed forecast inflation is estimated with reference to the BEI (1.80%); or
  - where a ten year risk free rate is employed the composition forecast inflation rate derived in section 4.1.2 (2.30%).
- in February of each year of the regulatory period (with the exception of the first year) the forecast inflation rate will be updated to reflect the expected inflation rate for the current year and every year thereafter subject to:
  - the rolled forward RAB values being consistent with the revised inflation forecast; and
  - the allowable revenues being consistent with the expectation of earning the real rate of return.

- the approval of the RAB roll-forward will also include an inflation accrual account which reflects the difference between the revenue earned on the applied forecast inflation rate and the actual inflation rate with the account accruing at the relevant nominal inflation adjusted WACC each year; and
- the balance of the inflation accrual account being recovered/returned in prices in the subsequent regulatory period.

Aurizon Network considers this approach is consistent with avoiding revenue adjustment processes for actual inflation while minimising inflation forecast error over the regulatory period to reduce the materiality of the inflation accrual account. This approach is more closely aligned with the objective that prices reflect efficient costs over the term of the regulatory period.

5

Rate of return

5. Rate of Return

This chapter examines issues related to Aurizon Network's proposed WACC for the UT5 regulatory period.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 36 QCA Draft Decision and Aurizon Network's Response – rate of return – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs, based on WACC of 5.41%. The QCA also requires consequential amendments to the definition of Approved WACC to reflect this Draft Decision,	5.1 (section 5.3 of DD)	Disagree
Risk free rate The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply a WACC of 5.41% based on a risk-free rate of 1.90% per annum. In this Draft Decision, the risk-free rate for the UT5 undertaking averaging period is based on: (a) approval of Aurizon Network's choice of Commonwealth Government nominal bonds as the proxy for the risk-free asset (b) approval of Aurizon Network's proposed averaging period of the 20 business days up to, and including, 30 June 2017 (c) a term to maturity consistent with the term of the regulatory period (i.e. four years).	5.2 (section 5.5 of DD)	Disagree—except the use of Commonwealth Government nominal bonds as the proxy for the risk-free asset. Aurizon Network maintains its position that investors take a long-term perspective on the risks associated with investing in CQCN compared to other investment opportunities, rather than one based on the term of the regulatory period. Consequently, Aurizon Network proposes a term to maturity for the risk-free rate of 10 years, the longest available term in Australia, rather than 4 years as proposed by the QCA. Aurizon Network has incorporated in the 2017 DAU a proposal that the averaging period for the risk-free rate estimate be reset in the month prior to the QCA's final decision on UT5.
Market risk premium The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU's proposed estimate of 7.0 percent for the MRP, but not Aurizon Network's underlying methodology used to reach its proposed estimate. Our Draft Decision to approve an MRP of 7.0 percent is based on: (a) considering various MRP estimates from the: (i) Ibbotson historical averaging method (ii) Siegel historical averaging method (iii) survey evidence/independent expert reports (iv) Cornell dividend growth model (v) Wright method (b) considering conditional information, including volatility measures, corporate debt premiums and the relationship between the risk-free rate and market risk premium (c) exercising our judgement to reach a view on the appropriate estimate of the MRP.	5.3 (section 5.6 of DD)	Disagree—except the proposed alignment of the term of the risk-free rate and MRP used in the CAPM formula, removing the previous inconsistency. However, other methods used by the QCA to determine its weighted MRP estimate of 7.00% are based on a 10-year MRP estimate, creating inconsistency in its methodology. This inconsistency serves to reduce the proposed MRP estimate. The QCA's proposed MRP of 7.0% does not represent an increase in the MRP, even though there is evidence of an increase in the MRP in prevailing market circumstances. Aurizon Network considers the empirical evidence establishes an efficient MRP is 7.5%.

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
Asset beta The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs by applying a WACC based on an asset beta of 0.42.	5.4 (section 5.7 of DD)	Disagree. Aurizon Network considers that the QCA has not substantiated the reasons for proposing to reduce its asset beta from 0.45 in UT4 to 0.42 in UT5. Aurizon Network considers that an asset beta of 0.55 is appropriate and is well within the beta range identified by the QCA's consultant, Incenta.
Equity beta The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs by applying a WACC based on an equity beta of 0.73.	5.4 (section 5.7 of DD)	Disagree. Given Aurizon Network's view that an asset beta of 0.55 is appropriate, applying the QCA's preferred Conine de-leveraging method results in an equity beta of 0.98.
Capital structure and credit rating The QCA's Draft Decision is to approve Aurizon Network's proposed 55% debt and 45% equity benchmark capital structure and a notional credit rating of BBB+.	5.5 (section 5.9 of DD)	Agree—with the QCA's proposed acceptance of Aurizon Network's benchmark capital structure. Agree—with the Draft Decision the use of a BBB+ notional credit rating for determining the debt risk premium. However, the practical and more significant issue is that Aurizon Network's approved maximum allowable revenues only (just) satisfies the lower FFO/Debt credit benchmark of S&P credit rating agency in the last year of the regulatory period, but fails to satisfy it in the preceding three years. The higher threshold for the FFO/Debt credit benchmark adopted by Moody's is not satisfied in any year of the regulatory period. It is a market requirement for large borrowers to maintain at least two ratings. In other words, the QCA's proposed BBB+ credit rating assumption is not supportable in the market. This suggests a fundamental flaw in the QCA's regulatory approach in that a benchmark credit rating has been set to determine the efficient benchmark capital structure and gearing. However, the approved cashflows do not support maintenance of that assumed rating. This raises the risk of a credit downgrade and potentially higher debt funding costs in the UT5 regulatory period.
Return on debt *Debt risk premium* The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply a cost of debt of 4.13% per annum. This Draft Decision is based on a cost of debt for the UT5 Undertaking period based on: (a) Approving Aurizon Network's proposed benchmark term of debt issuance (i.e. 10 years).	5.6 (section 5.10 of DD)	Disagree—except for the QCA's proposed benchmark term of debt issuance (i.e. 10 years). *Debt risk premium* Aurizon Network considers that Incenta's application of the PwC methodology has several shortcomings, such that its estimate of 2.00% is unreasonable because it is based on a methodology that is unduly biased by the inclusion of A- bonds.

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
(b) Approving Aurizon Network's proposed averaging period of 20 business days up to and including 30 June 2017. (c) Approving Aurizon Network's adoption of the PwC methodology to estimate the debt risk premium. Debt issuing and hedging costs (d) Refuses to approve Aurizon Network's proposal to incorporate transaction costs associated with foreign bond issuances in the benchmark debt-financing transaction costs.		Aurizon Network's adviser, CEG, has proposed a best DRP estimate within a range between 2.36% and 2.50% (based on a 4-year risk-free rate of 1.90% as at June 2017). Aurizon Network maintains that the transaction costs and marketing of debt for coal exposed sectors is greater than the average firm and that debt issuance costs will fall within the range of 0.18% and 0.26%.
Gamma The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to apply a gamma of 0.46, comprising a distribution rate of 0.83 and a utilisation rate of 0.55	5.7 (section 5.11 of DD)	Disagree. Aurizon Network maintains its position that a gamma value of 0.25 is appropriate based on a market value concept of imputation credits. However, recognising the QCA's preference for a utilisation rather than market value interpretation of gamma, Aurizon Network proposes ATO taxation statistics should be used in the gamma calculation. Using ATO taxation statistics, Aurizon Network proposes a gamma estimate of 0.31, based on a utilisation rate of 0.37 and a distribution rate of 0.83. This gamma estimate also includes cleansing of the equity ownership data that the QCA relies upon for its distribution rate estimate. Finally, Aurizon Network considers an upper bound estimate for gamma of 0.40 is appropriate. This is the most heavily and independently scrutinised gamma value in an Australian context and is the one favoured by the Australian Energy Regulator (AER). This scrutiny includes cases heard in recent years by the Australian Competition Tribunal and Federal Court.

5.1 Overview - Aurizon Network's position

The Draft Decision is to not accept Aurizon Network's proposal for a post-tax nominal (vanilla) WACC of 6.78% per annum, based on:

- return on equity of 9.13% per annum;
- return on debt of 4.86% per annum;
- capital structure of 55% debt (45% equity); and
- gamma value of 0.25.

The QCA has proposed a materially lower post-tax nominal (vanilla) WACC of 5.41 per cent per annum reflecting a fundamentally different position on the long-term systematic risks facing Aurizon Network and its investments in the CQCN.

The QCA's reasons are set out in Chapter 5 of the Draft Decision. Following close assessment of the Draft Decision, Aurizon Network contends that the QCA has not considered the full range of information that was provided to it as part of our earlier supporting submission. Further, the QCA's proposed position in the Draft Decision will result in outcomes that are inconsistent with the promotion of efficient investment in the CQCN due to an inappropriately low rate of return on Aurizon Network's investment in the CQCN. This is contrary to the objective of Part 5 of the QCA Act.

Aurizon Network is therefore unable to support most of the rate of return changes proposed in the Draft Decision. Our reasons and further supporting information for our positions in a general sense are contained in section 5.1.2 below, and regarding specific WACC parameter values commencing from section 5.2 below.

5.1.1 Aurizon's Network's submission (2017 DAU)

Aurizon Network proposed that the WACC approved for the UT5 regulatory period should, amongst other things, reflect Aurizon Network's commercial and regulatory risks. In establishing an appropriate WACC, Aurizon Network proposed that the QCA must have regard to empirical market evidence and where the QCA applies benchmarks, it must use data for firms that are comparable to Aurizon Network.

To this end, Aurizon Network proposed that the WACC needs to be estimated having regard to the following characteristics that drive its 'core' systematic risk profile:

- Aurizon Network operates a stand-alone below-rail coal network that has a long economic life and no alternative use;
- Aurizon Network has high operating leverage (i.e. a high proportion of its costs are fixed);
- the CQCN operates as part of a complex integrated supply chain;
- the nature and scale of Aurizon Network's operations require it to raise capital in both domestic and global markets;
- the demand for services is ultimately derived from the seaborne coal market, which depends on the relative competitiveness of CQCN producers and can also be influenced by unanticipated government policy actions;
- Aurizon Network's user base is highly concentrated; and
- the RAB is highly segmented with metallurgical coal demand concentrated in a single system and future metallurgical coal projects occurring within a common geographical precinct.

Aurizon Network also noted that its regulatory WACC allows it to compensate investors for the risk of committing capital to fund investments in the CQCN. This investor base has the following characteristics:

- it comprises sophisticated domestic and global investors, who are constantly evaluating opportunities in the domestic and global marketplace;
- investors evaluate investments over a long-term, forward-looking horizon;
- investors are becoming increasingly focused on regulatory risk, and value stability and predictability in the regulatory framework;
- investors evaluate Aurizon Network as part of a broader infrastructure asset class, which comprises regulated and unregulated assets; and
- investors are more likely to focus on the overall return (relative to the risks involved), rather than on underlying parameter estimates.

A breakdown of Aurizon Network's original UT5 rate of return proposal is presented in the table below.

Table 37 Aurizon Network – rate of return – key parameter values

WACC parameter	Value
Risk free rate	2.13%
Capital structure (gearing ratio)	55%
Market risk premium	7.0%
Asset beta	0.55
Equity beta	1.0
Debt risk premium	2.05%
Debt issuance & hedging costs	0.262%
Gamma	0.25
Return on equity	9.13%
Return on debt	4.86%
Post-tax nominal (vanilla) WACC	6.78%

Source: Aurizon Network (2016) UT5 submission to the QCA, p.196.

5.1.2 Summary of Aurizon's Network's response

We have considered each aspect of the QCA's assessment of our rate of return proposal. Following this assessment, Aurizon Network considers the WACC proposed in the Draft Decision is unreasonable on the following main grounds:

- unreasonableness of QCA's assessment of Aurizon Network's long-term systematic risks and exclusion of the most comparable industry sector;
- adverse financial outcomes associated with the QCA's building block modelling, which dampens Aurizon Network's post-tax return on equity;
- recent Australian regulatory WACC determinations suggests the Draft Decision is an outlier; and
- a post-tax nominal WACC of 5.41% would create an environment that would materially reduce Aurizon Network's willingness to invest in the CQCN, a possible outcome that would be contrary to the objective of Part 5 of the QCA Act which is to promote economic efficiency in the network.

Each of these grounds is briefly discussed below.

Unreasonableness of QCA's assessment of Aurizon Network's long-term systematic risks

Many of the WACC parameters are observable and their measurement or estimation will often give rise to a reasonable range of outcomes. Therefore, it is essential that there is a testing or sense-check taken of the overall reasonableness of a particular WACC figure that has been calculated by reference to point estimates drawn from such ranges.

Summary of Aurizon Network's unreasonableness concerns about Draft Decision

- The QCA's decisions on individual WACC parameters are uniformly at the lower end of potential ranges for these values indicating a downwardly biased overall WACC estimate.
- The lack of a reasonableness check on the overall WACC estimate is contrary to the s.168A pricing principles in the QCA Act.
- The QCA's view that its regulatory framework reduces systematic risk ignores the fact that the regulatory regime contained in the QCA Act is not a rule-based or prescriptive regime and rather embodies considerable risk (uncertainty) as to how it may be applied from time to time.
- A long-term perspective on Aurizon Network's systematic risks should result in a relatively stable WACC over time, not one subject to potentially adverse timing impacts of regulatory determinations.
- The extent to which the QCA's regulatory framework protects Aurizon Network's future revenues can also easily be exaggerated, with long-term risk factors associated with the CQCN not mitigated in any way by the framework.

The QCA has increased its MRP estimate to ensure consistency with its use of a 4-year government bond yield as a proxy for the risk-free rate, the QCA's decisions on individual WACC parameters are uniformly at the lower end of potential ranges for these values. The selection of point estimates from the lower end of the ranges has resulted in an overall WACC estimate that is unreasonable.

In other words, the QCA's point estimates for each WACC parameter appear to have a downward bias, which results in an unreasonably low WACC outcome of 5.41%. This suggests that the QCA has not applied an overall reasonableness check to the draft WACC estimate generated by its methodology but rather has mechanically applied it. In doing so, Aurizon Network considers this is contrary to the s.168A pricing principles in the QCA Act, specifically, allowing Aurizon Network to generate revenue at least sufficient to meet the efficient cost of its service provision.

Further, Aurizon Network considers that a WACC of 5.41% is unreasonable having regard to the long-term systematic risks associated with investing in the CQCN, which is the appropriate time frame for investors' risk assessments not 4-year regulatory cycles. Specifically, market investors make capital allocation decisions (i.e. between cash, equity and bonds) from a long-term perspective not based on 4-year regulatory cycles.

The QCA's view that its regulatory framework reduces systematic risk ignores the fact that the regulatory regime contained in the QCA Act is not a rule-based or prescriptive regime. This gives rise to considerable risk (uncertainty) as to how the regulatory regime may be applied from time to time. This creates additional regulatory risk for Aurizon Network.

This point was recently illustrated by the ACCC's decision to approve Australian Rail Track Corporation's (**ARTC's**) application to vary its 2011 Hunter Valley Access Undertaking (**HVAU**). In accepting ARTC's proposed commercial parameter values, including the rate of return estimate, the ACCC referred to the importance of delivering regulatory certainty for the Hunter Valley rail network and its affected stakeholders in making its decision:[44]

[44] ACCC (2017) Australian Rail Track Corporation's application to vary the 2011 Hunter Valley Access Undertaking, Decision, 29 June, p.29.

> *….. the ACCC considers the ROR [rate of return] specified in the Application [to vary the term of the 2011 HVAU] has not been calculated on the basis of an accepted methodology. The ACCC's acceptance of these commercial parameters is in order to balance the legitimate business interests of ARTC and the interests of access seekers with the need for regulatory certainty for the Hunter Valley rail network and broader Hunter Valley Coal Chain (sections 44ZZA(3)(a), (c) and (e)).*
>
> *In coming to this decision, the ACCC considered the support of Access Holders in submissions and statements from stakeholders regarding the need for regulatory certainty for the Hunter Valley Coal Chain. In particular, the ACCC considered Access Holder acceptance (albeit qualified) of these commercial parameter values as a key component of approving the broader variation application.*

The regulatory risk that Aurizon Network's business operations are exposed to, is exacerbated when the QCA's WACC decisions are focussed on short regulatory cycles rather than Aurizon Network's long-term risk factors. The market reaction to the Draft Decision starkly illustrates the impact of surprising exercises of regulatory judgement on investors' appetite for Aurizon Network's stock relative to other stocks. This market response was discussed in Chapter 2 of our response to the Draft Decision.

The 'lock-in' of WACC parameters for each regulatory period can also exacerbate the potentially adverse timing impact of regulatory determinations and in so doing adds to rather than reduces systematic risk. In contrast, taking a long-term perspective on Aurizon Network's systematic risks should result in a relatively stable WACC over time, not one that reflects the timing of regulatory determinations.

Aurizon Network does not consider that the current 'on the day' approach to estimate the risk-free rate component of the Capital Asset Pricing Model (**CAPM**) and term matching for estimating the cost of equity produces efficient outcomes for customers, the regulated business or investor's in regulated infrastructure who take a long-term perspective. In this sense Aurizon Network agrees with the observations by the Energy Network's Association that it is unreasonable for customers of a similar service to pay vastly different prices based on the timing of the regulatory determination and the way in which the rate of return is estimated.[45] Similarly, as demand for rail transport services in the CQCN is a derived demand from the end-user of the commodity with alternate supply options the vagaries of the regulatory cycle can impact on supply chain competitiveness.

The extent to which the QCA's regulatory framework protects Aurizon Network's future revenues can also easily be exaggerated. While the regulatory framework reduces Aurizon Network's exposure to short-term volume risk for each regulatory period, there remains a long-term risk associated with the CQCN that is not mitigated in any way by the framework. Other comparable entities in the transport and energy infrastructure sectors may not have a regulatory revenue cap as currently applies to Aurizon Network, but rather are protected from volume risk through other commercial mechanisms, including long-term foundation and/or take-or-pay contracts, which is seen in gas pipelines and unregulated ports. This issue is discussed further in section 5.7 of this chapter in the context of estimating an asset beta for Aurizon Network.

Finally, the absence of a merits review mechanism under the QCA Act that would be potentially applicable to the QCA's regulatory determinations adds to Aurizon Network's ongoing regulatory risk. This can be contrasted with the development of regulatory precedent in relation to the rate of return under the Australian national energy regulatory framework since the late 2000's with such a review mechanism in place and the confidence that this provided to investors.[46]

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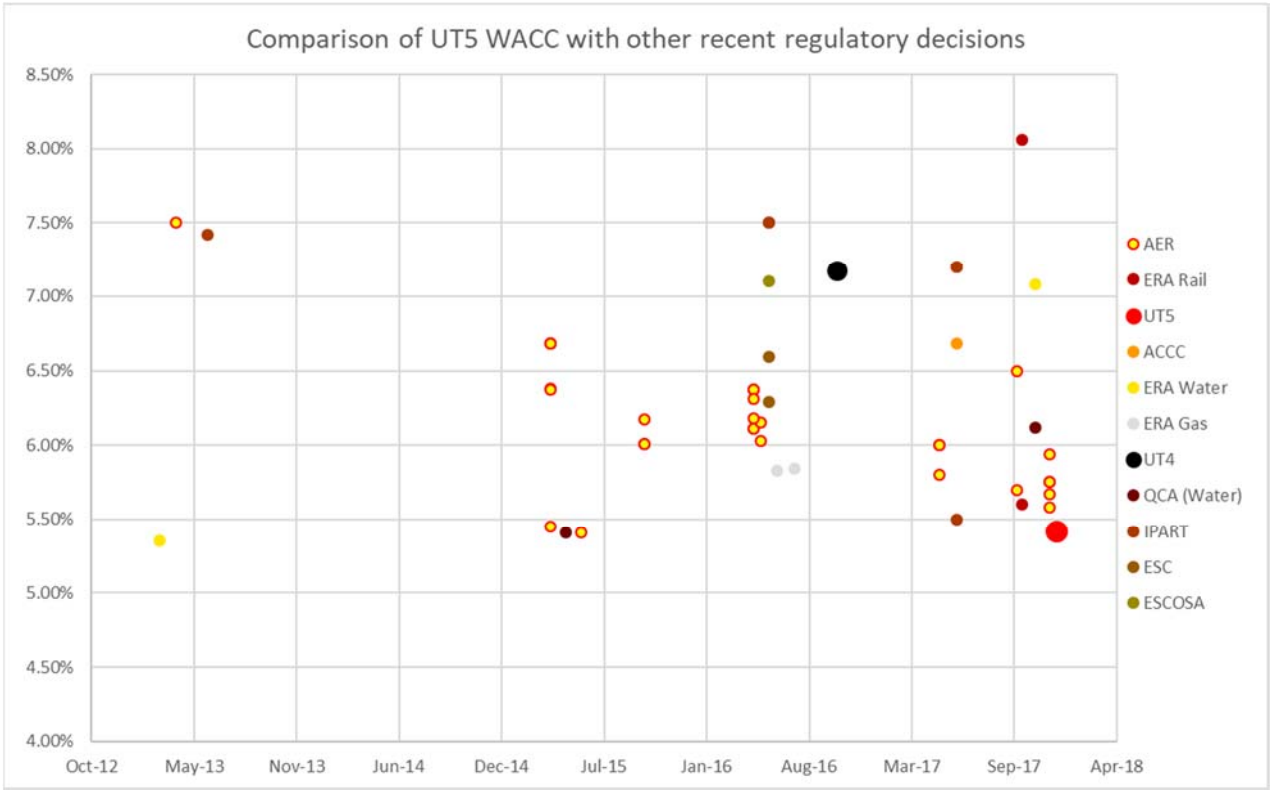
[45] ENA (2017) AER Rate of Return Guidelines, Response to issues Paper, 12 December, pp.11-12.

[46] Aurizon Network recognises that, in late 2017, the Commonwealth Government flagged its intention to remove future access to the merits review mechanism available under the national energy regulatory framework.

Recent Australian regulatory WACC determinations suggests the QCA's Draft Decision for Aurizon Network is an outlier

Figure 16 shows that the QCA's proposed WACC of 5.41% for the UT5 regulatory period is the lowest contemporary regulatory WACC estimate for a regulated entity in Australia across the transport, energy and water infrastructure sectors.

Figure 16 Comparison of UT5 WACC with other recent regulatory decisions



Source: Aurizon Network using data sourced from ACCC, AER, ERA, ESC, ESCOSA, IPART and QCA decisions

The QCA reasons that its WACC estimate reflects its legislative framework. However, the QCA Act framework is fundamentally the same as all other Australian national and jurisdictional regulatory frameworks in terms of its overriding objective – most importantly, all frameworks have an underlying economic efficiency objective.

In fact, the less prescriptive regime provided for by the QCA Act provides greater degrees of freedom or flexibility for decisions that are appropriate, in light of all of the prevailing circumstances, to promote economically efficient operation of, use of, and investment in regulated infrastructure. This flexibility in regulatory decision-making can potentially create value if the appropriate decisions are made, but equally, it should be recognised that it is this same flexibility that gives rise to regulatory risk.

The QCA's proposed WACC of 5.41% for the UT5 regulatory period can be contrasted with the WACC of 7.17% approved for the current (UT4) regulatory period in October 2016, just 14 months ago.

The Draft Decision is also fundamentally incompatible with the conclusion that Aurizon Network is a higher risk business with higher operating costs, long term demand uncertainty and less favourable risk positions than regulated water and energy utilities. This is particularly the case with electricity networks given the differences in the regulatory frameworks that have not been considered in the first principles analysis. This issue is discussed further in section 5.7 of this chapter in the context of estimating an asset beta for Aurizon Network.

A post tax nominal WACC of 5.41% will materially reduce Aurizon Network's willingness to invest in CQCN

The draft WACC estimate reduces Aurizon Network's willingness to make future investments in CQCN beyond essential replacement capex.

Specifically, business cases to undertake reliability and operational performance improvement investments to reduce and/or improve supply chain costs across the CQCN are unlikely to be supportable given such a low WACC. This outcome is contrary to the QCA Act objective of promoting economically efficient operations, use of, and investment in the CQCN.

The QCA's Draft WACC Decision exacerbates its draft maintenance cost decision, which also reduces Aurizon Network's willingness to make decisions to enhance supply chain performance.

Beyond essential replacement capex for common network infrastructure, there is substitutability of Aurizon Network and User investments in the CQCN. If the WACC in the Draft Decision is retained, Aurizon Network's willingness to invest in the UT5 regulatory period is likely to be reduced and will result in greater recourse to User funding – otherwise network investment will not occur. This is inconsistent with the objectives clause of Part 5 of the QCA Act because:

- a reasonable WACC would increase the likelihood that the service provider would invest based on the regulatory rate of return and avoid the need for User funding;
- the access provider always has greater incentives to invest in expansions regardless of downstream effects thus promoting competition in related markets; and
- socially beneficial marginal network investments are less likely to occur because neither the access provider or User will take on the risk given the access provider's WACC is too low and the User's WACC could be expected to exceed the access seeker's WACC.

Aurizon Network also notes that the consequences of regulatory error in determining the efficient return on investment are also asymmetric. By way of example if the regulatory WACC is set at 1% less than the true value of the required rate of return then the access seeker or the access provider would incur a substantial economic loss in funding at a cost higher than the compensated return. However, the extent of this economic loss to the access seeker can be mitigated by agreeing to a return with the access provider above the efficient benchmark. In contrast, if the regulatory WACC is set above the true value of the required rate of return then the access seeker is willing to finance the expansion if the access provider's proposal is unreasonable. In this regard, the consequences of undercompensating in the regulatory WACC is to raise the costs of access of one access seeker relative to its competitors which is contrary to the objectives of the access regime.

This conclusion is consistent with the findings of Kao, et al in their examination of optimal access regulation with downstream competition who conclude:[47]

> *Our results also imply that, in a dynamic setting, firms considering investing in a bottleneck facility may be deterred from doing so by the prospect of mandated access and access pricing policies that yield prices below the [Efficient Component Pricing Rule] and are set as a result of a static welfare maximization exercise by the regulator. That is, deregulation of the downstream market then needs to be coupled with other policy instruments to ensure sufficient upstream investment.*

Further, a potentially important second order effect of Aurizon Network being discouraged from investing is the asymmetric impact on competition in upstream or downstream markets associated with under-compensating the access provider (Aurizon Network). This outcome is contrary to the QCA Act objective of promoting effective competition in upstream and downstream markets. A more conservative approach to capacity measurement and

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[47] Kao, T. Menezes, F. M. and Quiggin, J (2012) Optimal Access Regulation with Downstream Competition.

reduction in operational flexibility increases the barriers to entry as a small rail operator will not possess the scale necessary to obtain high asset utilisation rates. The economic literature generally concludes that the upstream service provider has stronger incentives to promote downstream competition where it earns a sufficient economic return.[48] In this regard the under compensation associated with a cost of capital of 5.41% is contrary to the overarching competition objectives of QCA Act's Part 5 the access regime.

A post tax nominal WACC of 5.41% will adversely affect Aurizon Network's ability to raise capital at the assumed gearing and cost of debt

The Draft Decision places significant strain on Aurizon Network's capacity to raise capital because the approved maximum allowable revenues are insufficient to satisfy the financial metrics necessary to sustain a BBB+/Baa1 credit rating at an assumed gearing of 55%.

This suggests a flawed regulatory approach in that a benchmark credit rating has been set to determine Aurizon Network's capital structure and gearing but its allowable revenues will not support maintenance of the rating.

Aurizon Network has assessed the financial impact of the Draft Decision and derived the following metrics:

Table 38 Aurizon Network – financial impact of QCA Draft Decision[49]

	FY2018	FY2019	FY2020	FY2021	Threshold	
					Moody's (Baa1)	S&P (BBB+)
Funds from operations (FFO) to Debt %*	12.3%	12.3%	12.7%	13.0%	16%	13%

* FFO/debt for FY18-FY21 calculated using the QCA model for the regulatory business. Moody's and S&P each have slightly different methodologies for the calculation of FFO/debt.

The table indicates that the FFO/debt ratio will not satisfy the 16% requirement of Moody's in any year during the regulatory period and only just satisfy the threshold levels in the final year of the UT5 regulatory period to meet the 13% requirement set by S&P.

Aurizon Network notes it is typically a market requirement for large borrowers to maintain at least two ratings.

Aurizon Network notes that dual credit ratings also facilitate ease of access to a variety of capital markets for the following reasons:

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[48] Works include (1) Valletti, T. and Estache, A (1998) The theory of access pricing: an overview for infrastructure regulators, March (2) King, S. (1993) Access – what where and how, The University of Melbourne (3) Castalia Strategic Advisors (2010) Review of the Queensland Rail Access Regime, Annexure 7 to Pacific National application for declaration of Queensland's coal rail network, March, p.11.

[49] These metrics are inclusive of the deferral of WIRP revenues and is therefore more closely representative of the firm's actual position as discussed in section 5.1 of Appendix C.

- public debt capital markets generally require at least one rating, however, investors prefer companies to have dual ratings;
- for Australian issuers, the US144A market is the largest global public debt capital market where a minimum of two ratings is required;
- investor mandates often include issuer ratings band limits from one or more agencies;
- within the ASX 200:[50]
  - 71% of rated companies have dual ratings (Moody's, S&P, or Fitch)
  - 85% of rated companies with long term debt > $2bn have dual ratings
  - 70% of rated companies have dual ratings from the Materials, Energy, Utilities and Industrials sectors;
- having the second independent rating may help through times where one agency's view diverges from Aurizon's own view or a market consensus view of the company; and
- changing ratings provider or removing ratings may cause problems as credit ratings provide a long term independent view of Aurizon's credit profile to investors and other stakeholders and are used as benchmarks in investor mandates.

If unamended by the QCA in its Final Decision on the 2017 DAU, the cash flow assumptions built into the Draft Decision would increase the market and transaction costs of debt raising and would increase Aurizon Network's borrowing costs to the upper end of the BBB+ range and close to BBB. These concerns are reflected in the following comments by Moody's on the Draft Decision:[51]

> *On a forward-looking basis, however, the regulatory uncertainty surrounding the final UT5 determination could introduce material downward pressure on Aurizon Network's credit rating," adds Manning.*
>
> *The UT5 regulatory determination will set Network's revenue for the period from 2017 to 2020, and is a material driver of Aurizon's credit profile given that Network generates around 50% of Aurizon's consolidated revenue. The draft determination provided for an AUD999 million reduction in Network's maximum allowable revenue compared with the Aurizon UT5 submission, which is below Moody's central scenario for the company.*
>
> *Given the magnitude of the proposed revenue reductions under the draft UT5 determination, if enacted as proposed, Moody's estimates that Aurizon Network's credit financial leverage, as measured by funds from operations (FFO) to gross adjusted debt, could fall below the rating tolerance level of 16% based on the draft determination*.

The minimum FFO/Debt threshold set by Moody's is currently 16-18%, which is higher than the S&P threshold of 13-15%. The steeper threshold is driven by Moody's view that Aurizon Network has a higher overall risk profile. Aurizon Network notes that this threshold is not met in the UT5 draft decision. In order to achieve this metric, the UT5 post tax nominal WACC would need to increase to a minimum of 8.11% (through a higher cost of equity allowance), based on the other building blocks within Aurizon Network's response to the Draft Decision. An alternative approach could be a WACC that is lower than 8.11%, but combined with an acceleration of depreciation. However, Aurizon Network has submitted a proposed WACC of 7.03%, recognising the need to balance industry needs against its own funding requirements. Given the clear business need to retain two ratings, as explained in section 5.1.2, we believe that this is not a sustainable regulatory financial model. We therefore recommend that the QCA have discussions with Moody's to better understand Moody's view of risk.

Our response to the Draft Decision results in a revised post-tax nominal (vanilla) WACC of 7.03%, which is summarised in the table below.

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[50] As at 8 March 2018.

[51] Moody's Investors Service (2018) Moody's comments on Aurizon's 1H FY2018 results, 12 February, p.1.

Table 39 Aurizon Network – Response to Draft Decision – rate of return – key WACC parameter values

WACC parameter	Value
Risk free rate^	2.76%
Capital structure (gearing ratio)	55%
Market risk premium	7.50%
Asset beta	0.55
Equity beta	0.967
Debt beta	0.12
Gamma	0.31
Debt risk premium	1.64%
Debt financing costs	0.20%
Return on equity	10.01%
Return on debt#	4.60%
Inflation	2.30%
Post-tax nominal (vanilla) WACC	7.03%

Totals may not add due to rounding.
^ Based on a placeholder market averaging period of 20 days up to and including 30 January 2018
# Based on the June 2017 market averaging period and to be updated to reflect the nominated market averaging period.

The key drivers of this higher proposed WACC as reflected in Aurizon Network's response submission compared to the Draft Decision are as follows:

> updated market conditions associated with a January 2018 averaging period (derived as a placeholder, as discussed in section 5.5.6 of this chapter);
> a market risk premium of 7.5%;
> adoption of an asset beta of 0.55, resulting in an equity beta of 0.967;
> a gamma value of 0.31.

Aurizon Network's response to the QCA's proposed positions on each WACC parameter value is provided in more detail below.

5.2 Key issues identified during the QCA's investigation

The QCA indicates that it has considered all elements of Aurizon Network's proposed WACC in making its Draft Decision. It notes the following issues attracted comment from stakeholders or have been identified for further consideration (the bracketed section numbers below have been adopted in our response):

> approach to assessing Aurizon Network's rate of return (see section 5.4);
> risk-free rate (see section 5.5);
> market risk premium (see section 5.6);
> beta (see section 5.7);
> benchmark capital structure and credit rating (see section 5.8);
> return on debt (see section 5.9); and
> gamma (see section 5.10).

5.3 Overview of QCA's Draft Decision

Summary of Draft Decision 5.1

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs, based on a post-tax nominal (vanilla) WACC of 5.41%.
- The QCA also requires consequential amendments to the definition of 'Approved WACC' to reflect its Draft Decision.

We note the Draft Decision is to not accept Aurizon Network's post-tax nominal (vanilla) WACC of 6.78% annum for the UT5 regulatory period. Rather, the QCA has proposed a lower post-tax nominal WACC of 5.41%.

The QCA argues this WACC estimate is based on a detailed, bottom-up estimate of the individual WACC parameter values and reflects consideration of Aurizon Network's proposal and submissions.

The QCA also states that its assessment of Aurizon Network's proposed WACC parameter values incorporates the characteristics of Aurizon Network's investor base. Relevantly, in its view, this entails a forward looking, market-based assessment of Aurizon Network's opportunity cost of capital for the UT5 undertaking period. However, Aurizon Network is not aware of any evidence provided by the QCA in support of this claim. Aurizon Network presents evidence to the contrary at relevant points in this chapter, including in relation to the overall proposed WACC estimate, the risk-free rate and MRP. Furthermore, the QCA's WACC estimate for Aurizon Network is an outlier compared to other recent Australian regulatory determinations.

Finally, the QCA argues its Draft Decision is ultimately guided by whether the overall level of rate of return is reasonable and appropriate to approve having regard to the criteria in section 138(2) of the QCA Act. This includes considering whether the proposed rate of return is sufficient for Aurizon Network to provide a return on investment commensurate with the commercial and regulatory risks involved, while balancing the legitimate business interests of Aurizon Network and the interests of its customers and the public.

A breakdown of the QCA's proposed parameter values in the Draft Decision is presented in the table below.

Table 40 QCA Draft Decision on Aurizon Network – rate of return – key WACC parameter values

WACC parameter	FY2018
Risk free rate	1.90%
Capital structure (gearing ratio)	7.0%
Market risk premium	7.0%
Asset beta	0.42
Equity beta	**0.73**
Debt risk premium	2.00%
Debt issuance & hedging costs	0.233%
Gamma	0.46
Return on equity	6.99%
Return on debt	4.13%
Post-tax nominal (vanilla) WACC	5.41%

Source: QCA (2017) Draft Decision, p.183.

5.4 The QCA's assessment approach

5.4.1 Summary of QCA's assessment approach

The QCA notes in section 5.4 of the Draft Decision that its role, when considering reference tariffs and allowable revenues in the 2017 DAU is to assess the rate of return proposed by Aurizon Network for providing below-rail services to coal-carrying trains, having regard to the factors specified at s.138(2) of the QCA Act.

To this end, the QCA indicates that in assessing Aurizon Network's UT5 proposal, it has developed a detailed, bottom-up estimate of the individual WACC parameters values and considered Aurizon Network's proposal and submissions. In doing so, it has ultimately been guided by whether the overall level of rate of return is reasonable and appropriate to approve having regard to the criteria in section 138(2) of the QCA Act.

The QCA also states that its assessment of Aurizon Network's WACC parameters incorporate the characteristics of Aurizon Network's investor base. Relevantly, in its view, this entails a forward-looking, market-based assessment of Aurizon Network's opportunity cost of capital for the UT5 regulatory period. As a result, the QCA considers that it has estimated a rate of return that is sufficient to compensate investors for Aurizon Network's exposure risk, given the way in which risk is addressed in the regulatory framework.

5.4.2 Aurizon Network's overarching view of QCA's assessment approach

Aurizon Network considers that the QCA has not undertaken a balanced assessment of the overall rate of return having regard to the criteria in section 138(2) of the QCA Act. Specifically, Aurizon Network does not accept that the QCA has estimated a rate of return that is sufficient to compensate investors for Aurizon Network's systematic risk exposure, including due to the way in which risk is assessed in the Draft Decision and under the QCA's approved regulatory access arrangements applied to Aurizon Network.

This deficiency has been reflected in the adverse equity market response to Draft Decision, which was taken by surprise by the Decision, and which has created uncertainty for investors regarding the outcomes arising from the QCA's regulatory framework that is being applied to Aurizon Network.

The impact of the Draft Decision on the market value of Aurizon Network was evident in the Aurizon Holdings' share price before and after the release of the Draft Decision. Prior to and post the Draft Decision's release, there were no material information releases relevant to the non-network parts of Aurizon Holdings or macro-economic data. Therefore, outside of general market movements, the Draft Decision would have been the sole determinate of any share impact. It is also reasonable to make inference, based upon the Aurizon share price movement, regarding whether the Draft Decision is commensurate with the return expectations of investors.

Therefore, Aurizon Network contends that the material reduction in AZJ's share price of 5.9% from close of business on 15 December 2017 and market close on 18 December 2017 was largely attributable to the Draft Decision's misalignment with market and investor expectations (see Figure 6). This compares to the Australian Securities Exchange 200 which rose during this trading period.

Based on the fact that the fall was solely attributable to the information provided within the Draft Decision, this 5.9% fall in overall Aurizon Holdings value, equates to a fall in Aurizon Network's capital value of 11.6% based upon Aurizon Network's contribution to the Aurizon Holding's group's EBIT.

Aurizon Network notes the release of the UT4 Final Decision in October 2016 did not result in such an outcome.

Further, the disconnect between the QCA's term matching approach to set the risk-free rate used in the return on equity estimate and investors longer-term perspective on equity market risk, means that the Draft Decision's equity risk premium is unreasonably low. This is directly contrary to the QCA's assertion that its proposed WACC parameter values incorporate the characteristics of Aurizon Network's investor base.

Aurizon Network expands on its concerns about the Draft Decision in the remaining sections of this chapter.

5.5 Risk free rate

Summary of Draft Decision 5.2

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking to amend its draft access undertaking is to apply a WACC of 5.41% based on a risk-free rate of 1.90% per annum.
- In this Draft Decision, the risk-free rate for the UT5 undertaking averaging period is based on:
  (a) approval of Aurizon Network's choice of Commonwealth Government nominal bonds as the proxy for the risk-free asset
  (b) approval of Aurizon Network's proposed averaging period of the 20 business days up to, and including, 30 June 2017
  (c) a term to maturity consistent with the term of the regulatory period (i.e. four years).

5.5.1 Overall assessment of QCA's proposed risk-free rate

Aurizon Network maintains its previous position that the appropriate risk-free rate to use for determining an appropriate WACC is the longest date Australian Government bond, effectively a 10-year risk free rate.

Aurizon Network also maintains its concern that the QCA's rigid application of its long-standing NPV=0 principle is in error given that is not a relevant consideration for investors.

Finally, Aurizon Network is concerned that the QCA applies two different real risk-free rates in its WACC determination, including a negative real risk-free rate in the RAB roll-forward and a high positive real risk-free rate in its Siegel estimate of the MRP. This inconsistent use of the real risk-free rate serves to dampen the QCA's proposed WACC.

5.5.2 Inconsistency with regulatory and commercial practice

There is substantial evidence to indicate that the standard Australian commercial and regulatory approach when calculating the return that is required on investments in infrastructure assets is to set the risk-free rate to the yield on Commonwealth Government 10-year bonds. Hence, the use of a 4-year risk-free rate is inconsistent with this conventional practice.

Frontier has previously presented substantial evidence in support of use of a 10-year risk-free rate. In addition, Frontier notes that the latest survey of Australian valuation experts – the KPMG 2017 Valuation Practices Survey – finds that 90% use the 10-year risk-free rate is used within the CAPM. Aurizon Network notes this is one of the two surveys that the QCA has relied on in estimating the MRP in its Draft Decision. Frontier notes that some experts applied an adjustment to increase the figure. Most experts covered by the Fernandez survey also relied upon by the QCA also uses a risk-free rate higher than the 10-year risk-free rate.

Based on its survey of five leading global investment banks who have been involved in large infrastructure transactions over the past two years, Deloitte also advised Aurizon Network that the 10-year Commonwealth Government bond rate is the preferred and more commonly used rate.[52]

It is reasonable to conclude categorically that commercial practice is to use a risk-free rate equal to at least the 10-year bond rate. It is also reasonable to conclude that equity investors in Aurizon Network do so as part of a portfolio as assumed in the determination of equity betas. As equity betas of the comparators used by Incenta are based on prices established from valuations using a 10-year CAPM, then the QCA is likely to materially undercompensate a

[52] Deloitte (2017) Required Returns for Infrastructure Assets – Market Based Evidence, 29 September, p.8.

regulated service in applying a term of four years while comparator betas are based on 10 years. There is also no supporting evidence that equity investors perform valuations or that price formations are based on a 4-year CAPM. Therefore, the 4-year CAPM is not consistent with the return expectations of equity investors.

Frontier has also identified that standard Australian regulatory practice is to use a 10-year risk-free rate, the longest dated government bond available on the market. Australian economic regulators that currently apply a 10-year risk free rate include the AER, IPART, ESC, ESCoSA, the ICRC and ACT Industry Panel.[53] Only ERA term-matches the risk-free rate and length of regulatory period and only for gas and electricity transmission and distribution determinations. It applies the standard Australian regulatory practice for its regulation of rail access providers.

Overseas regulatory practice is to use risk-free rates greater than 10 years given the availability of such government longer-term bonds, including in the UK and the US.[54] Hence, given the scale of globally regulated assets relative to those regulated under the QCA Act, it is highly improbable that the investor earnings expectations would conform to those assumed by a 4-year CAPM. The resulting systematic under-compensation of using a 4-year CAPM introduces a funding risk premium for investment in Queensland regulated infrastructure to ensure equity returns are comparable to alternate investments in Australia or globally.

Hence, it can be said with a high degree of certainty that the QCA's application of a short term risk-free rate is an outlier having regard to Australian commercial and regulatory practice. The QCA's main reason for adopting a short term risk-free rate contrary to prevailing mainstream practice is its rigid adherence to what is referred to as the NPV=0 principle in setting maximum allowable revenues. Aurizon Network notes that other Australian regulators' decision to adopt the longest available risk-free rate term have placed limited weight, if any, on the NPV=0 principle.

5.5.3 Applying the NPV = 0 principle

The NPV=0 criterion is that the regulator must set the allowed return equal to the return that is required by the providers of capital. If the allowed cash flows are set based on the same return that investors require, then the present value of the allowed cash flows to investors will be zero. The setting aside of observed investor return requirements in favour of a theoretical construct of investor preferences will not result in the regulatory cash flows determined in respect of that construct yielding a zero NPV when discounted at the required commercial return which is the relevant test required under the QCA Act.

The NPV=0 principle is a long-standing practice of the QCA. Aurizon Network and other QCA-regulated entities have previously raised concerns about the QCA's rigid application of this principle in the face of substantial evidence that it is not a relevant consideration for investors and nor is it a relevant matter to which the QCA is directed to have regard in the QCA Act.

Frontier argues that since the Draft Decision does not dispute the evidence that the standard commercial practice is to use a 10-year risk-free rate, the NPV=0 principle requires that the allowed return should also be based on a 10-year risk-free rate. Frontier goes on to argue that the QCA's approach is independent of any evidence of the returns that real world investors *do* require. Rather, it is based on algebraic derivations of what the QCA considers that investors *should* require. However, in Frontier's view, these algebraic derivations begin with the assumption that the regulator's allowed return is equal to the market's required return, and are therefore circular. That is, the derivation assumes the result that it seeks to prove.[55]

Importance of certainty assumption

The NPV=0 principle is underpinned by the critical assumption that the regulatory process is such that the market value of the regulated asset at the end of each regulatory period is not subject to any risk.

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[53] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, p.10.

[54] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.5-6.

[55] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.9-14.

Frontier agree that if the value of the regulated asset at the end of the regulatory period was known with certainty, it would be appropriate to use a risk-free rate with a term equal to the length of the regulatory period. In such a case, there would be no need for investors to consider any cash flows beyond the length of the regulatory period; they could simply discount the known end-of-period asset value back to present value. However, because the end-of-period asset value is not known with certainty, real world investors do not limit the risk-free rate to the length of the regulatory period.[56]

New algebraic derivations

The QCA in its Draft Decision now proposes that the certainty assumption that was relied on in the Market Parameters Decision is no longer required to support the practice of limiting the risk-free rate to the length of the regulatory period, even if there is ex ante uncertainty about the value of the regulatory assets at the end of the regulatory period. Frontier note that this conclusion is based on a new set of algebraic derivations presented in Lally (2017). These new derivations consider a special case where a specific type of uncertainty about the end-of-period asset value is considered.

Lally (2017) introduces uncertainty in the form of a random change to the RAB made at the end of each regulatory period such that the RAB at the end of each regulatory period is changed by an amount of $X, where X has a mean of zero and is uncorrelated with market returns. Specifically, the RAB is equally likely to be increased or decreased by a random amount (that is unrelated to the state of the economy or market returns) to re-set it to the replacement cost at that time.

Frontier have reviewed Lally's analysis and raised three main problems with it as follows:[57]

- it is irrelevant to the case at hand because the Aurizon Network RAB is not re-set to replacement value at the end of each regulatory period;
- logically, it does not follow that because one specific (irrelevant) form of uncertainty can be accommodated within the QCA's current framework, that framework is robust to all forms of uncertainty about the end-of-period asset value; and
- the NPV=0 principles are shown to be satisfied by assuming that it is true.

Frontier emphasises that Lally's formula demonstrating the NPV=0 'proof' in the face of uncertainty, simply shows that if investors are using a 4-year risk-free rate, the NPV=0 principle requires that the allowed return should be based on this 4-year risk-free rate. Similarly, if investors are using a 10-year risk-free rate, the NPV=0 principle requires that the allowed return should be based on this 10-year risk-free rate.

Premium for systematic risk

Frontier notes that Lally's analysis recognises the case where uncertainty at the end of the regulatory period is correlated with market returns. In such a case, he concludes that the allowed return must include a premium for this risk.

Lally argues the risk premium is intended to compensate for systematic risk arising from the uncertainty of the market value of the RAB at the end of each regulatory period and in his view, could be zero or even negative depending solely upon the nature of that risk, i.e., are the possible market values correlated with market returns and, if so, is the correlation positive or negative. He argues the sign and size of this risk premium is therefore unrelated to the difference between risk-free rates with different tenors, and therefore could not compensate for that difference.

Regardless, such a premium for uncertainty, including the extent to which it maybe systematic, is not considered or accommodated in the QCA's WACC model.

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[56] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.14-15.

[57] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.15-17.

Existence of systematic risk

Application of the NPV=0 principle and choice of risk-free rate term raises the broader issue of whether there is a correlation between the regulator's allowed return and the market's required return, including in relation to the MRP.

Frontier points to Lally's research about the MRP such that adoption of relatively stable MRPs in a regulatory context over time are likely to result in over-compensation of regulated entities in good times and under-compensation in bad times. He concludes that these estimation errors are a source of systematic risk.

Frontier's view is that there are many reasons why the regulator's allowed return might differ from the return that actual market investors might require. The sources of differences include the use of different risk-free rates and the MRP and DRP estimation errors identified by Lally (2016). Consequently, there is likely to be a systematic element to the mis-match between the allowed return and the required return, which would warrant a premium that is not provided for in the QCA's WACC model.[58]

5.5.4 Inconsistent use of real risk-free rates

The expected real risk-free rate is used in the following two places in the QCA's determinations: the RAB roll-forward and its Siegel estimate of the MRP.

The impact of different estimates of the real risk-free rate works to Aurizon Network's financial disadvantage in the opposite in the two places where it appears, reflecting the QCA's inconsistent approach to the term issue:

- In the RAB roll-forward, Aurizon Network is disadvantaged by a negative expected real-risk free rate. In this case, the MAR is lower and more of the equity return is pushed further into the future; and
- For the Siegel estimate of the MRP, Aurizon Network is disadvantaged by a high expected real risk-free rate. This is because the expected real risk-free rate is subtracted in the MRP calculation when implementing the QCA's Siegel approach.

The QCA's application of a negative real risk-free rate in the RAB roll-forward implies that investors are willing to invest in government bonds with the expectation that the invested funds will be able to purchase fewer goods at the end of the investment than at the beginning. As Frontier notes, this seems implausible in current Australian market circumstances and there is no historical evidence that prior economic and market conditions that might be considered similar to current conditions resulted in a negative real risk-free rate of return.

The underlying source of the different real risk-free rates is the QCA's use of two different forecasting methods as follows:

- the 10-year geometric averaging of the RBA's short forecasts and mid-point inflation target when computing the RAB roll-forward and DRP, which can be estimated by removing expected inflation from the nominal government bond yield using the Fisher equation;
  - this approach produces a nominal risk-free rate of 1.9% and expected inflation of 2.4%, which jointly imply an expected real risk-free rate of -0.5%; or
- the yield on inflation-indexed Commonwealth Government bond yields when applying the Siegel approach to estimate the MRP;
  - this approach produces a real risk-free rate estimate of 1.1%.

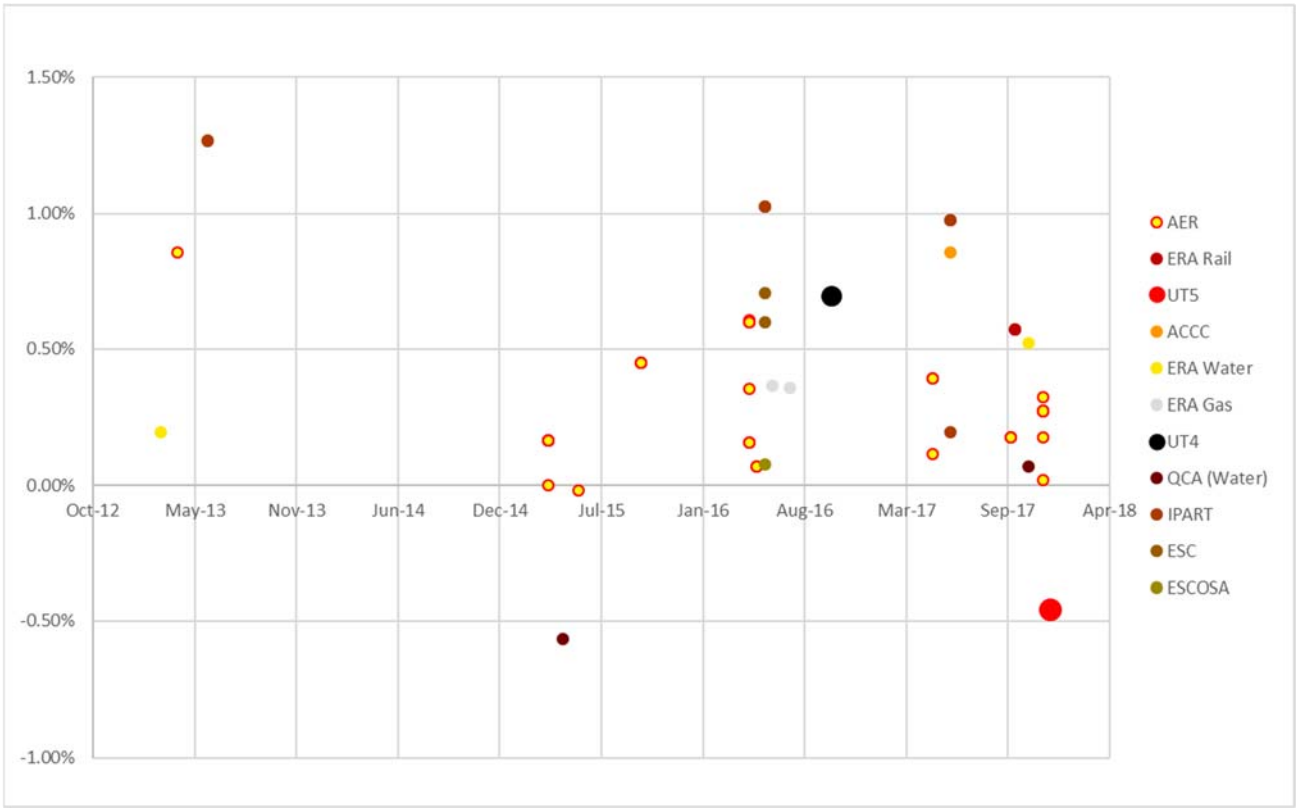
The QCA's choice of different real risk-free rate forecasting methods serves to dampen both the return on debt and equity estimates. Further, there is under-compensation if the actual inflation that is used to increase the RAB is less than the expected inflation figure that is used to reduce the MAR. Rather, we simply note that the allowed MAR in

[58] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.17-18.

the current regulatory period depends on the estimate of the expected real return (i.e., the expected nominal return net of expected inflation).

As a result, Aurizon Network contends the QCA's choice of different forecasting methods for the real risk-free rate is clearly unreasonable and forms part of a broader downwardly biased WACC estimate proposed for Aurizon Network for the UT5 regulatory period. This is evident from the figure below that shows the real risk-free rates approved as part of Australian regulatory decisions over recent years, with only one other decision also by the QCA in 2015 approving a lower real risk-free rate.[59] Aurizon Network also notes that the proposed real risk-free rate for UT5 of -0.46% is 115 basis points lower than the real risk-free rate of 0.69% in the UT4 Final Decision, which was released in October 2016, only 14 months ago.

Figure 17 Comparison of UT5 real risk-free rate with other recent regulatory decisions



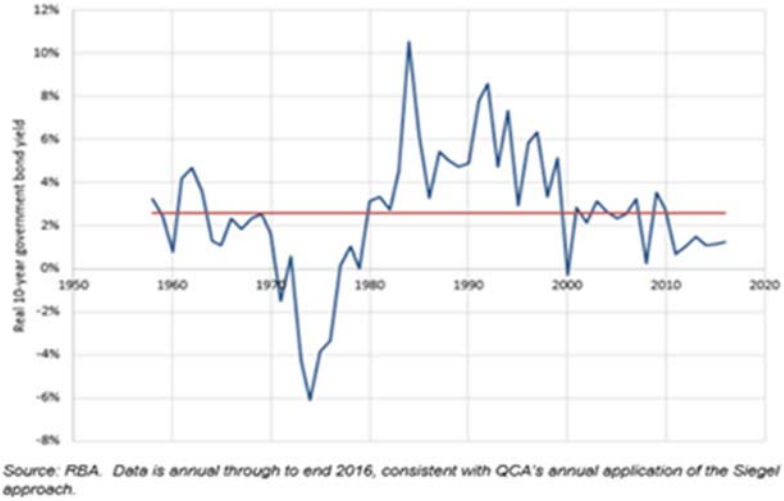
Source: Aurizon Network using data sourced from ACCC, AER, ERA, ESC, ESCOSA, IPART and QCA decisions

The atypical negative real risk-free rate outcome proposed by the QCA in the Draft Decision can be further illustrated by observance of real 10-year Australian Government bond yields since the 1950s.[60] The last time that the real yields on these risk-free bonds were negative was the 1970s.

[59] The QCA applied a 5 year risk free rate of 1.92% with an inflation estimate of 2.5% in its Final Decision on the Government owned Gladstone Area Water Board.

[60] Frontier (2018) Response to the UT5 draft decision on the market risk premium, March, pp.17-18.

Figure 18 Real yield on 10-year Australian government bonds



Source: RBA, Capital Market Yields – Government Bonds – Monthly – F2.1

5.5.5 Price shocks driven by risk-free rate changes

Frontier demonstrates that the 4-year risk-free rate is more volatile than the 10-year risk free rate such that:[61]

- when rates are rising, the 4-year yield tends to rise proportionally more than the 10-year yield (e.g., in the run-up to the GFC in 2007); and
- when rates are falling, the 4-year yield tends to fall proportionally more than the 10-year yield (e.g., the peak of the GFC in late 2008).

The higher volatility associated with the 4-year risk-free yield (relative to the 10-year risk-free yield) combined with the use of short-term averaging periods means that price changes for customers will tend to be proportionately more variable from one regulatory period to the next if the 4-year risk-free yield is used, and equity returns received by investors will also tend to be proportionately more variable from one regulatory period to the next.

This extra volatility introduced into the QCA's WACC determination process can be contrasted with the relative stability of MRP estimates adopted by the QCA across all its return on equity decisions for Aurizon Network and other Queensland regulated infrastructure assets. The ENA has commented on the adverse practical effect of such an approach as follows:[62]

> *In relation to the return on equity, the current approach, which estimates the risk free rate as the average of Commonwealth Government Securities (CGS) yields measured over a short-term averaging period, combined with a constant estimate of the equity risk premium, results in a "lottery" effect, whereby the customers of two networks, whose revenues are reset just a few months apart, can receive materially different outcomes, depending on whether interest rates happen to be higher or lower at the time the AER makes each of those decisions.*

Aurizon Network considers the effect of combining stable MRP and volatile risk-free rate estimates, as reflected in the fall in Aurizon Network's WACC between its UT4 to UT5 decisions that were released just 14 months apart, is inconsistent with the QCA Act's Part 5 objective of promoting the economically efficient operations of, use of and investment in significant infrastructure.

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[61] Frontier (2018) Response to the UT5 draft decision on the term of the risk-free rate, March, pp.21.

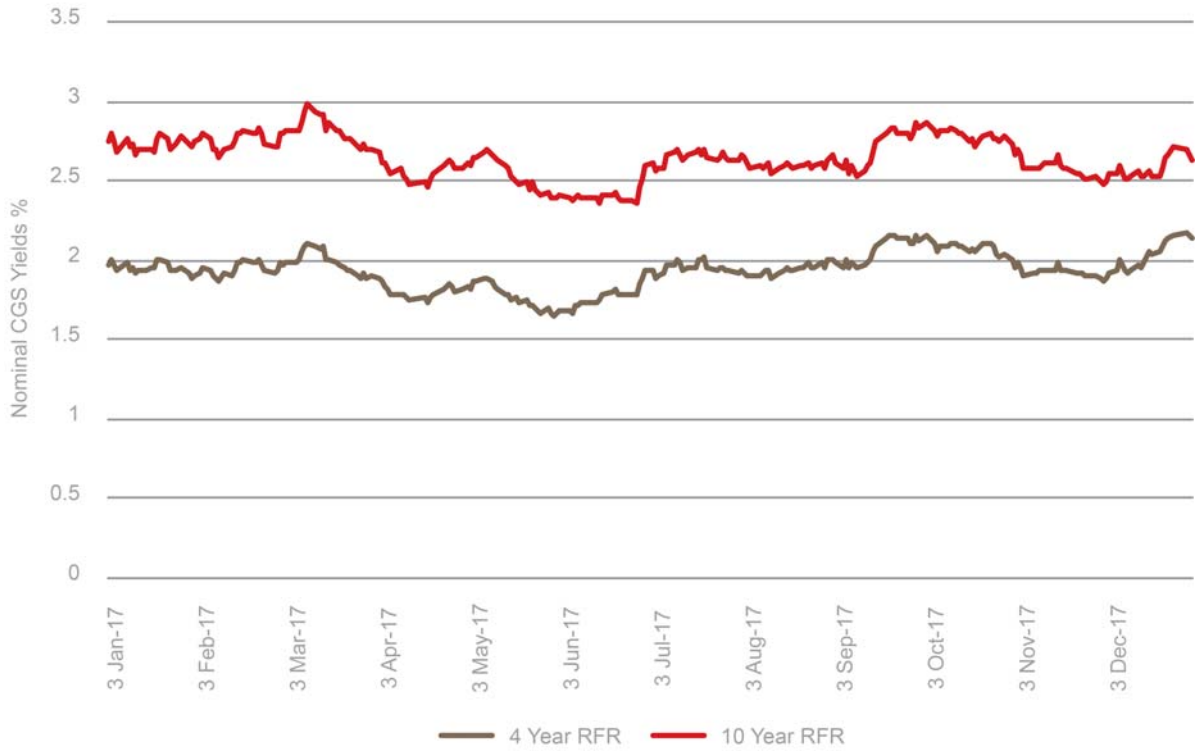
[62] ENA (2017) AER Rate of Return Guidelines, Response to issues Paper, 12 December, p.11.

5.5.6 Change in averaging period for risk-free rate

In February 2017, Aurizon Network wrote to the QCA nominating a market averaging period of 20 business days up to, and including, 30 June 2017. The QCA responded to this request indicating it was minded to accept the proposed period.

The Draft Decision estimates the market parameters for the cost of capital based on that averaging period. Aurizon Network considers that this averaging period and its duration is unsuitable for the purpose of determining the efficient return to equity investors and leads to under-compensation relative to stability of total market returns. The following figure shows that the market averaging period coincides with a suppressed risk free rate relative to a period which incorporates a longer averaging period.

Figure 19 4 and 10 year Risk Free Rates



Source: RBA Statistics, F02 Commonwealth Government Bonds Daily

As discussed above, the unintended implication of this averaging period and the Draft Decision of a 4-year term for the risk-free rate and the use of the RBA mid-point forecasts is that the regulatory cash flows are impaired through the application of a negative real risk-free rate.

As the inflation forecast is deducted from nominal depreciation the allowable revenue is therefore largely a function of the real pre-tax rate of return. The greater the inflation forecast then the lower the allowable revenue (this is partially offset in later years with the increased depreciation on the inflated RAB value). While the UT5 proposal is based on achieving a targeted nominal rate of return the conventional regulatory approach, and the method favoured by investors in regulated assets, is a target real rate of return to adjust the cash flows and asset values in line with inflation.

The targeted real rate of return approach is also preferred by Aurizon Network. However, the implications on the real rate of return due to the negative real risk-free rate precludes this model from being implemented. In contrast to the QCA the Economic Regulatory Authority of Western Australia, which oversees a real rate of return framework with

term matching, utilised the break-even inflation rate of 1.43% against a nominal risk-free rate of 1.80% to ensure the real risk-free rate was positive.[63]

As the nominated averaging period used for estimating the market parameters relevant to a real risk-free rate of return approach produces an anomalous outcome (i.e. a negative real risk-free rate), Aurizon Network is nominating an alternate short forward-looking market averaging period immediately prior to the release of the Final Decision, at this stage expected to be June 2018. Such an approach is consistent with application of the on-the-day approach to setting the return on debt, as applied by the QCA in the Draft Decision.

In addition to concerns about the real risk-free rate, the retention of the original averaging period when combined with the delays and uncertainty in the Draft Decision represent unreasonable regulatory risks which are unmanageable by a regulated business. This situation arises due to:

- the 2017 DAU (UT5) proposal was based on the use of the break-even inflation rate, not the RBA mid-point forecasting method. Under a nominal rate of return method, the firm can effectively manage its inflation risks through inflation swaps and other instruments. The absence of a regulator decision prevents the business from efficiently managing those risks;
- the benchmark regulated firm is subject to regulatory risks and uncertainty regarding how the regulator will address estimating the cost of debt. Given the increasing use of trailing average cost of debt approaches under Australian regulatory frameworks, there was an inherent risk that the regulator's Draft Decision may have implemented this method. The fact it did not is irrelevant as it was not known at the time the nomination was made;
- the Draft Decision while indicating support for a change to the averaging period, has not accepted the use of the nominal rate of return method and is seeking stakeholder submissions on other methods. This represents considerable regulatory risk and uncertainty that the market averaging period will occur prior to the finalisation of a fundamental and critical aspect of the regulatory framework; and
- it was reasonably anticipated by Aurizon Network at the time of nominating the averaging period that the Final Decision would be finalised reasonably close to the commencement date of the UT5 regulatory period. This reasonable view was obtained through the timing of the conclusion of UT4 and the expectation that the QCA would apply in UT5 the principles adopted in UT4 thus creating an expectation of a relatively short period between access undertakings.
- Aurizon Network notes the choice of the averaging period is intended to occur as close as possible to the regulator's decision rather than the commencement date of a regulatory period, on the grounds that this is likely to result in an estimate representative of the risk-free rate experienced over the forthcoming regulatory period. This is evident in the following two examples:
  - the AER applied a market averaging period approximately 12 months after the commencement date for TransGrid which was applied retrospectively to a transitional revenue year due to delays in resolving the regulatory framework. The market averaging period occurred close to the Final Decision;
  - the QCA accepted a market averaging period for DBCT which was approximately 11 months following the commencement date due to delays in the regulatory determination process. The market averaging period occurred after the Draft Decision date.

Having regard to these risks, Aurizon Network will propose an averaging period closer to the Final Decision.

5.5.7 Conclusion

Aurizon Network considers that the dominant commercial market and Australian regulatory practice of using a 10-year risk-free rate should be adopted by the QCA.

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[63] ERA (2016) Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020, 30 June, p.221.

Following this standard approach would address all the concerns that Aurizon Network has about the QCA's approach to setting the risk-free rate. Most importantly, it would equate the QCA's allowed return with the market's required return, which is necessary for its preferred NPV=0 principle to be satisfied.

Aurizon Network also notes that the regulatory uncertainty created using negative real risk-free rates in current Australian market conditions is an uncompensated risk to investors. This is contrary to the QCA's assumption about the positive cash flow buffering effects of the cost-based regulation that it applies and has relied upon in its proposed reduction of Aurizon Network's asset beta estimate to 0.42.

Aurizon Network intends to nominate a new forward-looking averaging period to set the risk-free rate (and debt risk premium) for the return on debt for the UT5 regulatory period.

5.6 Market risk premium

Summary of Draft Decision 5.3

- QCA has decided to align its use of a 4-year government bond yield for the risk-free rate with its estimation of the MRP, which results in an MRP of 7.0%.
- QCA gives greater weight to the Wright approach while retaining the Siegel approach.

5.6.1 Overall assessment of QCA's proposed MRP

Aurizon Network has the following concerns regarding the QCA's proposed MRP of 7%:

- it is inconsistent with evidence of an increase in the MRP in prevailing market circumstances;
- the QCA takes a weighted average of MRP estimates derived from several methodologies and approaches, some of which have been computed relative to the 4-year risk free rate and some which are relative to a 10-year risk free rate; and
- the QCA's exercise of regulatory discretion in determining the MRP disproportionately dampens the proposed MRP estimate.

Each of these concerns is discussed in the sections below.

5.6.2 QCA's proposed MRP estimate does not reflect prevailing market circumstances

The 4-year MRP of 7.0% is consistent with a 10-year MRP of 6.5%, both of which are consistent with previous QCA decisions. That is, the estimated required return on the market (i.e. the required return for a company of average risk) using either approach is 8.9%.

Aurizon Network supports the Draft Decision to implement the CAPM in an internally consistent way by pairing a 4-year risk free rate with an MRP estimated relative to the same 4-year risk free rate.

Accordingly, the proposed MRP of 7.0% does not equate to the QCA having determined that the MRP has increased since its UT4 decision was made; rather, it has increased purely through the appropriate adoption of consistency in methodological approach. The Draft Decision states that there is evidence to support an increase in the MRP but no such increase has actually been applied. The Draft Decision stated as follows:[64]

[64] QCA (2017) Draft Decision, p.84.

> *Estimates from four of the five methods have increased, in some cases materially, since the DBCT final decision – our most recent assessment of the MRP, which applied an MRP of 6.5%.*

and that:[65]

> *a component of the survey estimate (that is, the Fernandez et al. 2017 survey result) has materially increased, from 6.0 per cent to 7.6 per cent, since our previous assessment.*

The QCA further explains that an increase in the MRP is plausible in prevailing equity market circumstances, including due to contemporary low risk-free rates:[66]

> *As the QCA estimates the MRP for the regulatory term, it could be anticipated that short-term market fluctuations during the regulatory cycle result in the true MRP being either higher or lower than the MRP estimated at the previous regulatory reset.*
>
> *Further, it is likely that the MRP varies over time. This point is relevant given the observably low risk-free rate and the plausible (negative) correlation between the risk-free rate and the MRP.*

Considering these observations, Aurizon Network considers the effective stability of the MRP estimates, now that the QCA is using a consistent and appropriate approach, is inconsistent with the evidence of a contemporary increase in the MRP.

5.6.3 QCA applies an amalgam of 4-year and 10-year MRP estimates

The QCA maintains its standard practice of using a range of methods to inform its MRP estimate. For some of these methods, the QCA has revised its estimation approach to replace the 10-year risk free rate with the 4-year risk free rate. However, for other methods, the QCA has made no such changes, which means the outcome of applying these methods is the estimation of a 10-year MRP.

In estimating the MRP, the QCA then takes a weighted average of the estimates from all its methods, which results in its proposed MRP estimate of 7% that is based on an amalgam of 4-year and 10-year MRP estimates. This is an inconsistent basis to determine an MRP estimate.

Aurizon Network considers that if the QCA is to adopt its term-matching approach then all MRP estimation methods used by the QCA should calculate a 4-year MRP. Aurizon Network's WACC expert, Frontier, advises that it would be straightforward for the QCA to implement such an approach by adjusting the reported survey MRP estimate to reflect the prevailing 4-year risk-free rate. This would result in an MRP estimate of 7.5% compared to an MRP estimate based on a 10-year risk-free rate of 7.0%.[67]

Two methods used by the QCA where Aurizon Network has a specific concern about inconsistency in its application of risk-free rates are:

- Survey estimates (based on the Fernandez and KPMG survey)
- Cornell DGM estimates.

Survey estimates

In its 2014 market Parameters Decision, the QCA assumed that survey respondents supply a MRP estimate relative to the 10-year government bond yield. Aurizon Network agrees with this assumption. However, in the Draft Decision,

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65 QCA (2017) Draft Decision, p.84.

66 QCA (2017) Draft Decision, p.81.

67 Frontier (2018) Response to the UT5 draft decision on the market risk premium, March, p.12.

the QCA changes this approach in favour of the assumption that survey participants may be providing a MRP estimate relative to the 4-year government bond. The QCA states the following on this issue:[68]

> *We also hold the view that there is no basis to assume that survey respondents define the MRP relative to the 10-year risk-free rate. Further, some respondents might even provide responses to very short-term rates.*[69]

Aurizon Network is strongly of the view that the QCA's reference to "some respondents might even provide responses to very short-term rates'' cannot be substantiated by any supporting evidence from the survey's explanatory information or its authors' analysis of the survey results. As Frontier notes, this is not a reliable basis for placing a 100% weight on the assumption that all survey responses are made relative to short term bond rates. Further, Frontier notes that the short-term bond rate assumption is directly contradicted by the survey evidence reported by Fernandez and KPMG.[70]

Aurizon Network considers that this is another example where the QCA has used its judgement to produce a lower return on equity estimate than would be the case acting reasonably, including if it had maintained its long-standing approach to using the survey results in estimating the MRP. This is an unreasonable and inappropriate use of its discretion.

Cornell DGM estimates

The Cornell DGM first produces an estimate of the required return in the market. The prevailing risk-free rate is then deducted to produce an estimate of the MRP. Assuming the QCA is seeking to estimate the MRP relative to the 4-year risk free rate, Aurizon Network considers that this rate should be subtracted from the Cornell estimate of the required return on the market. However, the QCA deducts the prevailing 10-year bond rate and treats the resulting estimate as an MRP relative to the 4-year bond rate when applying weights to MRPs estimated from each of its preferred methods. Frontier argues that such an approach makes little sense and there is no clear reason why the 10-year bond rate should be used rather than the 4-year bond rate. In the current market environment, this results in the MRP estimate being biased downwards by 0.5%.

In support of its approach, the QCA references arguments made by Professor Lally that the standard regulatory approach to estimating the MRP entails an inconsistency between the assumed infinite term of the market cost of equity under the Cornell method and the application of a finite term for the risk-free rate, which will bias the resulting estimate of the MRP. However, this bias can be reduced by matching, to the greatest extent possible, the term of the market cost of equity to the term of the risk-free rate. Aurizon Network notes that most Australian regulators apply a 10-year risk free rate in determining the MRP and WACC more generally. Consequently, it is difficult to understand the regulatory problem to which Lally refers.

Further, the QCA is almost without exception amongst Australian regulators in favouring the use of short term bond rates to estimate the WACC notwithstanding substantial evidence to the contrary that investors make decisions based on a long-term investment perspective.[71]

In Aurizon Network's view, Lally's argument is being used to support a long-term equity perspective when the Cornell DGM is applied. However, the QCA's estimation of other WACC parameters is underpinned by the assumption of a short-term investment perspective underpinned by short term bond rate values. Aurizon Network is strongly of the view that the resulting MRP estimate is in error and that this error results in a downwardly biased estimate of the MRP.

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68 QCA (2017) Draft Decision, p.477.

69 QCA (2017) Draft Decision, p.477, emphasis added.

70 Frontier (2018) Response to the UT5 draft decision on the market risk premium, March, p.12.

71 Frontier, Response to the UT5 draft decision on the term of the risk-free rate, pp3-5; and Frontier (2017) The term of the risk-free rate, September.

As Frontier argue, the QCA's estimate of 6.4% based on deducting the prevailing 10-year risk free rate of 2.4% from the QCA's Cornell-based estimate of the required market return of 8.8%, cannot be simultaneously be the best prevailing estimate of the 10-year MRP and the best prevailing estimate of the 4-year MRP. To address this inconsistency, Aurizon Network agrees with Frontier that the QCA should deduct the prevailing 4-year risk free rate of 1.90% from the required return on the market estimate of 8.8%, which results in an estimate of the 4-year MRP of 6.9%.

Aurizon Network considers that this is another example where the QCA has exercised unreasonable and inappropriate judgement to produce a lower return on equity estimate.

5.6.4 Summary of QCA's Draft Decision on the available evidence

Aurizon Network recognises that the selection of a point estimate for the MRP inevitably involves several methodological decisions. Aurizon Network and Frontier consider that the decisions made by the QCA regarding the methods and weightings it has applied results in a MRP estimate that is unreasonable.

The main areas where Aurizon Network and Frontier consider an unreasonable judgement has been applied are identified below:

Relative weights applied to different MRP estimation methods

There are several issues related to the QCA's weighting scheme that all serve to reduce its MRP estimate of 7.0%.

First, the Siegel approach is unreliable and inappropriate and in Aurizon Network's view should not be given a material weight in estimating the MRP. Frontier has previously explained that the Siegel approach created by the QCA is not used by any other regulators, practitioners or academics because:

> it relies on unorthodox revisions to historical data
> the data required to implement the Siegel approach is not available, requiring strong assumptions to be made
> the Siegel paper assumes that high real government bonds returns in the 1980s are expected to continue, when precisely the opposite outcome has occurred.

In response to the criticisms of its approach raised by Aurizon Network (and its consultant, Frontier), the QCA acknowledges that shocks of short duration might tend to offset over a long time period, not all shocks, or sources of bias, are necessarily equal. It goes on to conclude that, because the high-inflation period persisted for so long (50 years), the historical data set may not be long enough to offset it. In response to this argument, Frontier argue that logically it simply cannot be that an event is simultaneously unexpected and so long-lasting that it dominates the historical data set.

The QCA's Market Parameters Decision indicated that the basis for consideration of the Siegel adjustment is that real returns on US government bonds were unusually low prior to 1990. However, Frontier presents data that shows there is no consistent pattern in real yields.[72] There is a period of negative real rates in the 1970s and a period of very high real rates in the 1980s. The Draft Decision concludes that such an extrapolation is sufficiently reliable. However, Aurizon Network and Frontier remain of the view that extrapolating a volatile series by thirty years beyond the end of that series is an unreliable approach.

Given these data availability issues, Aurizon Network maintains its position that the Siegel method should receive little, if any, weighting in the determination of a MRP estimate.

[72] Frontier (2018) Response to the UT5 draft decision on the market risk premium, March, pp.17-18.

Aurizon Network's second issue of concern regarding the QCA's change in relative weights in its Draft Decision, is the reduction in weight the QCA has previously placed on the Fernandez survey by taking into consideration survey results from a KPMG survey [for the first time].

The main outcome of this change is to reduce the size of the survey-based MRP estimate to 7.0% because the KPMG survey produces a lower most commonly accepted MRP of 6.0% compared to the 7.4% provided by the Fernandez survey.

The two main reasons for the QCA's change in weighting appear to be concerns about:

> the Fernandez 2017 sample size
> the MRP estimate of 7.4% from the Fernandez 2017 survey.

In Frontier's view, the sample size for the current Fernandez survey is not materially different from other years, such that it seems difficult to justify the lower weight afforded to its MRP estimate based on too small a sample size. In addition, the QCA appear to rely on Professor Lally's suggestion that the Fernandez 2017 figures may be the subject of a computation error, typo or transcription error to give less weight to results of this survey.

In Aurizon Network's view, there is always some uncertainty regarding the results of survey-based methods, including because of the lack of transparency about the composition of the sample. However, it seems somewhat unusual for the QCA to become concerned for the first time about the basis of the Fernandez survey when its estimate is producing a higher estimate than previously. It may equally be the case that the Fernandez 2017 survey results are consistent with other evidence of an increase in the MRP in the prevailing market conditions.

Aurizon Network considers this is another example where the QCA has taken an approach that produces a lower bound estimate of the relevant WACC parameter, in this case the MRP.

Ibbotson/Siegel estimation method

The QCA notes that it has attempted to test the Ibbotson/Siegel and Wright assumptions and concludes that there is no significant difference between the two in estimating the MRP.

However, it applies almost three times as much weight to the Ibbotson/Siegel approach as to the Wright approach in determining its MRP estimate. The Ibbotson and Siegel approaches receive a combined weight of 40% and the Wright approach receives only 15% weight. The effect of this weighting is to reduce the QCA's MRP estimate.

Imputation adjustment

Every MRP estimation method applied by the QCA has been adjusted to reflect the QCA's assumed value of imputation credits. That is, all other estimates are 'with-imputation' estimates of the MRP not 'without-imputation' estimates.

However, the QCA concludes that its survey method produces final MRP estimates of 6.6% without-imputation and 7.4% with-imputation. These two figures are then averaged (producing 7.0%) before being combined with the (exclusively) with-imputation estimates derived from the other MRP approaches.

Aurizon Network agrees with Frontier that a with-imputation estimate should be used for the following reasons: [73]

> the regulatory framework adopted by the QCA requires a with-imputation estimate of the MRP; and
> all other approaches that the QCA applies produce with-imputation estimates, so the survey estimate should be derived on the same basis for consistency.

[73] Frontier (2018) Response to the UT5 draft decision on the market risk premium, p.18.

The QCA's inconsistent application of its imputation adjustments means that the survey-based MRP estimate is 7.0% rather than 7.4%, dampening its weighted average MRP estimate.

Cornell DGM adjustments

In Frontier's previous report for Aurizon Network, it set out several discretionary adjustments that the QCA makes when constructing its Cornell DGM estimates of the MRP, explaining why it considers that those special adjustments are unwarranted. Both adjustments have the effect of materially reducing the Cornell estimate of the MRP.

In addition to those downward adjustments, Frontier note there are two more issues that arise in relation to the QCA's most recent Cornell DGM estimate. As previously noted, the QCA's Cornell estimate is derived relative to the 10-year government bond yield and then interpreted as an estimate of the 4-year MRP.

In its 2014 Market Parameters Decision, the QCA set its assumed long-run required return to 11.8%. This was computed by adding the QCA's assumed long-run MRP of 6% to an assumed long-run 10-year risk-free rate of 5.8%. In the Draft Decision, all other elements of the MRP calculation are updated to reflect the most recent data but the 5.8% figure has apparently not been updated. Frontier notes that if that figure is updated from October 2013 to the present, the result is a decline to 5.4%. This has the effect of materially reducing the "post 10 years" return, and consequently materially increasing the estimate of the required return over the first 10 years. In summary, the effect of freezing the 5.8% figure at its 2013 level (while all other aspects of the calculation are updated to reflect current data) is to materially reduce the MRP estimate.

5.6.5 Conclusion

Aurizon Network's fundamental concern is that whenever the QCA has made methodological choices in arriving at a point estimate for the MRP in the Draft Decision, the outcome is to choose an approach that results in a lower MRP estimate than what would have occurred if a reasonable available alternative approach and choice of input variable values had been chosen. This has introduced a systematic downward bias to its MRP estimate. This is exacerbated by the fact that, as indicated above, often the lower estimate has substantial shortcomings and arguably should not be considered at all.

The QCA's approach can be contrasted with that of IPART, which has adopted an approach of determining long term averages for WACC input parameter values, including the MRP, and exercising its discretion to adjust the MRP upwards within the established MRP range given Australia's historically low risk-free rates since the Global Financial Crisis.[74]

[74] Frontier (2016) The relationship between government bond yields and the market risk premium, January, pp.6-8.

5.7 Beta

Summary of Draft Decision 5.4

- Based on advice from its adviser, Incenta, the QCA has determined an asset beta of 0.42, which converts to an equity beta of 0.73 based on the Conine de-levering formula.
- The QCA's proposed asset beta relies on a sample of international electricity and water utility entities only.
- A key assumption of the QCA in choosing this sample is an assumption that the allocation of risk under the QCA's regulatory framework significantly reduces Aurizon Network's exposure to systematic market risk.
- The QCA also relies on an assumption of the strong competitiveness of Queensland metallurgical and thermal coal mines as reflected in their positions on respective international cost curves.

5.7.1 Summary of Aurizon Network's concerns with the QCA's beta analysis

Aurizon Network's DAU proposed an asset beta estimate of 0.55 for the UT5 regulatory period, based on a reasonable beta range of 0.55 to 0.65. The 0.55 beta estimate proposed in response to the Draft Decision and consistent with Aurizon Network's original submission, is underpinned by The Brattle Group's analysis that North American oil and gas pipelines provide the best asset beta comparators for Aurizon Network because of the comparability of their systematic risks.[75]

Table 41 summarises Aurizon Network's supporting arguments for its proposed asset beta estimate, the QCA's response to these arguments in its Draft Decision and Aurizon's response to the QCA.

Table 41 Identifying appropriate beta comparators for Aurizon Network

Aurizon's supporting arguments	QCA's rejection of Aurizon's proposal	Aurizon's response to QCA Draft Decision
The correct method for beta estimation is to identify industries with comparable systematic risks, including adjusting for the effects of the form of economic regulation that is applied.	The QCA's overriding consideration when selecting comparator firms for beta estimation appears to be the effect that economic regulation and market power have on Aurizon Network's systematic risk exposure.	The QCA gives little or no weight to relevant systematic risk factors such as industry characteristics, customer concentration and exposure to certain types of customers that affect asset beta. Rather, it over-relies on economic regulation and the existence of market power in assessing Aurizon Network's systematic risk exposure. This narrow analytical approach means that Incenta/QCA will always choose only electricity and water utilities as appropriate beta comparators for Aurizon Network, at the expense of using a broader range of entities with comparable systematic risk exposures.
North American oil and gas pipelines have relevant business characteristics that are directly comparable to the operation of a coal rail network. This is based on:	Despite physical similarities (e.g. relatively small number of customers compared with many customers of a regulated energy network), the systematic risk characteristics of Aurizon Network, its natural monopoly	All potential comparators considered by the QCA – regulated energy and water entities, toll roads, pipelines and railroads – likely have some useful information to assist determine Aurizon Network's beta estimate. Consequently,

[75] The Brattle Group (2016), Aurizon Network 2016 Access Undertaking, Aspects of the WACC, 30 November.

Aurizon's supporting arguments	QCA's rejection of Aurizon's proposal	Aurizon's response to QCA Draft Decision
• a single transported commodity based on a derived demand; • primarily industrial customer demand with high creditworthiness; • regulatory frameworks that include price and revenue controls; and • long term contracts with customer's subject to ship or pay obligations	status, its captured customer base and resilient demand, its regulatory framework and the non-responsiveness of its cash flows to GNP shocks, indicate that regulated energy and water utilities are better comparators than North American pipelines.	at least some weight should be afforded to that broader evidence, rather than assigning 100% weight to a single sub-sample Further, Aurizon Network has not proposed that it has the same asset beta as the railroad and gas pipeline comparator groups. Rather, an asset beta of 0.55 takes into consideration the differences in risk from the average industry asset betas of 0.59 and 0.98 for gas and rail industry classifications respectively.
North American pipelines provide services under cost-based regulation by the U.S. Federal Energy Regulatory Commission (FERC), the Canadian National Energy Board (NEB), and (in the case of intra-state pipelines) certain state regulatory bodies.	The QCA considers that Aurizon Network's regulatory framework differs substantially from the United States regulatory regime for gas and oil pipelines, which do not 'buffer' cash flows in the manner that the regulatory framework buffers the cash flows of Aurizon Network.	Aurizon Network acknowledges that there are differences in the regulatory ratemaking and the risk profiles between North American gas and oil pipelines that should be taken into account in beta analysis. However, both the QCA and Incenta have rejected the reasonableness of the entire North American pipelines group as a comparator largely based on the risk profile of oil pipelines.
Long-term capacity reservation contracts are a central feature of the North American pipeline industry, just as they are for Aurizon Network's below rail coal service. Further, long-term contracts associated with negotiated settlements serve to buffer regulatory cash flows	The QCA and Incenta rely on the scope for negotiated settlements (outside of cost-of-service regulation) and the issue of potential under-recovery of uncontracted capacity to conclude that the systematic risk of North American gas pipelines is not comparable to (i.e. it is higher than) that of Aurizon Network	Aurizon Network considers negotiated settlements have distinct advantages in lowering systematic risk as they allow for long term price and term certainty which supports efficient long-term finance. The net effect is to insulate earnings volatility over the business cycle and hence lower systematic risk. Negotiated settlements are also likely to not materially depart from cost of service regulation outcomes, particularly where as noted by the QCA, users have recourse to cost of service rates if the pipeline carrier unilaterally demands excessive prices.
Aurizon Network's regulatory framework provides for accelerated depreciation for new investment in order to mitigate the risk that the expanded capacity will not be required over the long term. However, the stranding risk mitigation measures are unlikely to be effective in protecting Aurizon Network against significant falls in volumes, particularly in those CQCN systems with a small number of users.	Incenta considers that the asset stranding risks are greater for North American gas pipelines than they are for coal carrying train services in the CQCN based on the 20-year depreciation profile applied under the QCA's regulatory framework.	Incenta does not assess the depreciation arrangements for North American gas pipelines in detail. Aurizon's analysis demonstrates that the FERC approach to depreciation of North American gas pipelines involves substantially less asset stranding risk than that facing Aurizon Network.
Aurizon Network and The Brattle Group did not assess toll roads as a potential beta comparator group for Aurizon	The QCA accepted Incenta's advice that toll roads provide an upper bound	Aurizon Network considers the inclusion of toll roads as an upper bound beta comparator is accompanied by a lack of

Aurizon's supporting arguments	QCA's rejection of Aurizon's proposal	Aurizon's response to QCA Draft Decision
Network because it was not considered to be reasonable or reliable.	estimate (of 0.50) for Aurizon Network's asset beta.	supporting evidence as to how toll road cash flows are exposed to the economic cycle. In contrast, based on its closer analysis, Aurizon Network considers toll roads have certain operating characteristics that result in lower systemic risk than that assumed by Incenta, including relevant concession agreement provisions which generally serve to 'buffer' cash flows, such as: • Non-compete and compensation clauses; • Toll indexation with deflation protection measures that limit downside exposures; and • Equity return caps which increase the licence or concession fee payments to the government owners. The systematic risk-mitigating effects of these factors indicates that toll roads provide an inappropriate upper bound asset beta estimate for Aurizon Network.

5.7.2 Over-emphasis on influence of regulation and market power on systematic risk

Aurizon Network has a fundamental concern about the way in which the QCA and its adviser, Incenta, have undertaken their beta analysis in the Draft Decision, such that the systematic risks facing Aurizon Network have been materially under-estimated.

Specifically, Aurizon Network's adviser, Frontier makes the important point that the QCA's overriding consideration when selecting comparator firms for the beta estimation task appears to predominantly be the influence of economic regulation and market power on Aurizon Network's exposure to systematic risk. This is demonstrated by the fact that the QCA has adopted a beta estimate for Aurizon Network based solely on a sample of regulated energy and water businesses. Incenta's reasons for recommending these firms as relevant comparators relies heavily on the extent to which they are either subject to cost-based regulation or enjoy significant market power.

Frontier notes that in conducting its first principles analysis, Incenta's overriding considerations were the extent to which the entities:[76]

> were subject to cost-based regulation that buffered their cash flows; and
> were likely to have market power.

Hence, Incenta's approach implies that the characteristics of the industry being regulated by the QCA do not matter in estimating beta. Rather, the only thing that matters is that the regulated entity is subject to cost-based regulation and, in the absence of this regulation, the entity would enjoy significant market power. This approach leads to the position that irrespective of the industry of the regulated entity, the best set of comparators would always be

[76] Frontier (2018) Comment on the UT5 draft decision on equity beta for Aurizon, March.

regulated energy and water entities, because these are the best examples of regulated monopolies that are readily available, to the exclusion of non-regulated listed entities operating in that industry.

Reflecting this presumption, little or no weight is given to other relevant factors (such as industry characteristics, customer concentration and exposure to certain types of customers) that affect asset beta and should therefore inform the selection of comparators. Aurizon Network agrees with Frontier that all the comparators considered by the QCA – regulated energy and water entities, toll roads, pipelines and railroads – likely have some useful information to assist determine Aurizon Network's beta estimate. Consequently, at least some weight should be afforded to that broader evidence, rather than assigning 100% weight to a single sub-sample.

Applying a more robust analytical framework to beta estimation

The starting point for the beta analysis of the QCA and Incenta is that it is necessary to find appropriate comparators based on perceived similarities in regulatory design and then make judgements on the relativity of strength of the so-called 'buffering' effects of regulation. This approach is underpinned by selective evaluation of empirical research on the effects of regulation on beta.

In this regard both Incenta and the QCA refer to the work of Rosenberg and Guy as demonstrating that the regulated industries have amongst the lowest betas after allowing for variations in firm-specific variables. However, Aurizon Network notes that this work makes no reference to economic regulation but merely observes, not surprisingly, that the Energy, Utilities industry classification have lower betas on average than other industries. Aurizon Network considers that it requires a large intellectual leap to conclude that the asset betas for an industry comprised of regulated essential services are appropriate comparators for a regulated service within another industry classification, such as coal export rail.

The true insight of the work of Rosenberg and Guy is the observation that:

> *because industry betas maintained these differences over the period studied it is appealing to incorporate an unconditional prediction of beta the assertion that the future beta for stocks in each industry will tend to be close to the historical average for that industry. Thus, the predicted beta for a stock will give some weight to the average historical beta for the industry.*

In practice, this suggests that the most robust starting point for asset beta estimation is the average industry beta, which should then be adjusted for firm specific characteristics within that industry. This is precisely the approach adopted by Aurizon Network and the Brattle Group in identifying the industry group most closely aligned to the key characteristics of Aurizon Network's network and the associated market environment and which have comparable risk characteristics.

To the extent that the form of regulation does influence asset betas then it should be reflected in adjustments from the industry average. In this regard, Aurizon Network maintains that the North American gas pipelines are the most closely aligned industry to the export rail infrastructure and that Aurizon Network has appropriately adjusted the asset beta to reflect differences in the respective regulatory environments.

While both the QCA and Incenta acknowledge that many empirical studies found 'no consistent differences in beta risk based on the form of regulation', it is then argued that these are of little relevance as:

> *These studies typically have tested for differences in beta caused by applying a different form of price control among utilities whose revenues are dominated by residential customers. Given that residential demand tends not to have a substantial pro-cyclical component, there is a low likelihood of finding material differentials in beta estimates in such circumstances.*

The reliance on this statement by the QCA is contradictory to its own empirical evidence in support of its cash flow buffering assumption regarding cost-based regulation. Most notably, the cited works of Davidson, Rangan and Rostenstein and that of Binder and Norton were tested against US electricity utilities, which is largely a function of residential demand. The QCA also cites Alexander and Irwin (1996) which suffers from largely the same problem.

Figure 20 Average Infrastructure Firm Betas, by country, sector and type of regulation

TABLE 1 AVERAGE INFRASTRUCTURE FIRM BETAS, BY COUNTRY, SECTOR, AND TYPE OF REGULATION, 1990–94

	Electricity		Gas		Combined gas and electricity		Water		Telecoms	
Country	Regulation	Beta	Regulation	Beta	Regulation	Beta	Regulation	Beta	Regulation	Beta
Canada	—	—	—	—	ROR	0.25	—	—	ROR	0.31
Japan	ROR	0.43	—	—	—	—	—	—	ROR	0.62
Sweden	—	—	—	—	—	—	—	—	Price cap	0.50
United Kingdom	—	—	Price cap	0.84	—	—	Price cap	0.67	Price cap	0.87
United States	ROR	0.30	ROR	0.20	ROR	0.25	ROR	0.29	Price cap	
									(AT&T)	0.72
									ROR (others)	0.52

— Not available or not applicable.

Note: The betas are asset betas that control for differences in debt-equity ratios between firms. ROR is rate-of-return regulation.

Source: Oxford Economic Research Associates, "Regulatory Structure and Risk: An International Comparison" (London, 1996).

Source: Alexander, I & Irwin T (1996) Price caps, rate of return regulation, and the cost of capital, Public Policy for the Private Sector, note 87, The World Bank Group, September.

Importantly, the study does not compare within-country differences for types of regulation and reaches different conclusions to the more comprehensive and recent empirical work of Gaggero (2012), which included transport sectors.

Professor Lally has commented on this issue as follows (bold text added):

> *Secondly, and notwithstanding the theoretical expectation that price-capped businesses would have higher asset betas than both ROR regulated and revenue-capped businesses,* ***there is no empirical study that provides a clear conclusion on the effect of regulation on beta****. In the face of this uncertainty, and until better evidence becomes available, I consider that one should keep an open mind. Accordingly, in respect of the New Zealand DPP (price-capped) [electricity] businesses, the best course of action would be to limit the comparators for them to either US ROR regulated or price capped businesses, depending upon which seems more appropriate, and I consider that the better comparators would be US price-capped businesses (including those also subject to earnings sharing in order to produce an adequate sample size), with the data used to estimate the betas being limited to the period in which the price capping prevailed.*

In summary, Aurizon Network's main concerns with the empirical evidence being relied on by the QCA is that it is highly selective and in some instances superseded by more recent research and does not include assessment of the impact of regulation on asset betas within the railway industry.

Aurizon Network did not, and does not, contend that 'a more favourable regulatory climate' has no influence on the firm's cost of capital. Rather, that the correct method for beta estimation is to identify comparable industries and adjust for the form of regulation, as opposed to using the form of regulation as a determinative factor in identifying the comparable industries. Further, Aurizon Network has not proposed that it has the same asset beta as the railroad and gas pipeline comparator groups. Rather, that an asset beta of 0.55 takes into consideration the differences in risk from the average industry asset betas of 0.59 and 0.98 for gas and rail industry classifications respectively.

Aurizon Network's specific concerns about the QCA's exclusion of North American gas pipelines from its beta analysis is discussed further below.

5.7.3 Critique of QCA's rejection of North American Pipeline Businesses as a beta comparator

Aurizon Network and its consultant, the Brattle Group, submitted that the North American pipelines are the most relevant comparators for determining Aurizon Network's asset beta on the basis this industry shared similar business and operational risks. Most notably the North American pipelines shared similar revenue and asset stranding risks associated with:

- a single transported commodity based on a derived demand;
- primarily industrial customer demand with high creditworthiness;
- regulatory frameworks which include price and revenue controls; and
- long term contracts with customer's subject to ship or pay obligations

The QCA dismisses this industry as an appropriate comparator group in reliance on the conclusions of Incenta that:

> *despite physical similarities (eg. relatively small number of customers compared with many customers of a regulated energy network), the systematic risk characteristics of Aurizon Network, its natural monopoly status, its captured customer base and resilient demand, its regulatory framework and the non-responsiveness of its cash flows to GNP shock indicate that regulated energy and water businesses are better comparators than North America.*

The QCA also considers that Aurizon Network's regulatory framework differs substantially from the United States regulatory regime for gas and oil pipelines, which do not buffer cash flows in the manner that the regulatory framework buffers the cash flows of Aurizon Network. This conclusion is reached without any objective evidence of the contracted revenue profile of these businesses and the underlying variability of their cost base even under these differences.

Aurizon Network acknowledges that there are differences in the regulatory ratemaking and the risk profiles between gas and oil pipelines, and these differences have been summarised by the QCA within the Draft Decision. However, both the QCA and Incenta have not sought to assess the relevance of gas or oil pipelines as an appropriate comparator but nevertheless have rejected the reasonableness of the entire North American pipelines as a comparator largely based as a comparator on the risk profile of oil pipelines.

Indeed, in advice it provided on determining asset betas for gas pipelines in NZ, Incenta appears to provide support for Aurizon Network's position on the appropriateness of North American pipelines as a beta comparator:[77]

> *US pipelines tend to be subject to more pipeline-on-pipeline competition than in New Zealand, but US pipelines also tend to have long term contracts and mostly fixed charges that would mute the impact of this factor.*
>
> *……*
>
> *However, a common feature to each [North American and NZ gas pipelines] is a much more substantial exposure to industrial and commercial customers than electricity distributors and thereby to the effects of economic cycles and material 'stranded asset risk'.*

Further, Incenta appear to acknowledge Aurizon Network's position on the beta implications of a large proportion of industrial customers:[78]

> *We find that the proportion of revenue from industrial and commercial customers for gas pipelines is substantially higher than the proportion of revenue from these customers to an electricity distribution business, and that the Commission's current [upward] asset beta differential for a gas pipeline can be*

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[77] Incenta (2016) Asset beta for gas pipelines in New Zealand, First State Investments, March, pp.15-16.

[78] Incenta (2016) Asset beta for gas pipelines in New Zealand, First State Investments, March, p.5.

achieved with a very plausible difference between the industrial and commercial customer and residential customer asset betas.

A focussed and robust examination of the North American gas pipelines should have resulted in a materially different conclusion. In this regard, Aurizon Network's response is primarily focussed on North American gas pipelines. The Brattle Report included the following sample:

> Boardwalk Pipeline Partners LP;
> EQT Midstream Partners. LP;
> Spectra Energy Partners LP; and
> TC Pipelines LP.

This approach is not dissimilar to that used by Incenta in its NZ gas pipeline asset beta advice noted above. In its NZ advice, Incenta expanded this sample to include the following two additional gas pipelines routinely included as comparators by FERC:[79]

> Williams Companies Inc; and
> Kinder Morgan Inc.

Aurizon Network notes that this expanded comparator group was proposed by Incenta as suitable for comparison with New Zealand gas distribution firms. Incenta characterises these businesses as 'regulated gas transmission' businesses and at no stage does it contend that they are not an appropriate comparator group due to the differences in the ratemaking framework. In fact, despite the higher asset beta for Williams Companies Inc, Incenta argue for their inclusion on this basis:

If this observation were removed from the sample, the differential to the CEG asset betas would fall slightly, but not sufficiently to change the inferences drawn. We do not favour removing this firm from the sample, however, given that WMB is used by FERC as a valid comparator when it assesses the risk of natural gas pipelines.

In rejecting the suitability of the North American gas pipelines as a comparator, Incenta and the QCA also rely on comments made by Aurizon Holdings Limited in relation to its regulated below-rail business that it:

> is a defensive, regulated asset supporting major export industry with a RAB of $5.6bn;
> has low volume and commodity price risk with socialisation and revenue protection, and
> has high quality customers with high quality mines.

However, these comments are replicated by firms with the gas pipeline comparator group as shown in the following comments from analyst presentations:

[79] Incenta (2016) Asset beta for gas pipelines in New Zealand, First State Investments, March, p.15.

Table 42 Gas Pipeline comparators

TCP Pipelines LP	Enbridge	Boardwalk Pipeline Partners
• Assets are highly contracted and our pipelines connect low-cost basins to large market areas at competitive transportation rates • Our customers are primarily large utilities, local distribution companies, major natural gas marketers and production companies • The majority of our cash flows are derived from long-term contracts underpinning our pipelines substantially all of our partnership cash flows were from long-term contracts where shippers pay us for transportation capacity regardless of the volume of gas they ship • The long-term contracted nature of our assets is further enhanced by the high quality, creditworthy nature of our customer base where just under 75 percent of our shippers are of investment grade status • Our pipelines operate under long-term FERC-approved rates. Northern Border's and Great Lakes' FERC-approved settlements were effective in January and November of 2013, respectively, and both are not required to file for new rates until 2018.	• Low-risk business model delivers highly predictable results in all market conditions • Minimal exposure to market prices, foreign exchange and interest rates • Minimal volume risk; strong, long-term contracts and billing structures • Minimal credit risk; majority of revenues underpinned by strong counterparties	• Approximately 90% of annual revenue is from fixed-fee, ship-or-pay contracts • Customers primarily rated investment grade • Weighted-average contract life of approximately 5 years for firm transportation agreements that are currently in service • Recently placed into service five projects that represent more than $500 million of capital expenditures and nearly 1.4 Bcf/d of capacity and are secured by ship-or pay agreements with a weighted-average contract life of approximately 17 years
Williams Partners LP		**Spectra Energy LP**
• High-quality fee-based revenue, drives peer-leading stability and WPZ Adjusted EBITDA growth • Fully contracted, fee-based expansion projects • Majority of Customers Have Strong Investment Grade Ratings • 64% of 2017–2019 growth capex is projected to be spent on regulated growth projects backed by long-term contracts with low credit risk customers that will also drive volumes on G&P systems		• Outstanding asset footprint provides a stable base business and a well-positioned platform for ongoing expansion • Predominantly natural gas focused with 95% fee based revenues and minimal volume risk • Revenues largely derived from strong credit quality customers (90%+ Investment Grade Counterparties) • 70+% of Canadian EBITDA from regulated, cost of service businesses.

Source: TC Pipelines Letter to Unit Holders (2016), Williams Analyst Day Presentation May 2017, Boardwa k Investor Day Presentation May 2017, Spectra Energy Partners 2016-18 Financial Plan and Outlook, 2 April 2016, Enbridge Investment Proposition (https://www.enbridge.com/reports/annual-review-2016/investment-proposition)

QCA's regulatory framework

The QCA summarises the regulatory ratemaking framework for gas pipelines on page 101 of the Draft Decision and recognises that:

> *Both firm and interruptible service rates are designed to recover a proportion of the fixed and variable costs associated with the two contract types. The total usage costs are divided by the projected annual firm and interruptible transport volumes, with the reservation costs divided by the contract demand volumes for firm services plus an imputed volume for interruptible service.*

The QCA also notes that there are instances where the pipeline carrier can deviate from costs of service rates through negotiated settlements. The QCA and Incenta rely on this feature of the regulatory framework and the issues of potential under-recovery of uncontracted capacity to conclude that the systematic risk of North American gas pipelines is not comparable to that of Aurizon Network. However, this conclusion is reached without adequate assessment of the design of negotiated settlements.

Aurizon Network and the Brattle Group argue that the long-term contracts associated with negotiated settlements serve to buffer the regulatory cash flows. While negotiated settlements may involve rates which differ from those that might be obtained from cost of service regulation, as noted by Incenta, it is the variability in those cash flows which are relevant to the firm's systematic risks. Aurizon observes that Incenta does not empirically evaluate the terms of negotiated settlement agreements to support its contention that negotiated settlements involve higher systematic risk than cost of service regulation. For example, the National Energy Board makes the following observations on negotiated settlements:[80]

> *Tolls on TransCanada increased almost 40% between 2010 and 2012 due to lower use of the Mainline to move gas from the WCSB to eastern markets. Tolls were restructured in 2013 and in 2015 and have returned to more stable levels.*
>
> *Under many negotiated settlements, if a pipeline earns too much or too little to cover costs in one year, the difference is made up the following year. Tolls on Westcoast increased in 2014 due to under-collection in 2013, while excess revenue in 2014 resulted in lower tolls in 2015.*

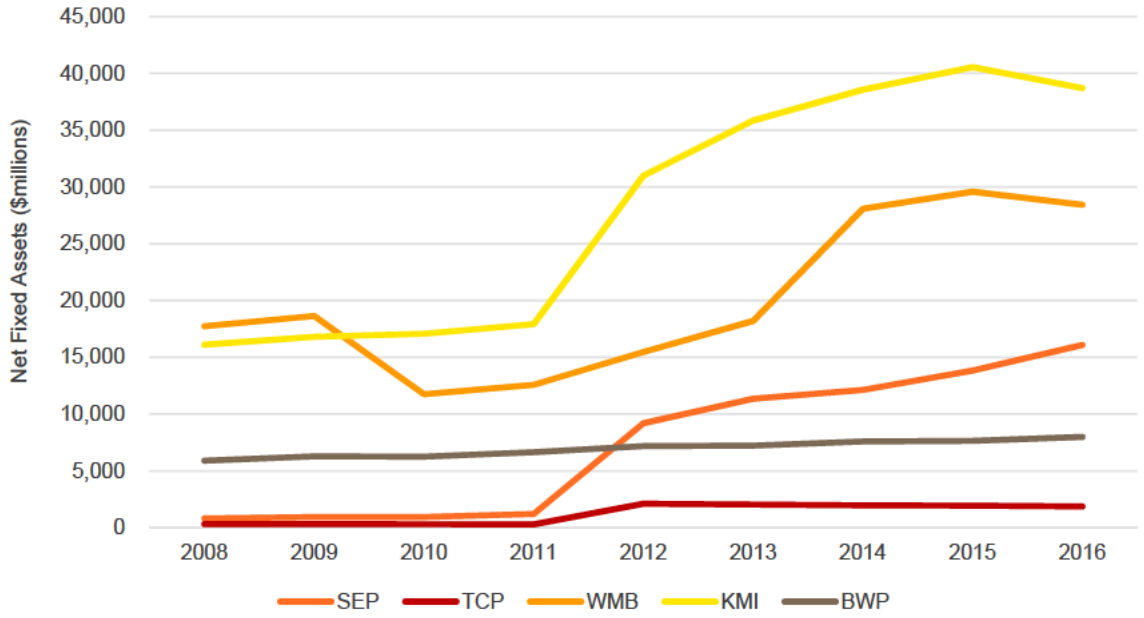
The negotiated settlements typically include some form of revenue adjustment process which may also take the form of end of period adjustments or adjustments to the capital base. Aurizon Network does not consider that the use of negotiated settlements diminishes the relevance of North American gas pipelines as an appropriate comparator industry.

On balance, negotiated settlements have distinct advantages in lowering systematic risk as they allow for long term price and term certainty which supports efficient long-term finance. The net effect is to insulate the firm's earnings volatility over the business cycle. Negotiated settlements are also likely to not materially depart from cost of service regulation outcomes, particularly where as noted by the QCA, users have recourse to cost of service rates if the pipeline carrier unilaterally demands excessive prices.

In relation to gas pipelines the QCA states that while cost of service rates are adopted in the regulatory regime these tariffs expose the gas pipeline transportation rates to the volume risk of the uncontracted portion of their capacity. However, there is little consideration in the Draft Decision as to the materiality of this risk and how those risks have been ameliorated by capacity expansions through underwritten contracts. Figure 21 shows the significant expansion in the value of net assets associated with the change in the US energy market. The rate of expansion in the gas market substantively mitigates the prospect of excess or uncontracted capacity and that expansions will be subject to ship or pay contracts with scale matched to that demand.

[80] National Energy Board (2016), Canada's Pipeline Transportation System 2016, August, p.23.

Figure 21 Net Fixed Assets of US Gas Transmission Pipelines



Source: Aurizon Network analysis of Bloomberg Data

In contrast to the contractual 'buffering' of earnings from short to medium term changes in throughput, Aurizon Network's regulatory frameworks provides no long-term price or risk certainty beyond the current regulatory period. Aurizon Network's shareholders are subject to the regulatory uncertainty as to how future regulatory decisions will influence systematic risk or how prices and revenues will respond to changes in market conditions. This arises because, unlike the prescriptive frameworks for energy and water, the rail access regime is not prescriptive with current arrangements not binding on subsequent regulatory determinations as all matters can be considered 'afresh' at each review.

The Draft Decision states that:

> *Aurizon Network's regulatory framework entails more than the application of revenue cap regulation. The regulatory compact contains various mechanisms that allocate risk among industry stakeholders and/or seek to mitigate the extent to which Aurizon Network is exposed to certain risks.*

Aurizon Network acknowledges that the regulatory framework includes various review measures but does not deem that these are of sufficient significance to render the differences to gas pipelines, as sufficient reason to warrant exclusion as a comparator group. In this regard the differences are likely to relate to recovery of operating costs:

- the operating costs for gas pipelines form a relatively minor component of the rate base. This is evident in the opex to asset ratio estimates provided by Incenta which shows ratios of 0.4 and 0.10 for pipelines and Aurizon Network respectively. Similar differences are observed in the operating leverage of 0.82 to 0.98 respectively.
- Operating and maintenance costs for gas pipelines are also reasonably predictable and closely aligned with industry benchmarks reflected in the FERC indexation indicating revenues are likely to move in line with costs over time.

Importantly, Incenta has not provided any empirical analysis or examples of the nature of asymmetric risks that North American gas pipelines are exposed with respect to costs they would not be able to transfer to customers within the negotiated settlement or the nature of the review provisions with those settlements.

There are also similarities in the price structure between Aurizon Network and gas pipelines. Incenta notes:

US gas pipelines operators are to apply the 'straight fixed variable' (SFV) method of tariff design. Under the SFV method, the tariff is comprised of two components, a fixed and variable rate: the fixed capacity component covers the investment costs and a variable component costs the marginal cost of transporting gas on the pipeline system. This reflects the fact that most of the costs to obtain firm capacity are fixed. These fixed costs are apportioned among pipeline users depending on the amount of each users reserved capacity.

The most relevant points in this statement is the recovery of the fixed costs through reservation charges and the marginal costs which are largely energy consumption associated with gas compression and transfer. The price structure ensures revenues are closely aligned to costs. Variable costs are also significantly curtailed as 'many pipelines retain fuel as a percentage of total receipts of gas, thus, pipeline's today often do not include fuel costs in their rates.'[81]

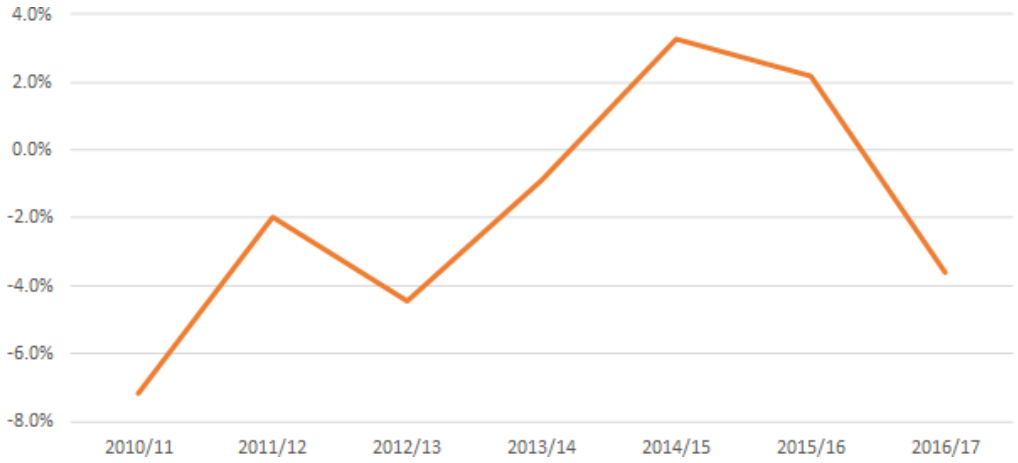
In contrast, Incenta states that:

Aurizon Network's pricing structure does not include fixed or variable components, its revenue is decoupled from performance in a single year through the revenue cap regulatory framework.

This statement is factually incorrect. Aurizon Network's pricing structure does have fixed and variable components. Further, Incenta does not address the issue that AT1 is a variable charge that sits outside of the revenue cap, or that Aurizon Network's actual costs may significantly depart from the maintenance cost index that is used to escalate that rate over each regulatory period. The maintenance cost index is an imperfect proxy of Aurizon Network's actual costs constructed from broader macro, non-rail specific industry, indexes.

Further, Incenta also appears to under-estimate the wide variability of Aurizon Network's reported annual revenues for the CQCN system as shown in the figure below.

Figure 22 Annual revenue under/over recoveries as a proportion of system allowable revenue



Source: Aurizon Network

Aurizon Network would also expect that contract based ship or pay pricing to involve lower systematic risk than forecast based pricing with regulatory lag of revenue adjustments. This arises because to the extent that demand is influenced by economic activity the earnings outcome in each year will also be variable. The figure above shows Aurizon Network's revenue cap adjustments as a percentage of each CQCN system's allowable revenue (i.e. the annual % of revenue over or under recovery).

[81] FERC (1999) Cost of Service Rates Manual, p.28.

Taking these factors into consideration, Aurizon Network also directs the QCA's attention to Incenta's submission to the Commerce Commission that:

> *US pipelines tend to be subject to a more pipeline-on-pipeline competition than in New Zealand, but US pipelines also tend to have long term contracts and mostly fixed charges that would mute the impact of this factor.*

In summary, when the comparator assessment is restricted to the North American gas pipelines there are significant similarities in the drivers of gas pipeline earnings and Aurizon Network earnings that are highly relevant to determining the asset beta for Aurizon Network.

Income Elasticity

The Draft Decision considers the relevant commentary on income elasticity with the QCA and Incenta declaring that it is income elasticity and not price elasticity of demand which is relevant to determining systematic risk. As noted by the Brattle Group the demand for retail natural gas distribution services has few substitutes and is highly inelastic. Similarly, the QCA notes Incenta's observation that the fracking revolution has driven down the price of oil and gas, causing a substitute of gas fired for coal fired power stations.

The Draft Decision iterates the views of Incenta that while Aurizon's customer base may be affected by the pro-cyclical nature of the coal market, the coal producer's income elasticity of demand for the CQCN services is, to a large extent, decoupled from the elasticity of demand for coal from the CQCN. However, the QCA then surmises that the income elasticity of demand for the North American pipeline services is not decoupled from that of the commodity being transported.

This comparison is inconsistent with the correct evaluation of income elasticity with respect to the primary drivers of demand. Except for hard coking coal in the Goonyella system, most demand within the CQCN is associated with demand-pull. That is, the primary driver of demand for rail transportation services are the final users of coal procurement decisions with respect to which global coal supply chain to obtain the supply from. In this case there is no functional difference between:

- the supply of gas via a transmission pipeline that may at the expiry of contracts be subject to displacement or substitution from gas supplied from another region; and
- the supply of coal via a rail transport corridor which is subject to the displacement of demand from coal sourced from other global supply chains.

Given the prevalence of ship or pay contracts within negotiated settlements for gas pipelines then the income elasticity of demand is also decoupled from the commodity being transported. Aurizon Network also notes Castalia's comments that the domestic United States gas market was insulated from the rest of the world and that as Queensland coal is largely exported, coal producers face much more diversified market risks. This supports the proposition that the medium to long term elasticity of demand for Queensland coal is subject to greater competition and substitution risks than demand for domestic gas by American utilities with long term supply agreements and effective vertical relationships through contracting.

In summary the income elasticity of demand for coal rail freight services in the CQCN and the income elasticity of demand for gas pipeline transmission is derived from the demand preferences of the end users of the commodity and to the extent there are available substitutes in the long term then there is no practical difference in the income elasticity of these services.

The regulatory framework also curtails Aurizon Network's ability to manage the income elasticity associated with the demand for coal as it is prevented from price differentiating between producers based on their resource endowments, locational and resource rents and the cost differential in mine production methods. However, pipeline owners may price differentiate to maximise demand for the services and exploit the price elasticity of its customers to reduce income elasticity of transmission services.

Importantly, the income elasticity of the demand for coal carrying train services in the short to medium term is highly dependent on the supply chain being fully contracted and capacity constrained. In circumstances where supply chain

substitution occurs and supply chain capacity materially exceeds demand then the service provider has no market power to protect earnings through take or pay contracts as these obligations can be avoided through reliance on either:

> under contracting for expected demand;
> obtaining services on a spot basis; or
> ceasing mining operations or sourcing coal from other mines.

Long Term Contracts

As shown in chapter 2, the demand for hard coking coal is concentrated within the DBCT and Hay Point geographical catchment which possess significant locational rents relative to other CQCN terminals. Therefore, in the event of a structural change in the demand for metallurgical coal, a large proportion of the regulatory asset base is subject to asset stranding risk. This asset stranding risk is fundamentally different to that faced by North American gas pipelines which are expected to have underwritten large and significant expansions prior to their investment through transport agreements.

The likelihood of a pipeline being subject to asset stranding from competition or having uncontracted capacity in a growing gas market is also low given the regulatory requirements for obtaining certification of a new interstate pipeline under Section 7(c) of the Natural Gas Act of 1938. A key requirement of the FERC approval process is avoiding inefficient duplication which typically also requires demonstration of substantial contracted long term firm contracts and that the demand could not be met through existing uncontracted capacity.[82]

Aurizon Network acknowledges that gas transmission pipelines are subject to competition for the market associated with expansions and development of new pipelines where large industrial energy consumers and utilities have the alternate regional supply options. Whilst this competition serves to constrain the exercise of market power, it has limited impact on the requirement to secure long term contracting to finance the expansion or investment. This diminishes the systematic risk of real options associated with expansions. This competition for the market is comparable to the market forces relevant to the negotiation for the expansion of the rail network where producers will only progress the development of their mining projects if the expansion occurs on reasonable terms. Large producers also typically have active interests in multiple resources and projects globally and therefore have some discretion on which coal supply chains they might seek to expand production.

As noted above, any exposure to uncontracted capacity requires the pipeline owner to possess uncontracted capacity and this risk can be avoided through matching pipeline capacity with expansion contracts as has occurred in Australia. Incremental capacity expansions are subsequently obtained through increased gas compression.

In summary, Aurizon Network considers the QCA and Incenta have:

> understated Aurizon Network's asset stranding risks for most of the financial value of the regulatory asset base; and
> overstated the asset stranding risks associated with North American gas pipelines.

The energy market dynamics has seen a considerable shift in the composition of the North American energy mix with an increased use of natural gas in both electricity generation and industrial consumption. The prospect of uncontracted capacity is incongruent with the current and projected demand for gas transmission services.

Aurizon Network also notes that Incenta considers that the stranding risks are greater for gas pipelines than they are for coal carrying train services in the CQCN based on the 20-year depreciation profile applied in the building blocks. However, Incenta does not assess the depreciation arrangements for gas pipelines. Under cost of service regulation, the costs are required to reflect those of the firm. Therefore, the accumulated depreciation of the rate base is subject to a straight-line reduction in the book value over an economic life of 20 to 25 years as per the

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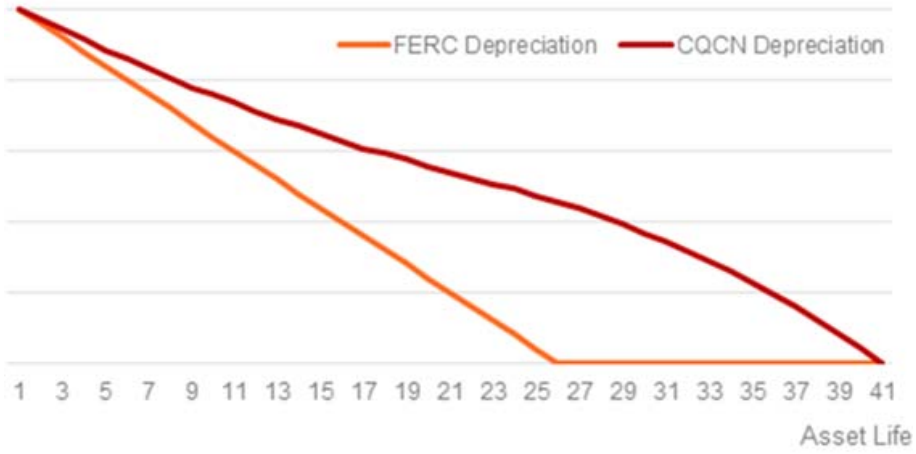
[82] FERC (1999), Statement of Policy on Certification of New Interstate Gas Pipelines, Docket No. PL99-3-000.

Federal Energy Regulatory Commission (**FERC**) cost of service rates manual. This is materially different to the investment recovery profile of the appreciating RAB and rolling 20-year depreciation as shown in the closing rate base under both methods. It is plainly clear that the FERC approach involves substantially less asset stranding risk where investment is underpinned by long term contracts representing a large proportion of the NPV of the original investment.

Figure 23 Indicative Asset Value Profiles under CQCN and FERC Regulation



Source: Aurizon Network Analysis

5.7.4 Use of toll roads as an asset beta comparator for Aurizon Network

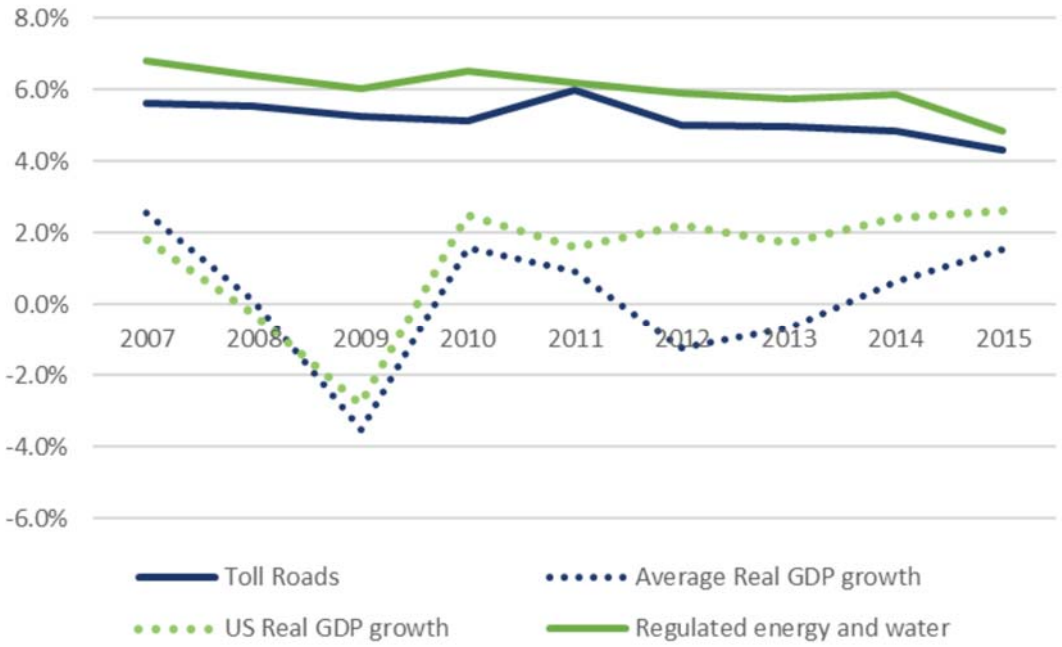
The Draft Decision accepts the position advocated by Incenta and the Queensland Resources Council (**QRC**) that Toll Roads represent an upper bound for Aurizon Network's asset beta and summarises this position as:

> *Incenta also considered toll road businesses to have higher systematic risk than Aurizon Network. Incenta said toll roads typically face a degree of competition from alternative routes and transport modes that apply competitive pressure on toll road operators. Noting that there are often alternatives to toll road services, and traffic can be sensitive to GDP shocks, Incenta also expects the demand of toll road customers to display some sensitivity to the economic cycle. Additionally, Incenta reported that toll roads generally bear full demand risk, and are not buffered by regulation in the same manner as Aurizon Network.*

Aurizon Network and the Brattle group did not assess Toll Roads as they do not have sufficient industry characteristics to Aurizon Network or North American gas pipelines to be considered a reasonable or reliable comparator group.

The inclusion of Toll Roads in the Incenta analysis is accompanied by a lack of supporting evidence as to how toll road earnings are exposed to the economic cycle. The only supporting material included to this effect is the following graph of toll roads and regulated energy and water ROA with real GDP growth.

Figure 24 ROA vs GDP growth for regulated energy/water and toll roads, 2007-2015



Source: Incenta (2017) Aurizon Network's WACC for the 2017DAU, A report prepared for the QCA, December, p. 46

The graph reveals no insight into the systematic risk of toll roads other than a long-term trend decline in ROA which is relatively invariant to the economic cycle and for the most part counter-cyclical. Incenta does not reconcile this observation with its own proposition that:

> *While traffic can be sensitive to GDP shocks, there is no cost-based regulatory mechanism to cushion such shocks, which leads us to expect higher systematic risk for toll roads relative to Aurizon Network.*

Aurizon Network contends that cost based regulation is unnecessary as 'revenue is closely matched to cost over time'. This is evident in the stability of the Transurban's EBITDA margin shown in Table 43.

Table 43 Transurban EBITDA Margins

	2013	2014	2015	2016	2017
Underlying proportional EBITDA margin	73.7%	75.8%	74.7%	73.8%	73.7%

Source: Transurban (2017) Transurban's Euro Medium Term Note Programme Documentation, ASX Release, 31 August, p. 99

In this regard, Toll-roads are subject to a regulatory framework through the construction of the relevant concession agreement which serves to 'buffer' cash flows through various mechanisms such as:

- Non-compete and compensation clauses;
- Toll indexation with deflation protection measures limit downside exposures; and
- Equity return caps which increase the licence or concession fee payments to the government owners.

Stable Cash Flow Earnings

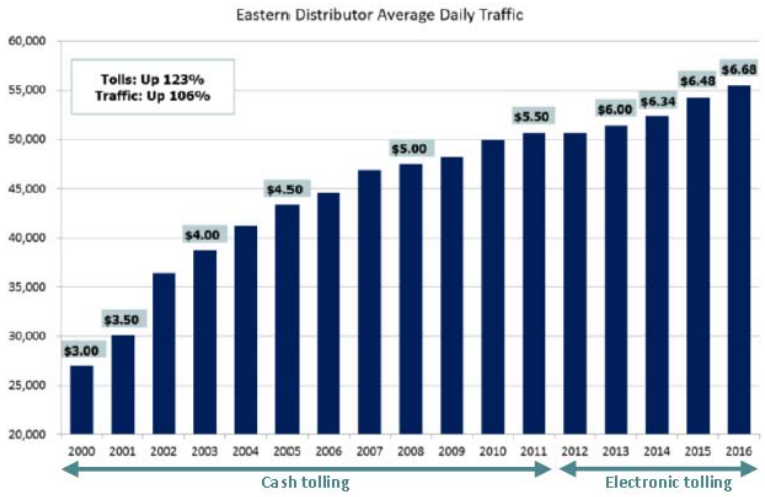
Incenta relies predominantly on the belief that toll roads face significant competition and therefore that toll road services are sensitive to GDP shocks (despite the relative invariance of ROA to the global financial crisis noted above).

Aurizon Network notes that the extent of any such competition is weak. Toll concessions are typically awarded over roads that are being constructed to alleviate congestion on alternate routes and often involve non-compete or

compensation clauses. This ensures that toll road operators are subject to low price elasticity. This is demonstrated in the following commentary by Magellan:

> *In most markets, the toll road is not the only road route available to motorists (although water crossings are an exception). Consequently, the toll road is not a monopoly. However, the toll road generally exists because alternative routes are much slower. The opening of a new toll road inevitably reduces traffic on the free alternative. But over time, the free alternative can become congested more quickly than the toll road. As that occurs, the toll road behaves more like a monopoly. Chart 1, for instance, shows how demand grew even as toll prices rose on a Sydney toll road between 2000 to 2016.*

Figure 25 Price elasticity of toll roads



Source: Magellan, Transurban.

https://au.magellangroup.com.au/insights/how-inflation-proof-is-infrastructure/

This relative inelasticity of demand is consistent with the characterisation of demand risk by Transurban who state:

> *We believe that urban toll roads like ours benefit from a significant proportion of non-discretionary travel, such as commuting to and from work, making traffic volumes less sensitive to overall economic conditions compared to travel on non-urban roads.* [83]

In this regard the primary driver of demand for toll roads is long term population growth and the associated growth in demand for road trips which causes little volatility in annual earnings.

Stable Cash Costs

Since the introduction of automatic tolling the cash operating costs of toll-roads have become more stable. As these roads are also typically constructed to a high standard and deep pavement depth there is also minimal road maintenance expenditure with major period maintenance being highly predictable and funded through a maintenance reserve.

Stable Long-term financing costs

In contrast to regulated assets which are subject to increased exposure to systematic risk at price resets (i.e. returns are adjusted to reflect the business conditions at that point in the business cycle) the financing arrangements for toll roads involve long dated debt maturities which are also typically hedged against interest rate risk. This is evident in the following debt maturity profile for Transurban:

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[83] Transurban (2017) Transurban's Euro Medium Term Note Programme Documentation, ASX Release, 31 August, p.149.

Figure 26 Transurban Debt Maturity Profile

Source: Transurban (2018) Results for six months ended 31 December 2017. ASX Release 13 February, p. 61

This debt profile, with the use of interest rate risk hedging, supports a 'through the cycle approach to cost of capital' whereby the cost of debt and the cost of equity is relatively stable and immunised from economic conditions. Debt financing is also a toll-road's most significant cost and would therefore be expected to be subject to inflation risk. However, the inflation indexation of toll charges mitigates this risk as noted in the following Transurban's commentary to analysts: [84]

> *We look at interest rate rises and the mitigants supporting those rises in 3 core streams relevant to Transurban. And the first is the physical hedges that we have in place. And obviously, the chart behind me illustrates the fact that almost 100% of our debt book has fixed interest rate hedges in place to basically protect ourselves in the event that there is rising interest rates over time. But supporting that, and very importantly supporting that, we've also done a very good job at extending the average tenor of our debt. So that's only as good as the length of the debt that we've got in the book as it stands, and you'll see again in the future slides, that we've taken that average tenor out to almost 10 years. And the third one is the natural hedge that we have in place on the basis that, as you know 101 economics, in the event that you've got rising interest rates, you would typically have rising inflation. So, with 90% or more of our debt, -- sorry, of our earnings stream being inflation-linked, we've got that natural hedge against rising interest rates as well.*

The combination of stable earnings, expenditure and financing produces highly stable EBITDA margins as observed by Incenta. The comparator toll-road group also own a portfolio of toll roads which would be expected to provide further diversification benefits and reduction in systematic risk relative to a coal system with industrial exposure to a single commodity.

Aurizon Network does not agree with the conclusions of Incenta and the QCA that Toll roads represent a cap on Aurizon Network's asset beta. Having regard to the risk assessment in Chapter 2, Aurizon Network considers there is a reasonable empirical basis for toll roads representing a floor for that beta estimate.

QCA's over-reliance on electricity and water utilities as beta comparators

In approving a WACC estimate for Aurizon Network's UT4, the QCA's consultant, Incenta, relied primarily on comparison with regulated energy and water utilities, reflecting its view that, because of the application of economic regulation, the risks associated with Aurizon Network's provision of below rail services most closely resembled those of regulated energy and water network businesses. The QCA's final approval of DBCT's 2015 Draft Access Undertaking in February 2017 re-affirmed this view as did the Draft Decision.

Like Aurizon Network, Australian energy networks are subject to highly prescriptive regulation, while Australian water networks are subject to varying types of regulation under different jurisdictional regimes. Aurizon Network recognises that economic regulation may impact the way in which market characteristics translate to commercial risk for these businesses.

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[84] Transurban (2017) Transurban Group Investor Day, 2 May, Transcript, p.7.

In particular, the QCA places heavy weight on Aurizon Network's revenue cap as a mechanism by which the regulatory framework reduces Aurizon Network's exposure to market risk. In contrast, Aurizon Network considers the revenue cap is only moderately effective in managing volume risk in the shorter term, with Aurizon Network continuing to bear short term volume exposure due to revenue deferrals for expansion projects and revenue cap exclusions (e.g. AT1).

However, more significantly, Aurizon Network considers the revenue cap is unlikely to be effective in dealing with major volume shortfalls within or across regulatory periods. This reflects the characteristics of Aurizon Network's highly concentrated market exposure – the market factors that would be likely to lead to a loss in demand (e.g., low coal prices reflecting low international demand) will impact on all users in a consistent way, that is, all users will be receiving lower coal prices with pressure being placed on their margins. In this context, in the face of significant volume loss, Aurizon Network considers there is genuine uncertainty as to whether remaining users will have the capacity to pay higher prices to recover revenue shortfalls.

Example

The implications associated with dependence on a small number of operating mines for the majority of the revenue recovery is evident in the following example which estimates the Moura tariff impacts associated with the loss of the major producing mine in that system.

Table 44 Moura Tariff Impacts from closure of most significant mine

	AT3 ($/ 000ntk)	AT4 ($ per nt)
Moura (FY18)	9.61	1.59
Moura (FY18) less major producing mine volumes	30.79	4.57

This concentration ratio increases the exposure to optimisation risks associated with the loss of one or more major producing mines in a single coal system.

Furthermore, the fragmentation of Aurizon Network's RAB across the CQCN, which has been increasingly compartmentalised to specific customers for pricing purposes, increases these risks. Assessment of this risk is critical as resulting prices for some systems are highly dependent on the volume decisions of a small number of users, with some CQCN systems having only two customers. This contrasts with Australian energy and water networks regulated under revenue caps, which are typically highly effective at mitigating volume risk given a single RAB/revenue cap is generally applied for core network services with no exclusions and servicing a large (by number) and highly diversified customer base.

Aurizon Network maintains its view that it faces materially higher volume and counterparty risks (leading to higher revenue risk) and much higher stranding risks than Australian energy and water networks including due to:

- minimal diversification of Aurizon Network's customer base, which is characterised by large industrial users with exposure to the same market segment;
- recovery of a relatively large proportion of capital costs from each of a small number of individual industrial customers;
- more reliance on customers who are price takers in their markets, with demand for their products subject to market conditions; and
- commercially viable bypass options for some services on the CQCN associated with end-user ability to obtain supply from competing export supply chains, exacerbated by RAB segmentation, increasing standing risk.

Aurizon Network reiterates its view that these risk factors are immaterial or non-existent for Australian energy and water networks providing essential services, including because of their large, highly diversified customer bases, which amongst other things significantly mitigates asset stranding risk.

Moreover, Aurizon Network remains of the view, that while the application of economic regulation may modify the impact of commercial/market risks facing regulated entities, including mechanisms like revenue caps, do not change the nature of the underlying commercial/market risks facing these entities. Aurizon Network again confirms that it considers these risks are fundamentally higher for the CQCN than for electricity and urban water networks.

As noted in section 5.5.4, the ultimate outcome of the QCA's comparative risk assessment is a WACC estimate for Aurizon Network in the Draft Decision that is lower than any other recent Australian regulatory decision, including for energy and water utilities. In other words, the QCA appears to consider that Aurizon Network's CQCN has lower systematic risk than any other Australian energy or water utility's network. Aurizon Network considers this outcome to be anomalous and not soundly based. Rather, it reflects little or no weight being given in the QCA's analysis to the risk factors noted above that affect asset beta and should therefore inform the selection of beta comparators, other than whether an entity is subject to cost-based regulation and would likely have significant market power in the absence of that regulation.

The different nature of risk factors facing Aurizon Network compared to electricity and water utilities was discussed further in Synergies' report submitted as part of Aurizon Network's 2017 DAU.[85]

Conclusion

The QCA's decision, based on Incenta's advice to exclude North American gas pipelines from the comparator group in estimating Aurizon Network's asset beta is unreasonable.

Aurizon Network maintains that the asset beta estimate of 0.55 proposed in the 2017 DAU, including North American gas pipelines in the comparator sample, appropriately reflects the systematic risks of CQCN and should be accepted by the QCA.

5.7.5 Inconsistency and unreasonableness in QCA's decision-making

Further to Aurizon Network's view that an asset beta of 0.55 is appropriate, we do not support the QCA's approach to beta calculation between regulatory periods. These concerns are based on the observed inconsistency in the QCA's judgement in determining such estimates.

The QCA has proposed to reduce Aurizon Network's asset beta estimate from 0.45 currently applying under UT4 to 0.42, which results in an equity beta estimate of 0.73 compared to 0.8.

However, the QCA's adviser, Incenta, has determined a point estimate of the asset beta that is identical to the UT4 case (0.42) and the upper bound of the range is now slightly higher (0.49 to 0.50). Hence, the QCA has reached different conclusions in the UT4 and UT5 Draft Decisions to reduce the asset beta estimate and hence Aurizon Network's allowable return on equity.

In exercising its judgement, the QCA has overlooked several key considerations cited in its UT4 decision in choosing an asset beta of 0.45 that is above the mean point estimate of 0.42, which were that:[86]

- an asset beta of 0.45 was well within the range of 0.35 to 0.49 identified by Incenta (also noting that this range is close to the 0.35 to 0.50 used in previous QCA decisions)
- caution should be shown in making significant changes to previous estimates;
- selecting an equity beta point estimate as precise as 0.73 may represent an attempt to be over-precise; and
- the QCA's intent to maintain an environment conducive to investment in new infrastructure, including user-funded investment.

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[85] Synergies Economic Consulting (2017) Risk Comparison Between Aurizon Network and Energy and Water Networks, September.

[86] QCA (2016) Aurizon Network 2014 Access Undertaking – Volume IV – Maximum Allowable Revenues, Final Decision, April, pp. 249-250.

Further, the QCA's UT4 decision stated that the best possible estimate of beta had been adopted given the available evidence at the time.

However, faced with essentially the same available evidence (and if anything, slightly higher systematic risk now prevailing), the QCA has reduced its asset (and equity) beta estimates. Hence, if the empirical evidence regarding Aurizon Network's asset beta has not fundamentally changed, Aurizon Network considers that the QCA has not adopted the best possible estimate of beta for the UT5 regulatory period. Further, no clear reasoning has been provided by the QCA in departing from the key considerations noted above.

The Draft Decision suggests that it is reasonable for the QCA to arrive at a different decision on the asset beta estimate because the methodology used by Incenta is different here to the approach adopted in the 2016 UT4. The QCA specifically points to Incenta considering monthly and weekly returns data when formulating its recommendations, whereas Incenta only considered monthly data when deriving its beta estimate for UT4. Frontier argue that this is not a sound reason to adopt a different beta estimate because the difference in approach highlighted by the QCA has no influence on the estimates Incenta recommended i.e. the point estimate (0.42) and the upper bounds for the UT4 and UT5 periods (0.49 and 0.50 respectively) are virtually identical.[87]

Of most concern to Aurizon Network, the QCA's proposed reduction in the allowed asset beta (and therefore the return on equity) suggests that maintaining an environment conducive to investment in new infrastructure in the CQCN, including through providing regulatory certainty, is now a less important consideration than at the time of the UT4 Final Decision. The QCA does not explain why this is the case. Moreover, Aurizon Network contends the proposed reduction is inconsistent with the objective of Part 5 of the QCA Act to promote efficient investment under third party access frameworks. Aurizon Network notes that the UT5 Draft Decision was released only 14 months after the UT4 Final Decision (October 2016) was released.

The QCA's approach which is based upon Incenta's advice of having regard to industry characteristics when estimating beta for Seqwater in its most recent decision[88] but not having regard to such characteristics when estimating an asset beta for Aurizon Network, is internally consistent and promotes regulatory uncertainty regarding the QCA's WACC determination processes. This further supports Aurizon Network's concerns about the effect of the Draft Decision has on investment incentives.

5.7.6 Failure to correct for low-beta bias

Aurizon Network's adviser, Frontier, notes that the QCA makes no attempt to correct for the well-accepted low beta bias issue. Frontier notes because the QCA's adviser, Incenta, was not asked to consider the low beta bias problem in its advice, its mean estimate of beta makes no correction for this problem.

The low beta bias refers to the tendency for the Sharpe-Lintner CAPM favoured by the QCA (and other Australian regulators) to systematically under-estimate the required return for stocks with an equity beta of less than one. Frontier notes this bias has been consistently reported over several decades and across many markets and is discussed in standard finance text books. Other Australian regulators, including the AER, and the Australian Competition Tribunal, have recognised this bias.

The Australian Competition Tribunal commented on the evidence of low beta bias as follows:[89]

> *It is, as the AER noted, correct that the three parameters for the SL CAPM – equity beta, risk free rate, and MRP – are recorded as giving a low beta bias for businesses with a beta (that is, the risk of the asset relative to the average asset) of less than 1.0, and that the Network Applicants are all within that group. There was also evidence that the low beta bias is exacerbated when it is combined with conditions of low*

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87 Frontier (2018) Comment on the UT5 draft decision on equity beta for Aurizon, March, p.7.

88 Incenta (2017) Estimating Seqwater's firm-specific WACC parameters for the 2018-21 bulk water price investigation, November, p.20.

89 PIAC-Ausgrid, 2016, Paragraph 731.

government bond rates and a high MRP. Those conditions were applicable at the time of the AER Final Decisions.

The Tribunal determined that there is no error in:

> recognising the existence of low-beta bias; and
> accounting for this bias by adjusting the equity beta estimate in the SL CAPM.

Frontier advises that the low-beta bias can be addressed by selecting a point estimate for beta that is greater than the raw mean estimate of beta derived through empirical application of the SL CAPM to returns data.

The AER makes such an adjustment to the equity beta used in the SL-CAPM in relation to this evidence. It does this by adopting a point estimate for its equity beta of 0.7 that is at the upper end of its range of 0.4 – 0.7.[90] The AER explains its approach as follows:[91]

We have chosen this point estimate because:

Theoretical principles underpinning the Black CAPM suggest the standard Sharpe–Lintner CAPM may underestimate the return on equity for firms with equity betas below 1.0. Although it is difficult to ascertain the magnitude (or materiality) of this effect, selecting a point estimate at the higher end of the range is an appropriate approach to allow for the theoretical differences between the Sharpe–Lintner CAPM and the Black CAPM.

The AER's approach can be contrasted with that of the QCA in the Draft Decision, which reduces Aurizon Network's current asset beta of 0.45 to 0.42, the mean (average) raw statistical energy/water asset beta estimated by its consultant, Incenta. Incenta's upper bound asset beta estimate was 0.50. It did not derive a lower bound estimate noting that such a task 'would entail considerable imprecision'.[92]

5.7.7 Conclusion

Aurizon Network maintains its position substantiated in supporting documentation for the 2017 DAU that an asset beta value of 0.55 is appropriate based on a US gas pipeline comparator group, rather than electricity and water utilities.[93] The reliance on the North American pipeline as the appropriate industry comparator group as the basis and adjusting for differences in risk profiles is supported by the common characteristics in business and operating risks identified in the following table.

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[90] The AER's equity beta range is based on an assumed gearing ratio of 60% compared to the 55% gearing assumption assumed by the QCA for Aurizon Network.

[91] AER (2013) Explanatory Statement, Rate of Return Guideline, December, p.86.

[92] Incenta (2017) Aurizon Network's WACC for the 2017 DAU, December, p.15.

[93] Brattle Group (2016), Aurizon Network 2016 Access Undertaking Aspects of the WACC, 30 November.

Table 45 Common characteristics in business and operating risks - Aurizon Network and North American Gas Pipelines

	Aurizon Network	North American Gas Pipelines
Nature of commodity	Single commodity exposure	Single commodity exposure
Nature of customers	Industrial and largely investment grade	Industrial/Commercial and largely investment grade
Nature of contract	Take or pay contracts on part of allowable revenue	Ship or pay contracts on reserved capacity. Exposure on uncontracted capacity but likely immaterial given growth in demand
Term of contract	Less than 10 years and reduced by strength of relinquishment fees	Relatively long term with increased coverage on expansions
Depreciation	Rolling 20 year depreciation with asset inflation indexation	Straight line depreciation on book value
Operating Costs	Material exposure to operating cost variations from approved allowances	Fixed and variable charges with marginal costs representing a low proportion of revenue
Long term demand risks	Subject to competition from competing supply chains. Low or negative growth in coal demand	Subject to competition from competing supply from alternate gas basins. Substantial and sustained growth in gas demand.
Duplication risks	Monopoly infrastructure with bypass risk on overhead power systems	Monopoly infrastructure with FERC approvals required for new and expanding pipelines.
Financing risks	Coal risk premium and exposure to change in market conditions from regulatory reset	Stable long term debt maturities
Rate review provisions	May submit a draft amending access undertaking to the regulator	May submit revised tolls and tariffs where the prices do not support price recovery

Further, Aurizon Network contends that no compelling evidence or justification has been presented by Incenta or the QCA to warrant a reduction in Aurizon Network's asset beta from its current level of 0.45 to 0.42 for the UT5 regulatory period. As a result, the QCA's argument in its UT4 Final Decision that it had not 'inappropriately set an asset beta at the higher end of a range',[94] but rather that its approach is always to choose the best estimate for each parameter remains highly relevant.

Aurizon Network shares Frontier's view that economic regulation and market power are relevant factors that affect systematic risk but they are not the only relevant factors. However, by using only regulated energy and water entities to estimate Aurizon Network's beta, the QCA places exclusive weight on these considerations. Effectively, the QCA has excessive confidence in its regulatory framework's ability to mitigate Aurizon Network's systematic risks.

[94] QCA (2016) Aurizon Network 2014 Access Undertaking – Volume IV – Maximum Allowable Revenue, Final Decision, April, p.267.

5.8 Capital structure and credit rating

Summary of Draft Decision 5.9

- The QCA's Draft Decision is to approve Aurizon Network's proposed 55% debt and 45% equity benchmark capital structure and a notional credit rating of BBB+.

5.8.1 Benchmark capital structure assumption

Aurizon Network supports the QCA's acceptance of Aurizon Network's proposed gearing ratio of 55% for the benchmark efficient entity.

5.8.2 Credit rating assumption

Aurizon Network supports the QCA's acceptance of Aurizon Network's proposed BBB+/Baa1 credit rating assumption in establishing the debt risk premium for the benchmark efficient entity. However, Aurizon Network considers the more significant practical issue is the Draft Decision's impact on the financeability tests used by credit rating agencies.

The key financeability metric is FFO/Debt (i.e. free cash flows available to service debt obligations). As demonstrated in section 5.1.2 of this chapter, based on the Draft Decision's approved allowable revenues, Aurizon Network will not satisfy the Moody's threshold and will only just meet the Standard and Poor's threshold for this metric in the last year of the undertaking. It is also a necessary requirement for Aurizon Network to maintain two credits ratings in order to efficiently obtain debt financing. Therefore, in order for the Draft Decision to provide a return on investment commensurate with efficient and necessary financing practices, the Draft Decision must satisfy both thresholds.

It is important to emphasise that, if unamended by the QCA in its Final Decision, the cash flow assumptions built into the Draft Decision would increase the market and transaction costs of debt raising and would increase Aurizon Network's borrowing costs to the upper end of the BBB+ range and close to BBB. Aurizon Network does not consider that this situation represents reasonable judgement by the QCA and calls into question the economic viability of the overall rate of return.

5.9 Return on debt

Summary of Draft Decision 5.6

- QCA has proposed a return on debt of 4.13%, based on a risk-free rate of 1.90% (assuming a 4-year term), debt risk premium of 2.0% and debt re-financing/interest rate swap costs of 0.233%.
- QCA has continued to use the 'on-the-day' approach in setting the cost of debt.
- The PwC method has been used to identify a corporate bond sample to estimate the debt risk premium.
- QCA rejected Aurizon Network's proposed currency swap cost and adjustments to account for existence of a coal premium.
- The debt risk premium will need to be reassessed for the relevant forward looking market averaging period.

5.9.1 Overall assessment of QCA's proposed DRP and rate of return estimate

The QCA's proposed DRP of 2.0% as at June 2017, based on BBB+ rated bond yields and an assumed benchmark term of debt issuance of 10 years, relies heavily on advice provided by Incenta applying the QCA's preferred PwC's

DRP estimation method.[95] The QCA pairs this DRP estimate, with its 4-year risk free rate estimate (discussed in section 5.4 above) and assumed debt re-financing/interest rate swap costs to determine its return on debt estimate of 4.13%.

Aurizon Network engaged Competition Economics Group (**CEG**) to review Incenta's analysis and recommendations. CEG developed its own bond samples based on Incenta's stated search criteria. CEG developed a somewhat different sample based on its interpretation of the search criteria. Incenta included A-bonds in its sample, while CEG excluded A-bonds. CEG's Debt Risk Premium (**DRP**) estimates were within ±5 basis points of Incenta's estimates.

CEG considers that Incenta's estimation methodology contains several shortcomings that the QCA should consider. Given these shortcomings, CEG considers that Incenta's best DRP estimate of 2.0% (as at June 2017) is unreasonable because it is based on a methodology that is unduly biased by the inclusion of A- bonds.

Applying its interpretation of PwC's DRP estimation method, CEG has developed an efficient range for the DRP based on BBB+ rated bonds of between 2.36% and 2.50% as at June 2017. Aurizon Network proposes that CEG's methodology should be applied to update these DRP estimates close to the time of release of the QCA's UT5 Final Decision and paired with an updated 10-year risk-free rate estimate.

Further, Aurizon Network proposes that choice of a point estimate within the efficient DRP range should be based on the size of Aurizon Network's approved MARs adopted for the UT5 regulatory period. Hence, if the QCA accepts Aurizon Network's proposed positions on all parameter values used to establish the MAR, then a lower bound estimate from the DRP range is appropriate because the relevant S&P and Moody's credit metric tests are satisfied. However, if the QCA rejects Aurizon Network's positions on any parameter values used to establish the MAR such that the relevant credit metric tests used by either major ratings agency are not satisfied, then a DRP estimate at the top of the range is appropriate.

Aurizon Network emphasises that the MARs approved in the Draft Decision for the UT5 regulatory period do not satisfy the FFO/Debt credit metric benchmarks of Moody's and S&P. Factually, the S&P metric is met (just) only in the last year of the regulatory period, but fails to do so in any of the first three years of the period. The higher Moody's threshold for the FFO/Debt metric is not satisfied in any year of the regulatory period. Hence, the QCA has set a benchmark credit rating (BBB+) to determine Aurizon Network's benchmark capital structure and gearing. However, the approved cashflows arising from the Draft Decision do not support maintenance of this credit rating. This indicates a major flaw in the QCA's regulatory model.

5.9.2 Assessing Incenta's sampling methodology

Give the low DRP estimate of 2.0% proposed by Incenta, Aurizon Network requested CEG to assess Incenta's sampling methodology.

Key aspects of Incenta's sampling method

PwC described the following three candidate econometric models to develop estimates of the DRP (Incenta estimates in parentheses):

- Pooled regression (1.80%) – simple linear regression on a bond sample that includes bonds with A-, BBB+, and BBB credit ratings;
- Single credit rating regression (2.50%) – simple linear regression on a bond sample that only includes BBB+ bonds; and
- Dummy intercept regression (2.00%) – linear regression on a bond sample that includes bonds with A-, BBB+, and BBB credit ratings, but with separate intercepts being estimated for each credit rating.

[95] Incenta (2017) Aurizon Network's WACC for the 2017 DAU, December.

Of the three candidate models, Incenta considered the dummy intercept regression to be the most appropriate. Specifically, Incenta rejected the pooled regression estimate on the basis that the sample contained relatively more bonds with A- credit ratings than each of the other two ratings, which would underestimate the DRP. Incenta also rejected the single credit rating regression because it considered the sample size of six BBB+ bonds to be "too small a sample size to deliver a reliable and robust empirical estimate of the BBB+ debt risk premium.

Incenta also performed cross-checks of its preferred estimates based on an expanded sample and using third party DRP estimates sourced from Bloomberg and RBA.

CEG's replication of Incenta's methodology

Incenta obtained a sample of 55 bonds issued in Australian Dollar (**AUD**) without options in the Australian market, compared to CEG's sample of 53 bonds. CEG excluded an A- rated callable bond issued by Australian Pacific Airports Melbourne Pty Ltd. and a BBB+ rated bond issued by Coca-Cola Amatil.

Incenta's expanded sample includes 145 bonds compared to CEG's sample of 153 bonds. CEG considers that there is no reason for the 9 additional bonds it identified to be excluded from the expanded sample.[96]

CEG's estimates tend to be within +/-5 basis points (bp) of Incenta's estimates.

5.9.3 Determining the best DRP estimate

CEG identified two key problems with the dummy variable estimates derived from Incenta's preferred approach:

- the dummy variable model assumes that the DRP curves have the same slope across all credit ratings. However, investigation of the sample of bonds used by Incenta clearly shows that this assumption is false; and
- the dummy variable estimates show that the difference between BBB and BBB+ DRPs is only 0.2 bp. Consequently, BBB and BBB+ bonds are, unlike A- bonds, prime candidates for pooling.

Given that BBB+ and BBB bonds have DRP slopes that differ materially from A- bonds, CEG considers that the dummy variable approach used by Incenta is not appropriate for this dataset.

Quantitative analysis of appropriate DRP sample

CEG notes that Incenta's dummy regression estimates imply that the BBB DRP is only 0.2 bp higher than the BBB+ DRP and that this difference is not statistically significant. This suggests that the BBB and BBB+ bonds can reasonably be pooled to arrive at an estimate of BBB+ yields. CEG considers this would have the material advantage of increasing the sample size without the need to include A- bonds, which clearly have a different intercept and slope to those of BBB and BBB+ bonds. In CEG's view, this is a critical finding and is based on the results of Incenta's own regression analysis.

CEG further notes that pooling BBB and BBB+ bonds will result in a sample of 23 bonds even when the sample is restricted to AUD bonds without options. This is only two less than the number of bonds which Incenta used in its regression to establish the estimate of DBCT's DRP.

CEG's analysis is underpinned by the generation of regression lines for each single credit rating regression (BBB, BBB+ and A-) as well as the regression line for the pooled BBB and BBB+ bond.

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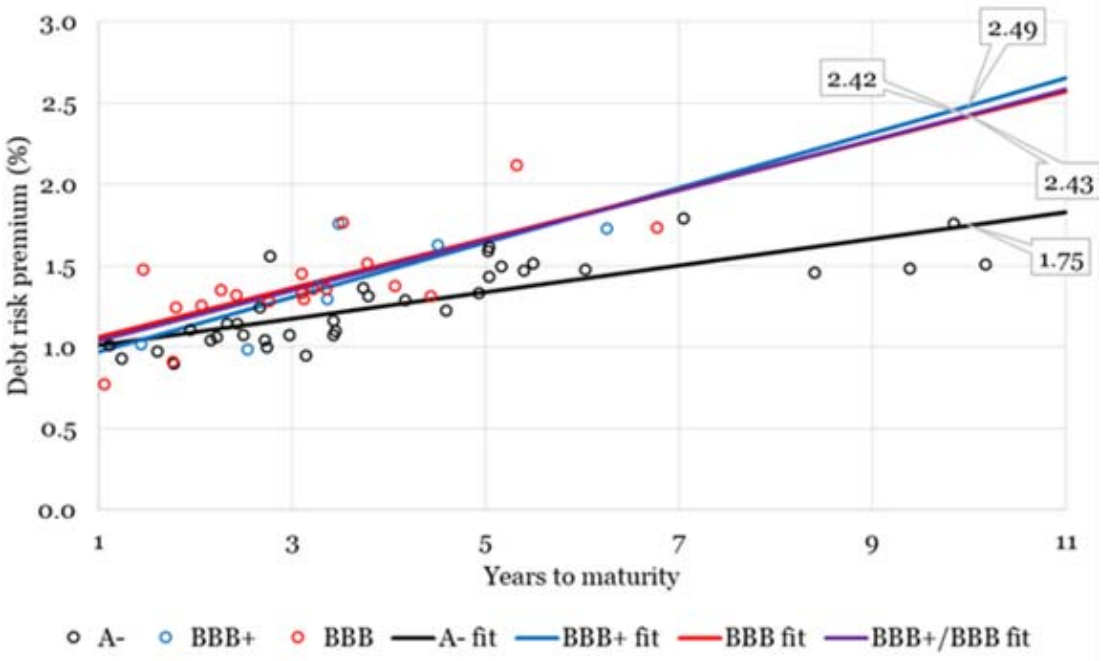
[96] CEG (2018) Debt Risk Premium Estimate for Aurizon Network, March, pp.7-8.

Figure 27 Credit rating regression



Source: CEG

CEG's figure indicates that the BBB and BBB+ regression lines are almost indistinguishable (consistent with Incenta's own finding of no statistically significant difference in intercept and there is also no statistically significant difference in slopes). When BBB and BBB+ bonds are pooled, the resulting 10-year DRP estimate is 2.43%. The pooled regression has a slope and intercept that is between the BBB and BBB+ slopes and intercepts.

In contrast, the slope of the A- regression in the figure is much flatter than the slope of the other regressions, with evidence that the slopes also diverge as the years to maturity for a bond falls. CEG advises that the A- slope is statistically significantly different to that of the pooled BBB and BBB+ regression. In its view, this clearly makes it inappropriate to use A- bonds in a pooled regression that assumes the same slope for all credit ratings. To do so will bias down the estimated BBB+ slope and, as a result, bias down the 10-year BBB+ estimate.

CEG make the important point that the main difference between credit ratings is not the intercept but, rather, the slope. When it performs a pooled regression with dummy variables for the slope (but not the intercept) it estimates that the DRP for a BBB+ rated bond is 2.32%. In CEG's view, if A- bonds are to be pooled with BBB and BBB+ bonds, it is critical that a dummy for slopes is used (not intercepts) because the main source of difference is the slopes of the credit rating regressions (not the intercepts).

Methodological basis of bond sample selection

CEG argues the pooling of BBB and BBB+ bonds represent a flexible response to the qualities that are observable in the bond data. In particular, it reflects a reasoned assessment of the trade-offs between the weaknesses of the various regression models. Specifically:

- the single BBB+ credit rating approach has too small a sample size to be reliable;
- the differences between BBB+ and A- bonds means that inclusion of the latter in the pooled regression and dummy variable approaches both suffer from material bias – reflecting both asymmetry in sample sizes across credit ratings and, in the case of the latter, the difference in slopes and levels;
- by contrast, the similarity between BBB+ and BBB bonds makes pooling of these bonds an appropriate response to the lack of BBB+ bonds.

CEG concludes that the inclusion of each credit rating notch in a pooled regression must be assessed on its own merits. To this end, its analysis shows that adding BBB bonds to BBB+ bonds will reduce variance without any likely impact on bias. However, the addition of A- bonds will strongly bias downward the 10-year DRP estimate.

CEG's proposed best DRP estimate

CEG states its best estimate of the BBB+ DRP in June 2017 is between 2.36% and 2.50%. The lower end of this range is based on a pooled regression of A- to BBB bonds with a dummy for slopes (not intercepts). The top end of this range is based on a pooled regression of non-financial AUD issued BBB and BBB+ bonds (excluding real estate bonds) with no dummy variables.

CEG also provides cross-checks of its DRP range using third party data sources. These cross-checks fall outside Incenta's best estimate of 2.0%, but two of the three cross-checks fall within CEG's range.

Given that there are 23 BBB and BBB+ AUD bonds without options in CEG's sample, it does not see any material advantages in terms of reduced variance from widening the sample size while there may potentially be material costs in terms of increased bias. Consequently, it does not include any foreign bonds in its sample. CEG also notes that a sample size of 23 compares to the sample of 25 bonds Incenta used in recommending a DRP for DBCT. Incenta did not include any foreign bonds in its DBCT sample either.[97]

5.9.4 Debt raising transaction costs

In the 2017 DAU, Aurizon Network proposed that a debt transaction allowance of 0.262% be incorporated in the return on debt estimate reflecting the following three groupings:

- debt-issuing costs
- cross-currency swap costs
- interest rate swap costs.

Aurizon Network also proposed a weighted average calculation based on both domestic debt issues and foreign debt issues, rather than a benchmark allowance derived with reference to domestic bond issues only. Aurizon Network noted that PwC, in its report to the QCA, reported that foreign bond issues attract 2.3 to 3.1 bps higher transaction costs. Therefore, Aurizon Network considered that the QCA's allowance of 0.108% understates its efficient debt-raising costs.

For the foreign debt issues, Aurizon Network uses cross-currency swaps to manage the exchange rate risk associated with foreign debt issues. Additionally, Aurizon Network also enters into interest rate swaps to convert the floating base rate to a 10-year fixed rate, to hedge the interest rate risk on the floating rate debt. Aurizon Network sought recognition of the additional transaction costs associated with these activities.

The Draft Decision rejected Aurizon Network's proposed cross-currency swaps primarily because Aurizon's estimate of its benchmark debt risk premium was based on the simple portfolio approach, rather than on the complex portfolio approach. In the QCA's view, the simple portfolio approach requires only an estimate of the debt risk premium of the benchmark term of debt for the benchmark credit rating for issues in the Australian corporate bond market rather than assumptions be required about the proportions of debt raised in domestic and international markets.

However, Aurizon Network's DAU proposed to derive its efficient debt raising and hedging costs allowance based on a one-third domestic debt and two-thirds foreign debt split. This reflects Aurizon's current view on the most efficient composition of its debt portfolio over the UT5 period having regard to its benchmark gearing level and domestic bond market constraints.

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[97] Incenta (2016) DBCT – debt risk premium to 31 May 2016, June.

Consequently, Aurizon Network maintains its position that cross-currency swap costs are incurred in managing its exchange rate risk associated with foreign debt issues and this approach is standard and efficient commercial practice. For these reasons, Aurizon Network considers that an efficient benchmark cross-currency swap cost should be estimated and form part of the approved debt raising transaction costs for the UT5 regulatory period.

5.9.5 Conclusion

CEG concludes that Incenta's DRP estimate of 2.0% is unreasonable because it is based on a methodology that, given the available data set, is unduly biased by the inclusion of A- bonds. Its best estimate of the DRP (excluding debt transaction costs) as at June 2017 is within the range of 2.36% to 2.50% (based on a risk-free rate of 1.90%) and paired with a 10-year risk-free rate estimate.

CEG's advice produces a best estimate of the nominal return on debt in the range of 4.40% to 4.66%, with Aurizon Network proposing an estimate of 4.60%, which is the 75th percentile of the range. The rationale is that in a low interest rate environment, a conservative approach should be adopted given the greater impact of regulatory risk on the return on equity. For example, a 20-basis point error has greater significance when the risk free-rate for equity is 2.76% compared to when it is over 4.0%.

Aurizon Network notes that its proposed DRP range and best estimate, will likely differ when the proposed new forward-looking averaging period for the 10-year risk-free rate and DRP is set close to the QCA's UT5 Final Decision.

5.10 Gamma

Summary of Draft Decision 5.7

- The QCA's proposed gamma estimate is 0.46, based on a utilisation rate of 0.55 and a distribution rate of 0.84.
- It has decided that the utilisation rate should be based on the reported utilisation of imputation credits rather than market value of these credits (as observed in dividend drop-off studies).
- It has used equity ownership estimation for the utilisation rate and the 20 largest ASX-listed entities for the distribution rate.

5.10.1 Overall assessment of QCA's proposed gamma value

The QCA rejects Aurizon Network's proposed use of market value studies to estimate the value of distributed imputation credits in the gamma calculation. Rather, the QCA relies solely on the equity ownership approach under the utilisation rate interpretation of gamma, notwithstanding the questionable reliability of this data.

Aurizon Network continues to contend that, within the QCA's regulatory framework, the value of distributed imputation credits should be a market value concept on the grounds that this reflects the value that equity investors place on the credits they receive and that this method is most likely to ensure that Aurizon Network's equity investors receive an appropriate equity return for the systematic risks that they bear. Frontier has commented on the potential for under-compensation in equity returns applying the utilisation rate interpretation of gamma as follows:[98]

> *The regulatory approach is to reduce the return that would otherwise be paid to shareholders by the regulator's estimate of the value of imputation credits. Consequently, the return that shareholders would otherwise receive should be reduced by the value of the imputation credits they receive. If the return to*

[98] Frontier (2016) Estimating gamma for regulatory purposes, November, p.2.

shareholders is reduced by the number of credits they receive or redeem, instead of the value of those credits, they will be left under-compensated.

However, recognising the QCA's rejection of this approach, Aurizon Network confines its comments in this response to the best available estimate of gamma using the QCA's preferred utilisation rate interpretation.

To estimate the distribution rate component of the gamma value, the QCA relies on a small unrepresentative sample of the largest 20 ASX-listed entities. Further, the QCA states that the characteristics of the benchmark efficient entity that is used as the basis for the determination of all WACC parameter values is irrelevant in estimating the proportion of imputation credits that are distributed.

5.10.2 Estimating the utilisation rate

There are two approaches that can be used to estimate gamma under the utilisation rate interpretation: the ATO tax statistics approach; and the equity ownership approach.

In its 2014 Market Parameters Decision, and in all subsequent decisions, the QCA has placed 100% weight on the equity ownership estimate and zero weight on the ATO tax statistics estimate. In this decision, the QCA questioned the reliability of the ATO tax statistics approach. However, Aurizon Network's adviser, Frontier, notes that the concerns relate to a data item, the quantum of credits distributed, that is not needed for the estimate of gamma. Rather, gamma is estimated from data items that are not subject to any concerns at all. Frontier's report proves this point, including support from Hathaway for his interpretation of the use of ATO statistics.[99] [100]

Aurizon Network sees no basis for the QCA to afford reliable and relevant evidence a zero weighting in its gamma calculation. Further, based on Frontier's advice that the QCA's concerns about the ATO tax statistics approach are not relevant, Aurizon Network considers the utilisation rate should be based solely on this data.

5.10.3 Estimating the distribution rate

The QCA's estimate of the distribution rate is set according to the Lally-20-firms approach. This estimate is constructed by selecting 20 large firms and, for each firm, estimating the total dividends paid over the 2000 to 2013 period, estimating the total credits attached to those dividends, and then estimating the increase in the firm's franking account balance over the period as an estimate of credits retained. The distribution rate is then estimated as the ratio of (a) credits distributed to (b) credits distributed plus credits retained.

Aurizon Network notes that the QCA's approach results in an estimate that is materially higher than other approaches. The QCA approach produces an estimate of 84%, revised to 83% in the Draft Decision to reflect more recent data. In contrast, Hathaway generates estimates that vary between 47% (if the franking account balance (FAB) approach is used) and 71% (if the dividend approach is used). That is, the maximum distribution rate that can be derived from the ATO data is 71% compared to the QCA's 84% estimate.

Further, Lally's approach implicitly assumes that all imputation credits are distributed by each of the 20 firms are immediately available for end shareholders to redeem. However, Frontier point out that this is an unreasonable assumption, such that Lally's approach establishes an upper bound for the distribution rate. No such issues arise with the use of ATO tax statistics because the distribution rate does not have to be estimated.[101]

Confusion regarding benchmark efficient entity

In its Draft Decision, the QCA responds to a previous submission from Frontier on the relevance of the 20 largest firms in determining the distribution rate. The QCA suggests that the relevant task is not to estimate the proportion of

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[99] Frontier (2018) Response to the UT5 draft decision on the value of dividend imputation tax credits (gamma), March, pp.4-7.

[100] Hathaway, N., (2013) 'Franking credits redemption ATO data 1988 to 2011', Capital Research, September.

[101] Frontier (2018) Response to the UT5 draft decision on the value of dividend imputation tax credits (gamma), March pp.11-13.

credits that could be distributed by the benchmark efficient firm, but that the relevant statistic is the distribution rate across the broad market.

However, this approach is opposite to the advice from the QCA's consultant, Professor Lally, and other regulators, including the AER, who consider that the distribution rate is a firm-specific parameter related to the benchmark efficient entity.

Aurizon Network seeks clarity from the QCA why it has adopted an approach to the distribution rate that is inconsistent with the advice of its consultant and the approach of other regulators. Aurizon Network also considers that the QCA should re-estimate the distribution rate for the benchmark regulated firm to ensure consistency with the approach it adopts to the determination of all other WACC parameter values.

Problem with the 20-firm sample

Based on Frontier's work, Aurizon Network notes a characteristic (the proportion of foreign income) that:

- differs materially between the QCA's 20-firms sample (which has 40% foreign revenue) and the benchmark regulated firm (which has no foreign revenue, by definition); and
- has a material effect on the amount of credits that can be distributed. A firm with foreign income will self-evidently have the capacity to distribute more credits than if that firm had domestic income only.

Consequently, Aurizon Network shares Frontier's view is that it would be inappropriate to rely on the 20-firm sample when estimating the distribution rate for the benchmark regulated firm. The problem is mitigated by expanding the sample to include all equity, as the effect is to reduce the impact of foreign income

In addition to these conceptual problems, Frontier has identified several issues in relation to the estimates used for the 20-firm sample that it considers should be resolved before material weight is placed on it.[102] These issues relate to:

- apparent inconsistencies relating to the year being reported for different businesses;
- potential exchange rate differences;
- change in definition of FAB;
- change in company structure over 14-year assessment period; and
- figures inconsistent with annual reports.

5.10.4 Concerns about QCA's estimate of equity ownership

The equity ownership approach provides an upper bound for the proportion of credits that are redeemed. Whereas the ATO data provides a direct estimate of the proportion of credits that are redeemed from the Tax Office, the equity ownership approach (at best) captures the effect of non-residents' inability to redeem tax credits, but no other reason why credits might not be redeemed. That is, if any credit is not redeemed for any reason other than it being distributed to a non-resident, the equity ownership estimate will be overstated. Consequently, it should be interpreted as an upper bound for the redemption rate.

One example is the 45-day rule, which prevents domestic resident investors from redeeming credits that are distributed to them unless they have owned the relevant shares for more than 45 days around the dividend event. The equity ownership estimate implicitly assumes that every credit distributed to every domestic investor will be immediately redeemed, so must be interpreted as an upper bound to the actual redemption rate.

Further, the Australian Bureau of Statistics (ABS) has expressed concerns about the quality of equity ownership data.

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[102] Frontier (2018) Response to the UT5 draft decision on the value of dividend imputation tax credits (gamma), March, p.13.

The AER reports that the average domestic ownership proportion over the relevant period is only 45% compared to the QCA's estimate of 55%. This discrepancy between the AER's and QCA's figures appears to arise due to the QCA's inclusion of equity owned by the public sector (e.g., equity in government owned corporations), which is entirely domestic. The inclusion of public sector equity creates an inappropriate upward bias in the equity ownership estimate. To address this distortion, Frontier recommends that the equity ownership estimate (to the extent that it is used at all) should be compiled after excluding public sector entities, as the AER has done. This produces an estimate of approximately 45% over the last 4-5 years.

5.10.5 Recent Australian regulatory precedent on gamma value

Aurizon Network recognises that determining an appropriate value for gamma has been contentious in Australian economic regulation over the past decade.

While there is a well-accepted approach to setting a gamma value, based on (1) estimation of a distribution rate (representing the proportion of imputation credits created and distributed to shareholders) and (2) estimation of the value of these distributed imputation credits (also referred to as theta or the utilisation rate). In contrast, a well-accepted approach to determining a value for the latter has yet to emerge, with widely varying estimates adopted.

Given the differences between Australian regulators on an appropriate gamma value, Aurizon Network considers that the significant level of debate and scrutiny of the gamma estimation process and values that has occurred in recent years under the Australian national energy framework is relevant to the QCA's assessment of Aurizon Network's proposed gamma value.

In 2013, the AER completed its review of its WACC guidelines, resulting in the replacement of the Statement of Regulatory Intent with the Rate of Return Guideline. In that review, the AER applied a gamma value of 0.5, which was revised down to 0.4 in its subsequent revenue determinations using updated data. This hinged on a review of the 'conceptual definition' of theta and a dismissal of market value studies as being of any relevance in valuing theta.

The AER's approach to gamma was one of the matters successfully appealed by the NSW and ACT electricity and gas network businesses in their last revenue determination processes. The Australian Competition Tribunal concluded that the AER's gamma was too high and that the upper bound for the value of theta should be no more than 0.43, which reflects the utilisation rates from ATO tax statistics (which would equate to a gamma of 0.3 at a distribution rate of 0.7). It highlighted that the AER's equity ownership approach (also favoured by the QCA and as discussed above) arrives at a value that is above this upper bound and therefore "the equity ownership approach overstates the redemption rate.[103]

The Tribunal remitted the decision back to the AER to remake with guidance implying that gamma should be set at a value no higher than 0.3 based on utilisation rates taken from ATO tax statistics. The AER subsequently made an application for judicial review of this decision to the Federal Court. The Full Federal Court upheld the AER's judicial review of the Tribunal's decision on the value of imputation credits.

Another Tribunal decision regarding SA Power Networks subsequently accepted the AER's gamma value of 0.4. This Tribunal concluded that there is no generally accepted theoretical model for explaining the valuation of imputation credits and that the AER had reasonably considered the range of alternative approaches (and diversity of expert views) and made a judgement call. For this reason, the AER did not err in giving greater weight to the utilisation approach rather than market value approach in estimating the value of imputation credits.

The AER has recently commenced a scheduled review of its Rate of Return Guideline. However, Aurizon Network considers the AER is likely to continue with its equity ownership approach in determining gamma following the Full Federal Court's judgment which, based on data as at 2015, suggests a gamma value of 0.4.

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[103] Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, para.1093.

Given the extensive debate on gamma that has occurred under the national energy framework, Aurizon Network considers that the Federal Court-endorsed value of 0.4 has been strongly tested and should be given some weight by the QCA. While Aurizon Network remains of the view that a gamma value of 0.25 is the best estimate, it considers that a value of 0.4 provides an appropriate upper bound.

5.10.6 Conclusion

Aurizon Network maintains its position that a gamma value of 0.25 is appropriate based on a market value concept of imputation credits.

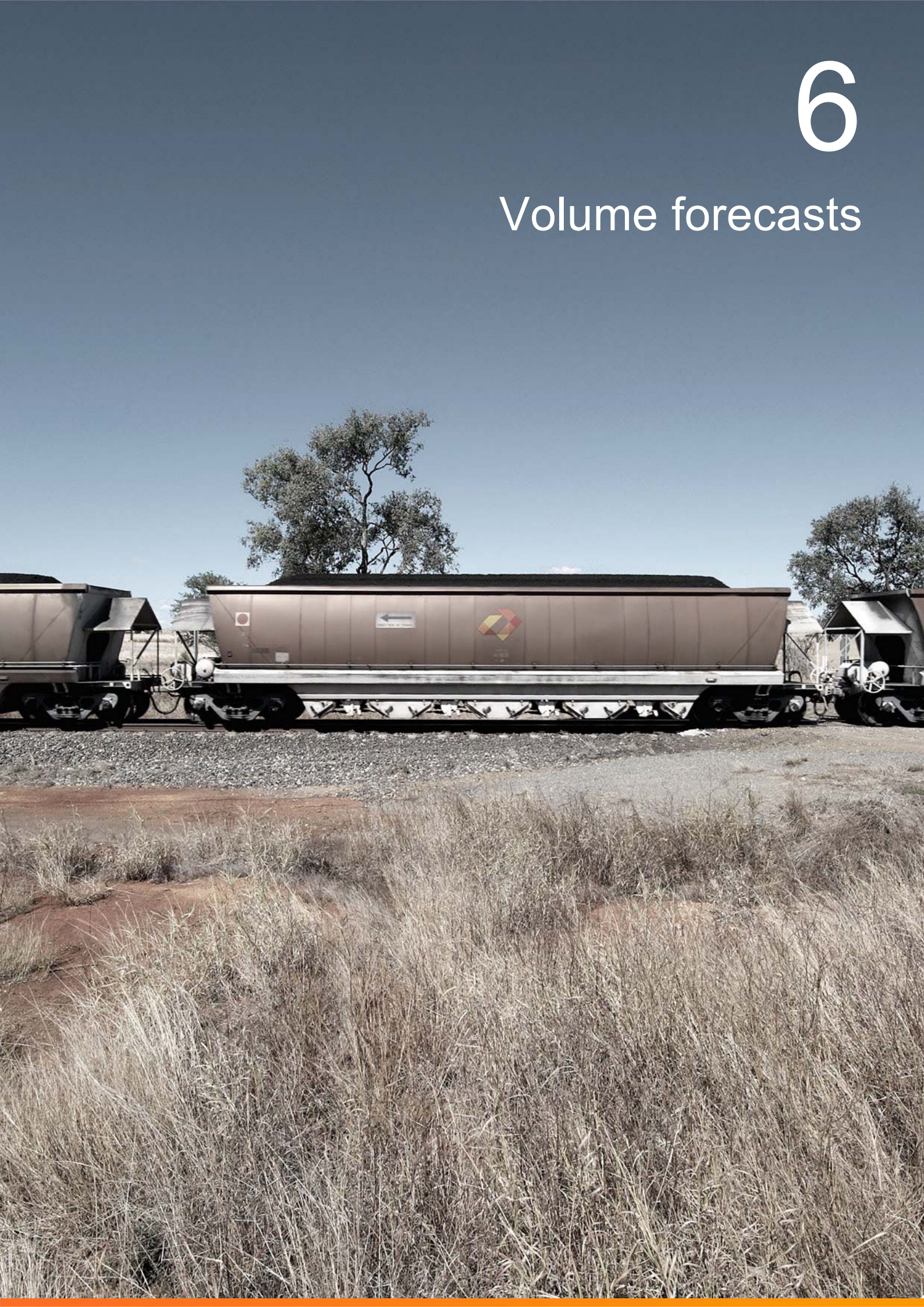
However, recognising the QCA's preference for a utilisation rather than market value interpretation of gamma, Aurizon Network proposes ATO taxation statistics should be used in the gamma calculation. Using this estimation approach, Aurizon Network proposes a revised gamma value of 0.31 based on a distribution rate of 0.71 (using the maximum distribution rate that can be derived from the ATO tax data) and a utilisation rate of 0.45 (using the equity ownership estimate of 45% which assumes removal of public sector equity from the QCA's current calculation).

If the QCA decides not to address the concerns Aurizon Network and its adviser, Frontier, have raised about its existing gamma methodology, an equity ownership estimate of 0.45 excluding public sector equity should be used (not a 0.55 estimate inclusive of public sector equity). The resulting estimate of gamma would then be 0.37, reflecting a distribution rate of 0.83 and utilisation rate of 0.45.

Finally, Aurizon Network considers that a gamma value of 0.4 provides an appropriate upper bound estimate. For the reasons summarised in section 5.10.5, this value has been subject to the most scrutiny in an Australian regulatory context, including testing before the Australian Competition Tribunal and Federal Court.

6

Volume forecasts



6. Forecast Volumes

This chapter details the proposed volume forecasts for the UT5 regulatory period.

Aurizon Network recognises that the determination of the forecast volumes should be made by the QCA. However, Aurizon Network also notes the importance of the volume forecasts on all stakeholders including:

> the setting of reference tariffs applicable to coal carrying train services;
> Take or Pay trigger tests and calculations;
> determining the scope of the CQCN maintenance programme and operating costs, both of which vary in relation to volume; and
> determining the allocation of system wide costs between the coal systems.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 46 QCA Draft Decision and Aurizon Network's Response – volume forecasts – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed volume forecasts for the central Queensland coal network based on the forecasts provided in Table 44	6.1	Agree with amendment

6.1 Overview - Aurizon Network's Position

We note that the Draft Decision is to not accept Aurizon Network's proposed volume forecasts (see section 6.3 of the Draft Decision). The QCA has proposed to agree with the volumes forecasts proposed by their consultant, Resource Management International (RMI).

Although Aurizon agrees with RMI concerning the relative quality of coal in Central Queensland and the long-term opportunity for export growth, the seaborne volume projections provided by RMI appear in excess of alternative market forecasts. This aggressive demand profile, combined with an assumed underperformance from competing export nations is likely to have driven the Central Queensland Coal Network volume projection. The individual mine forecasts contain several anomalies or contain volumes that are optimistic for mines returning from care and maintenance or expanding operations.

Aurizon Network also notes that FY2018 volumes are tracking materially below the level required to achieve the QCA FY2018 Draft Decision net tonnes of 236.4 Mt. To scale this, net tonnes would need to be over 9% higher each month than any previous record volumes from March to June to achieve the Draft Decision forecast.

We support the Draft Decision, but with some amendments. Our reasons and further supporting information of our position is contained within the response to the individual Draft Decision below (see section 6.1.3).

6.1.1 Aurizon's Network's submission (2017 DAU)

A breakdown of Aurizon Network's volume forecasts submission is presented in the following table for each year of the UT5 regulatory period.

Table 47 Aurizon Network – 2017 DAU (UT5) – volume forecasts proposal by year (nTm)

System	FY2018	FY2019	FY2020	FY2021
Blackwater	69.90	71.28	71.28	71.28
Goonyella	120.26	120.26	120.26	120.26
Moura	10.18	10.18	10.18	10.18
Newlands	9.21	9.21	9.21	9.21
GAPE	16.16	17.51	17.51	17.51
Total	**225.71**	**228.44**	**228.44**	**228.44**

Source: Aurizon Network, UT5 submission to the QCA, 2016, p.123.

6.1.2 QCA Draft Decision

Summary of Draft Decision 6.1

- The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed volume forecasts for the central Queensland coal network based on the forecasts provided in Table 44.

We note the Draft Decision is to not accept Aurizon Network's proposed volumes forecasts.

The QCA has proposed to agree with the volumes forecasts by their consultant, Resource Management International (RMI). The QCA stated that "the volume forecasts provided by RMI represent a balanced view of the most likely volumes over the regulatory period."

The QCA has relied on market outlook forecasts by their consultant RMI and the RMI individual mine forecasts including the assumptions relating to mines returning from care and maintenance or expanding operations.

A breakdown of Draft Decision 6.1 is presented in the table below.

Table 48 QCA Draft Decision on Aurizon Network - volume forecasts proposal by year (nTm)

System	FY2018	FY2019	FY2020	FY2021
Blackwater	55.88	57.08	58.08	58.08
Goonyella	128.25	131.95	133.75	133.75
Moura	14.30	17.50	18.50	18.50
Newlands	11.70	14.20	14.20	14.20
GAPE	16.15	19.15	24.15	29.15
WIRP	10.10	10.30	10.60	10.60
Total	**236.38**	**250.18**	**259.28**	**264.28**

Source: QCA (2017) Draft Decision, p.177.

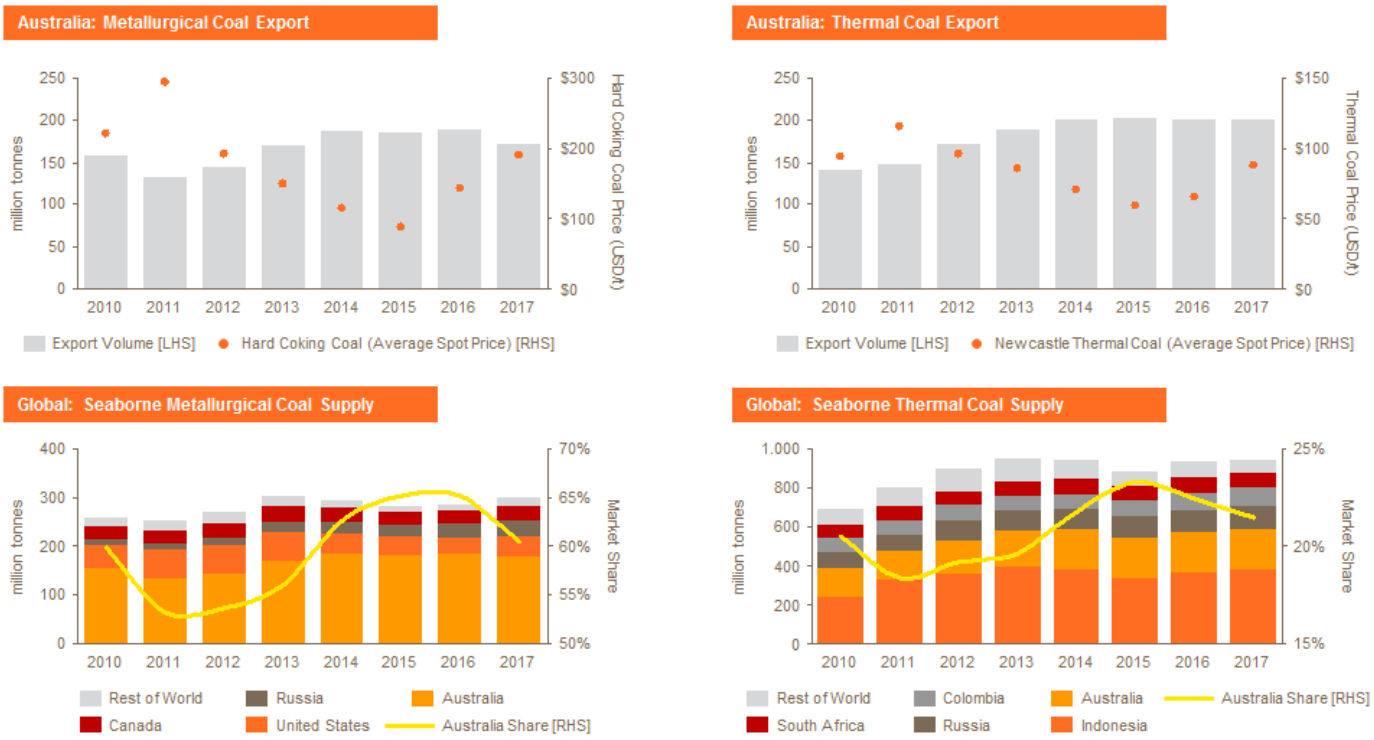
Note: Volumes for 2 mines have been reallocated by Aurizon Network in above table to the system of origin for those mine, the QCA Draft Decision included them within the system of destination. Allocation by system of origin is consistent with previous reported actual volumes and the Aurizon Network submission. There is no impact to the all systems total.

6.1.3 Aurizon Network's assessment of QCA Draft Decision

Market Analysis

Aurizon Network agrees with RMI concerning the relative quality of coal supply in Central Queensland and the long-term opportunity for export growth, in particular the resilience of Australian seaborne export volume (compared to competing export nations) in periods of subdued coal prices. This can be seen in Figure 28 below which show Australian coal volumes holding firm during periods of relatively low coal prices.

Figure 28 Metallurgical coal and thermal coal seaborne markets



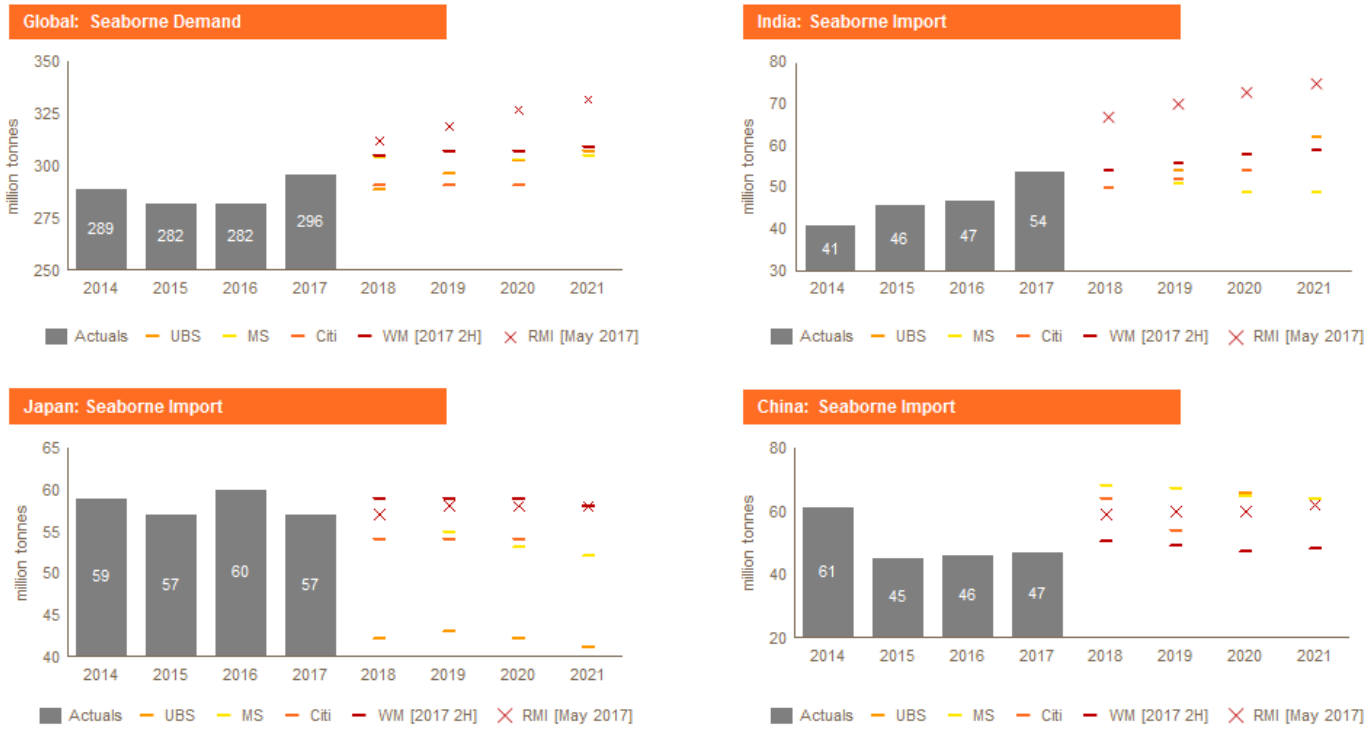
Source: Australian Bureau of Statistics, Wood Mackenzie Global Coal Markets (2017 2H), Platts, Intercontinental Exchange

This performance has been driven by the quality of coal and cost-effective extraction/transport. However, the seaborne volume projections provided by RMI appear in excess of alternative market forecasters.[104]

The seaborne metallurgical coal demand view provided by RMI shows the global traded market increasing to 332mt in 2021 which is the highest volume forecast for this year when measured against a portfolio of forecast providers. This outlook is primarily driven by growth from India with this assumption falling outside of market expectations, as can be seen in Figure 29.

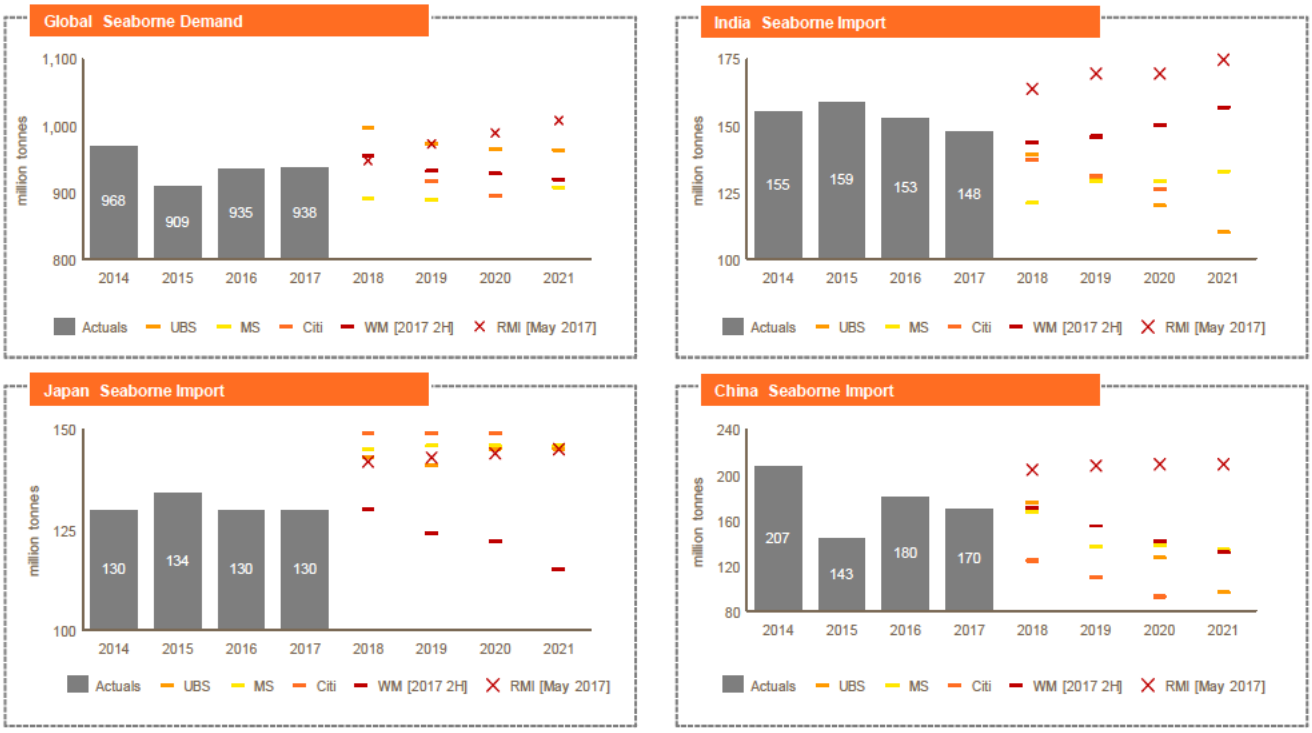
[104] Alternate forecast providers: Wood Mackenzie, Morgan Stanley, UBS, Citi.

Figure 29 Metallurgical coal forecast comparison



Source: Wood Mackenzie Global Coal Tool (2017 2H), UBS Coal - Reaping the Windfall (December 2017), MS Price Deck Q1 2018 (December 2017), Citi 2018 Commodity Outlook (December 2017). Actuals sourced from Wood Mackenzie

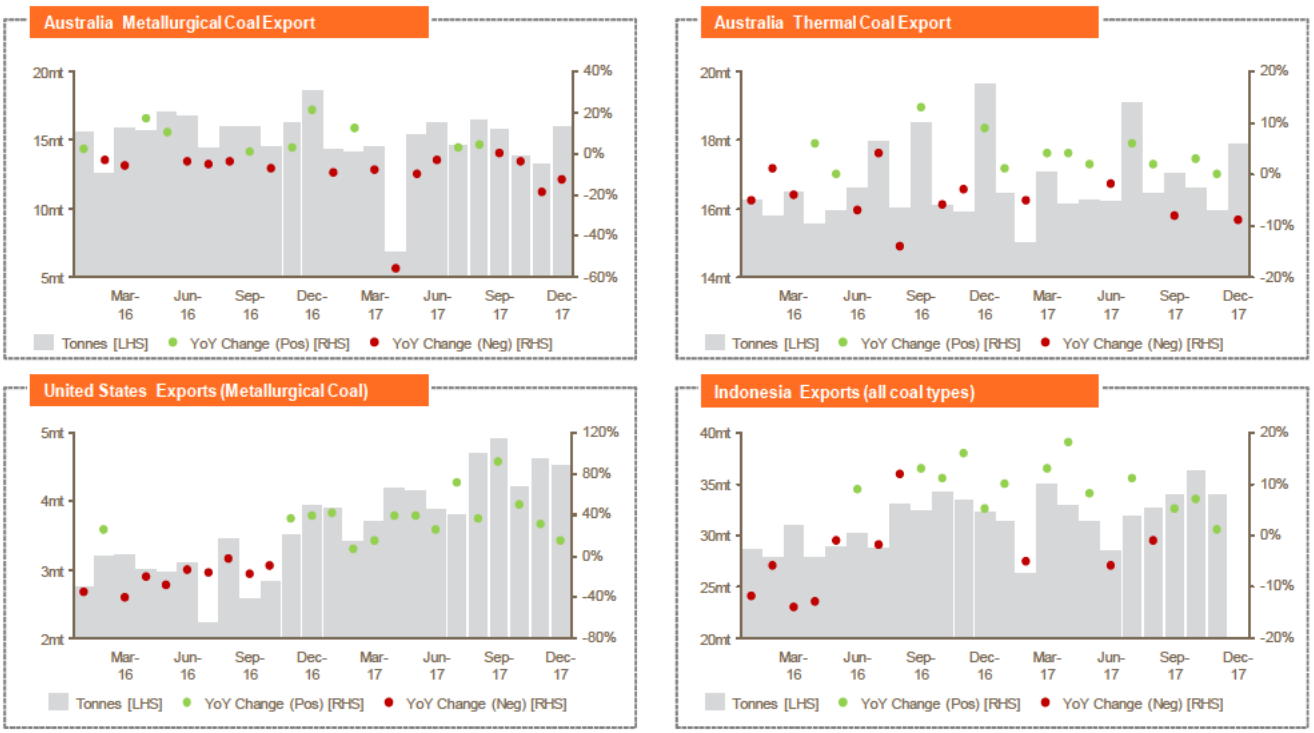
A similarly aggressive outlook is stated by RMI for seaborne thermal coal demand, as the only forecast provider forecasting seaborne volume in excess of 1 billion tonnes in 2021, driven by extraordinary import volume from both India and China (this is shown in Figure 30).



Source: Wood Mackenzie Global Coal Tool (2017 2H),UBS Coal - Reaping the Windfall (December 2017), MS Price Deck Q1 2018 (December 2017), Citi 2018 Commodity Outlook (December 2017). Actuals sourced from Wood Mackenzie.

Although the RMI analysis report does not include country-level export supply projections, the resurgence of coal supply from China, in addition to the resurgence of export volume from competing export nations of the United States and Indonesia may not have been fully considered.

Figure 31 shows monthly seaborne export volumes between March 2016 and December 2017. In terms of the United States, metallurgical coal export volume in the 2017 calendar year was 50mt (+36% on the previous year). For Indonesia, export volume (all coal types but almost entirely considered thermal coal) was 387mt in the twelve months to November 2017 (+5% on previous period) supplied to the seaborne market.



Source: Australian Bureau of Statistics, United States Import and Export Merchandise Trade Statistics, CEIC

In relation to China domestic coal supply, the RMI analysis stated that because of domestic coal industry reform in 2016 and despite the relaxation of the 276 Day policy in November 2016 that *the long-term effect has been a net reduction in coal production in China because of older and uneconomic mines being permanently closed*. Although mining capacity is understood to have reduced during 2017, production has significantly increased with an additional 146 million tonnes (+4%) of coal (all coal types) produced during 2017 compared to the previous year (see Figure 31 above).

Individual Mine Forecasts

Aurizon Network agrees with RMI that the forecasts submitted in November 2016 now appear to look conservative due to the improved market outlook driven by the higher coal prices. There has also been updated information regarding several mines that were returning from care and maintenance or expanding operations. Aurizon Network has not micro changed all of the RMI forecasts and therefore proposes to accept most of the revised volumes forecast contained within the Draft Decision.

However, in assessing the response to the Draft Decision, Aurizon Network responds as follows:

1. [redacted]

[redacted]

[redacted]

[redacted]

Volumes Forecasts - Summary

Table 49 summarises the changes Aurizon Network has made in its response to the Draft Decision. Aurizon Network also notes that as more updated information becomes available on the mines where volumes are uncertain, then this will be reflected during the regulatory period within the annual review of Reference Tariffs as required under section 4.1 of Schedule F of the Access Undertaking.

Table 49 Summary of Aurizon Network - volume forecasts compared to Aurizon Network's UT5 submission by year (nTm)

Mine	FY2018	FY2019	FY2020	FY2021
October 2016 submission	225.71	228.44	228.44	228.44
Net Differences	5.49	15.74	18.74	19.74
Response Volumes	**231.20**	**244.18**	**247.18**	**248.18**

6.1.4 Summary of Aurizon's Network's response

We have considered each aspect of the QCA's assessment in our response to the QCA volumes forecasts. Following this assessment Aurizon Network considers that the volumes forecasts in the Draft Decision are too high. In our view:

- the QCA has relied on the consultant RMI but does not appear to have not taken account of the RMI forecast being in excess of market forecast providers including Wood McKenzie, UBS, Citigroup and Morgan Stanley;
- the RMI forecasts include optimistic forecast volumes for mines whose development and ramp-up profile is uncertain and
- the RMI forecasts contains several discrepancies when compared to current railings and contracted volumes.

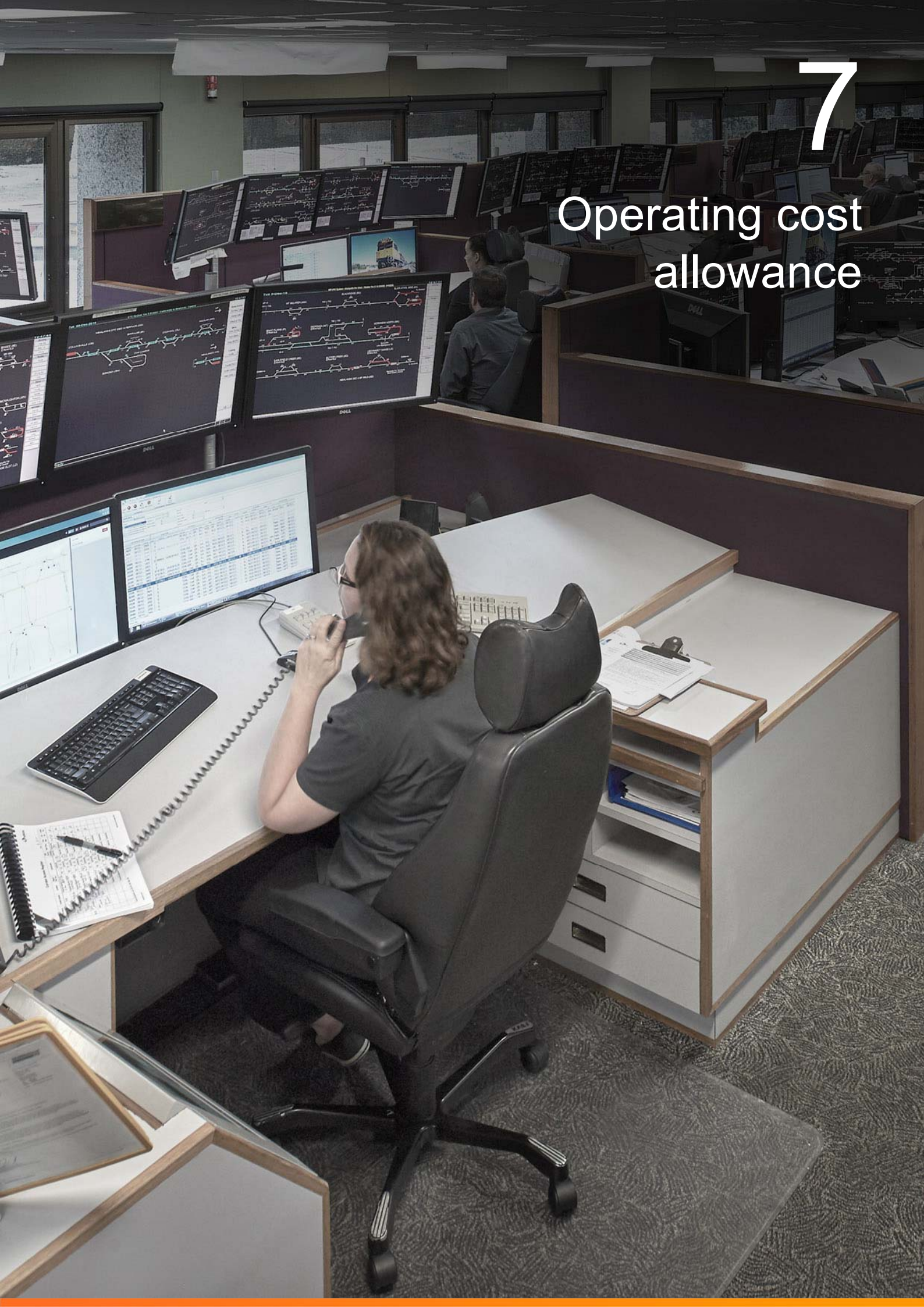
Our response to Draft Decision 6.1 results in a revised volume forecasts range of 231mT in FY2018 growing to 248mT by 2021, which is summarised in the table below.

Table 50 Aurizon Network – Response to Draft Decision 6.1 – volume forecasts proposal by year (nTm)

System	FY2018	FY2019	FY2020	FY2021
Blackwater	64.60	66.18	67.18	68.18
Goonyella	127.55	130.95	131.45	131.45
Moura	11.50	15.00	16.50	16.50
Newlands	11.70	13.20	13.20	13.20
GAPE	15.85	18.85	18.85	18.85
Total	**231.20**	**244.18**	**247.18**	**248.18**

7

Operating cost allowance



7. Operating Cost Allowance

This chapter examines issues related to Aurizon's Network's operating cost allowance in UT5 of $855.3m to provide below-rail coal services for the UT5 regulatory period.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 51 QCA Draft Decision and Aurizon Network's Response – operating cost allowance – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed allowable revenues and reference tariffs to reflect the operating expenditure allowances set out in Table 47, Table 48 and Table 49.	7.1	Disagree

7.1 Overview – Aurizon Network's Position

We note that the Draft Decision is to not accept our operating cost proposals. The QCA has proposed a lower total allowance of $743.0m (excluding electric traction energy costs) which it considers 'appropriately balances Aurizon Network's interests, the public interest, and the interests of relevant stakeholders' as well as providing 'incentives for Aurizon Network and relevant stakeholders to reduce costs or otherwise improve productivity'.[105]

In our view, the Draft Decision is not well aligned with the policy intent of incentive-based regulation, which is to provide firms with appropriate incentives to actively manage their costs and to 'outperform' such that any savings are able to be retained and directed back into the business to drive further operational efficiencies.

The regulatory scrutiny of pricing proposals has become increasingly forensic. The Productivity Commission has previously expressed that "…it seems clear that regulators should not 'go to the wire' in seeking to strip monopoly rents".[106] Such an approach removes the incentives of regulated firms to become more efficient, if there is an expectation that any efficiencies that are achieved and identified, will ultimately be lost.

Regulatory practice to date has focussed more on reducing the cost of service provision rather than on investment for future growth capacity. We contend that the focus needs to be re-balanced towards the incentives of the infrastructure owner to be able to manage its costs within an overall allocation such that it can continue to become more efficient and invest in network capacity enhancements. We consider that the QCA's approach to assessing cost of services at a detailed incremental level and refusing incremental cost increases while returning anticipated incremental savings does not adequately incentivise the Network business to aggressively identify opportunities for operational efficiencies, nor does it allow it to manage its exposure to market volatility or regulatory risk (see chapter 2).

We are therefore unable to support all aspects of the Draft Decision. We contend that the QCA has not taken into account the full range of information that was provided to it as part of the UT5 proposal. In most circumstances, the QCA has applied the lowest bound option to Aurizon Network's revenue positions. Our reasons and further supporting information is contained within our response to the individual cost categories as amended by the Draft Decision below.

We propose that the Final Decision accepts Aurizon Network's amendments, which result in a revised total allowance of $866.9m. This minor revision in nominal costs since our 2017 DAU position is due to using FY16 as the

[105] QCA (2017) Draft Decision, p.184.

[106] Gary Banks (then Chairman), Productivity Commission (2012) *Competition Policy's regulatory innovations: quo vadis?*, Speech prepared for the ACCC Regulatory Conference 2012, Brisbane, 26 July and the Economists Conference Business Symposium, Me bourne 12 July 2012.

base year in line with the Draft Decision with updated cost allocation methodology, such as information technology costs (see 7.3).

7.1.1 Aurizon Network's submission (2017 DAU)

In its UT5 proposal, Aurizon Network had proposed allowable revenues and reference tariffs based on an operating expenditure proposal comprising of two main components:

- a total operating cost allowance of $855.3m (in nominal terms), reflecting system-wide and regional costs, corporate overheads, risk and insurance as well as transmission and connection costs; and
- an additional allowance of $219.5m to recover electric traction energy costs associated with the Blackwater and Goonyella Systems.[107]

A breakdown of these cost proposals is presented in the tables below for each year of the UT5 regulatory period.

Table 52 Aurizon Network – 2017 DAU (UT5) – operating cost allowance proposal by year ($m)

Operating expenditure category	FY2018	FY2019	FY2020	FY2021	Total
System wide and regional costs	69.4	71.3	73.9	75.3	**289.9**
Corporate overheads	49.1	50.5	51.6	52.7	**203.8**
Risk and Insurance	9.0	9.3	9.4	9.6	**37.3**
Transmission charges	78.7	80.3	81.9	83.5	**324.3**
Total – Nominal	**206.2**	**211.4**	**216.8**	**221.0**	**855.3**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.196. This position is updated in this Response Submission.
Totals may not add due to rounding.

Table 53 Aurizon Network – 2017 DAU (UT5) – Forecast electrical energy charges by year ($m)

	FY2018	FY2019	FY2020	FY2021	Total
Total – Nominal	**52.8**	**54.9**	**55.6**	**56.2**	**219.5**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.200. Totals may not add due to rounding.

Aurizon Network's operating expenditure proposal fell well within the QCA's approved 2016 Access Undertaking Allowance for UT4, which the QCA assessed as the appropriate basis for setting an efficient cost benchmark for a stand-alone entity. Aurizon Network had used the UT4 operating expenditure allowances approved by the QCA as the starting point for developing the forecasts for the UT5 regulatory period.

In its UT5 proposal, Aurizon Network noted that while it did not fully agree with the QCA's UT4 methodology, it did, in the main, adopt it for UT5 (unless otherwise noted). This approach was designed to minimise points of contention and to facilitate an expedient and more efficient resolution of the regulatory process for reaching an approved access undertaking.

This operating expenditure proposal was based on the recovery of at least the efficient operating expenditure incurred in the provision of the declared service. Operating expenditure accounted for approximately 18% of MAR and Aurizon Network had been rigorous in ensuring its operating expenditure proposal for the UT5 regulatory period was robust and reflective of the efficient costs of operating a highly reliable below-rail network and consistent with the UT4 approach accepted by the QCA in October 2016.

[107] On 20 June 2017, the QCA approve Aurizon Network's June 2017 electric charge tariff draft amending access undertaking (DAAU), submitted on 6 June 2017. The amended electric charge tariff applied to the approved transitional basis from 1 July 2017, with any true-up adjustments to be dealt with as part of the approval of the replacement access undertaking.

Aurizon Network's Access Undertaking defines "efficient cost" as:

> *…the cost that would be reasonably expected to be incurred by a Railway Manager adopting efficient work practices in the provision of the Rail Infrastructure to the required service standard…and including any transitional arrangements agreed between Aurizon Network and the QCA to reflect the transition from Aurizon Network's actual cost to that efficient cost".*[108]

In its Consolidated Draft Decision for UT4, the QCA stated that its *"[…] role is to assess the efficient operating costs for Aurizon Network to deliver the declared service in the CQCN in the context of section 138(2)".*[109] In having approved the operating expenditure allowances for each year of UT4, it can be concluded that these allowances represent, at a minimum, the regulator's view of Aurizon Network's efficient costs. While not agreeing with elements of the QCA's determination, Aurizon Network accepted it in order to achieve regulatory certainty through the approval of UT4.

7.1.2 QCA Draft Decision

Summary of Draft Decision 7.1

- The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed allowable revenues and reference tariffs to reflect the operating expenditure allowances set out in Table 47, Table 48 and Table 49.

We note the Draft Decision is to not accept Aurizon Network's operating cost allowance proposals.

The QCA considered that Aurizon Network's proposed operating expenditure allowance was higher than 'reasonably required' to provide below-rail services to coal-carrying trains during the UT5 period. The QCA has proposed a total operating cost allowance comprising:

- an allowance of $743.0m (in nominal terms), which is 13% lower than Aurizon Network's submitted position and 8% lower than the approved UT4 allowance; and
- an additional allowance of $290.6m to recover electric traction energy costs associated with the Blackwater and Goonyella Systems which is higher than Aurizon Network's submitted position.

[108] QCA (2017) Aurizon Network's 2016 Access Undertaking (UT4), approved by the QCA on 11 October, Consolidated Version updated as at 28 September 2017, section 12.1, p.263.

[109] QCA (2015) Consolidated Draft Decision, Volume IV, December, p.31.

A breakdown of Draft Decision 7.1 is presented in the tables below.

Table 54 QCA Draft Decision on Aurizon Network – operating expenditure proposal by year ($m)

Operating expenditure category	FY2018	FY2019	FY2020	FY2021	Total
System wide and regional costs	58.5	60.3	62.7	65.1	**246.6**
Corporate overheads	40.3	41.2	42.3	43.5	**167.3**
Risk and Insurance	8.0	8.2	8.4	8.6	**33.2**
Transmission charges	72.5	73.8	74.8	74.8	**296.0**
Total – Nominal	**179.3**	**183.6**	**188.2**	**191.9**	**743.0**

Source: QCA (2017) Draft Decision, p.183. Totals may not add due to rounding.

Table 55 QCA Draft Decision on Aurizon Network – electric traction energy costs and reference tariffs by year ($m)

	FY2018	FY2019	FY2020	FY2021	Total
Electric traction energy costs	70.1	71.8	73.5	75.2	**290.7**
QCA forecast egtk ('000's)	68,284,683	68,863,759	69,189,894	69,206,062	**275,544,398**
Indicative EC component	$1.027	$1.043	$1.062	$1.087	-

Source: QCA (2017) Draft Decision, p.183. Totals may not add due to rounding.

The QCA noted its Draft Decision reflects the net result of various adjustments to Aurizon Network's proposal, which it summarised as:

> adopting 2015-16 as the forecasting year, rather than 2014-15;
> decreasing the below-rail allocation of Network Finance costs;
> increasing the allocation of costs to non-coal-carrying train services for 'Network Train Operations';
> reducing proposed corporate overheads for corporate accommodation and shared IT services;
> using updated electricity transmission and connection cost forecasts as well as electric traction energy forecasts;
> reducing proposed commercial insurance and self-insurance costs; and
> substituting Aurizon Network's wage price index (WPI) and consumer price index (CPI) inflation forecasts with alternative estimates.[110]

7.1.3 Aurizon Network's assessment of QCA Draft Decision

We consider the QCA's assessment is not consistent with delivering desired outcomes of incentive based regulation and is inconsistent with existing regulatory practice in other jurisdictions. We also consider that the Draft Decision contains errors (e.g. Train Control school costs) and requires updating to recognise more recent costs incurred by Aurizon Network. These issues are discussed in more detail below.

The QCA Draft Decision is not consistent with outcomes of incentive based regulation

The original rate of return cost-based regulation removed monopoly profits through an annual review in which a firm's revenue was equated with its costs plus a risk weighted return on its invested capital. However, this approach provided no incentive for a firm to increase its efficiency as the benefits of any efficiency gains would simply be passed through to its customers by the regulator at the next regulatory review.

The absence of efficiency incentives means that firms regulated under this framework often become technically focused, for example solving problems by constructing assets rather than investigating whether lower cost solutions might exist in demand management or more cost-reflective prices. Ultimately, the weak incentives of cost-based

[110] QCA (2017) Draft Decision, p.184.

regulation for managers to improve efficiency were recognised which led to the development of methods to include incentives in cost-based building block regulation. The purpose of regulatory incentives is to replicate in natural monopoly services the power of the efficiency incentives inherent to competitive markets.

The Productivity Commission has observed that:[111]

> *Incentive regulation can be a useful tool for encouraging network businesses to minimise costs and implement cost-reducing investments aimed at improving … operating efficiency … .*

Incentive regulation is focussed on strategic outcomes rather than business decision-making so that the firm takes the "day-to-day decisions, such as project choice and the timing of asset replacement".[112] Incentive regulation effectively seeks to establish upfront an efficient allowance for a bundle of costs, and then provides for the regulator to step away from the process. If additional costs are actually incurred in providing the services, these are borne by the regulated business, but similarly if they can achieve productivity improvements and reduce costs, they retain the benefit.

The Productivity Commission notes that incentive regulation should include:[113]

- *incentives for firms to maintain or improve service quality levels as well as to reduce costs. This ensures that improvements in cost-efficiency are not at the expense of quality of service;*

…

- *a linkage between the strength of the incentives and the level of confidence regulators have in their forecasts of efficient spending (the more accurate the forecast the stronger the incentive can be)*

When applied as part of the base-step-trend forecasting approach adopted by Aurizon Network and accepted by the QCA, the efficient cost allowance is established upfront using revealed 'base year' costs, with step adjustments applied where necessary if base year costs are not considered to be representative of 'efficient costs'. Where Aurizon Network identifies opportunities to reduce these costs over the regulatory period, and ultimately implements this, the efficiency gains will be revealed in the following review.

While the QCA has justified aspects of its Draft Decision on operating costs on the application of incentive regulation, the way in which it has assessed operating costs, and in particular the appropriateness of step changes to base year costs, actually runs counter to the philosophy upon which incentive regulation is based. These include:

> a forensic examination of costs on an individual cost centre basis and requirement for detailed justification for changes in these costs, including information relating to numbers of positions and individual roles – this type of detailed cost examination is more consistent with cost-based regulation and means that Aurizon Network's focus will inevitably be on a technical justification of costs within individual cost centres rather than a holistic consideration of costs;
> the timing of the Draft (and Final) Decision, and the QCA's requirements for further information on actual and expected cost performance up to and beyond the date upon which the regulatory period commences means the QCA will not really 'step away' to allow Aurizon Network to operate within a known aggregate cost allowance over the regulatory period;
> the QCA has sought to 'pass through' identified opportunities for further cost reduction throughout the regulatory period before these reductions have in fact been realised, without proper evaluation of whether the cited gains are

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111 Productivity Commission (2013) *Electricity Network Regulatory Frameworks*, Inquiry Report No. 62, April, p.188.
112 Productivity Commission (2013) *Electricity Network Regulatory Frameworks*, Inquiry Report No. 62, April, p.189.
113 Productivity Commission (2013) *Electricity Network Regulatory Frameworks*, Inquiry Report No. 62, April, p.191.

fully achievable, or whether there are other business priorities that should be funded through those cost savings. In effect, in contrast to the incentive regulation philosophy which is aimed at creating positive incentives for a business to identify and implement efficiency gains, this results in the imposition of a penalty for not achieving gains that have been identified but not yet been fully evaluated. This approach will severely weaken the incentive for Aurizon Network to aggressively identify areas where cost savings may be able to be achieved.

In aggregate, the QCA's approach is more akin to a forensic cost based regulatory approach, rather than setting an incentive for Aurizon Network to achieve an outcome over a regulatory period. This approach is not consistent with the manner in which incentives for sound decision-making by managers operate in competitive markets, and will ultimately undermine the preparedness for Aurizon Network to aggressively identify opportunities for cost savings.

The QCA's Draft Decision will under-compensate Aurizon Network for its legitimate costs

We contend that the effect of the Draft Decision, if unchanged in the Final Decision, would be to create an environment which would significantly under-compensate Aurizon Network for the efficient costs it would reasonably be expected to incur in operating a safe, reliable and efficient below rail service.

Aurizon Network has already realised productivity improvements and cost efficiencies which were reflected in Aurizon Network's UT5 proposed allowance, including:

> a reduction in labour costs;
> consolidation of management positions;
> implementation of a network control system for more efficient traffic management; and
> minimising professional consultancy and external service expenditure.

This is ongoing, with the potential for further benefits to be captured in the future, which should result in a range of network improvements in safety, customer service, operational excellence, productivity, technology and innovation. The Draft Decision is a 13% reduction in Aurizon Network's operating cost allowance and is effectively a clawback of anticipated savings, which comes at the expense of Aurizon Network, our customers and broader supply chain efficiency of the CQCN.

7.1.4 Summary of Aurizon Network's response

We have considered each aspect of the QCA's assessment of our proposed operating cost allowance.

We note that the QCA indicated its approach was to review Aurizon Network's proposed expenditure, considering forecasting methods, base year efficiency, cost allocation, step changes and rates of escalation. The QCA also stated that it assessed proposed expenditure against the QCA's alternative estimate and accepted Aurizon Network's where the difference was not material.[114] It also acknowledged that it has not applied a rigid materiality test as part of its review. Following this assessment, Aurizon Network supports, in principle, the QCA's intended approach with respect to:

> adopting 2015-16 as the base year, rather than 2014-15 and some commensurate base year adjustments through appropriate step-changes to appropriately reflect a number of one-off adjustments to the revised base that have been omitted from the QCA's estimated cost base e.g. Train control school;
> substituting Aurizon Network's wage price index (WPI), with alternative estimates based on the latest available information in the Queensland Government Budget Outlook; and
> using updated electricity transmission and connection costs forecasts, as well as electric traction energy forecasts (although, with some amendment to reflect Aurizon Network's revised volume forecast estimates).

However, we do not support Draft Decision 7.1 which proposes to:

[114] QCA (2017) Draft Decision, p.187.

> increase the allocation of costs to non-coal-carrying train services for 'Network Train Operations';
> decrease the below-rail allocation of Network Finance costs;
> reduce proposed corporate overheads (for corporate accommodation and shared IT services);
> the clawback of transformational savings achieved through operational efficiencies;
> reduce proposed commercial insurance and self-insurance costs; and
> substitute Aurizon Network's consumer price index (CPI) inflation forecasts with alternative estimates.

In particular, Aurizon Network contends that the QCA's cost allocation approach for system wide and regional costs and reduced allowances for corporate overheads do not reflect the legitimate efficient costs incurred by Aurizon Network nor do they incentivise the business to achieve ongoing efficiencies such that the benefits are captured and returned to the regulated entity.

Our response to Draft Decision 7.1 results in a revised operating cost allowance of $866.9m, which is summarised in the table below.

Table 56 Aurizon Network – Response to Draft Decision 7.1 – Operating cost allowance proposal by year ($m)

Operating expenditure category	FY2018	FY2019	FY2020	FY2021	Total
System wide and regional costs	66.9	68.4	73.0	73.3	**281.7**
Corporate overheads	59.6	62.0	62.8	64.3	**248.6**
Risk and Insurance	9.1	9.3	9.5	9.7	**37.5**
Transmission charges	72.1	73.8	75.9	77.3	**299.1**
Total – Nominal	**207.6**	**213.5**	**221.2**	**224.6**	**866.9**

Totals may not add due to rounding.

Table 57 Aurizon Network – Response to Draft Decision 7.1 – Forecast electrical energy charges by year ($m)

	FY2018	FY2019	FY2020	FY2021	Total
Blackwater	36.2	36.9	37.9	38.7	**149.8**
Goonyella	35.9	36.9	37.9	38.6	**149.3**
Total – Nominal	**72.1**	**73.8**	**75.9**	**77.3**	**299.1**

Totals may not add due to rounding.

Aurizon Network's response to the QCA's preliminary view is provided in more detail below.

7.2 System-wide and regional costs

System wide and regional costs relate to the operation and planning of train paths and are directly attributable to the provision and facilitation of actual operational access to the CQCN for coal carrying train services. The functions associated with the delivery of this service include:

> Network control, safe working and operations—plans and controls the movement of trains, light engines and track machines as well as the safe working of these vehicles as they traverse the rail infrastructure;
> Infrastructure management—manages the performance of assets required to deliver the declared service, including the safety, reliability and availability of the rail infrastructure; and
> Business management—performs the commercial, regulatory, financial and legal tasks required to operate a regulated below-rail business.

The QCA assessed the elements of Aurizon Network's proposed system-wide and regional costs and developed an alternative estimate that it considered reasonable. We do not support all aspects of the QCA's assessment for this cost category and our reasons, supported by additional information, are presented below.

7.2.1 Aurizon Network's submission (2017 DAU)

Aurizon Network proposed system-wide and regional operating costs totalling $289.9m over the UT5 regulatory period. A breakdown of this proposed allowance is presented in the table below.

Table 58 Aurizon Network – 2017 DAU (UT5) – Direct Opex: system wide and regional costs ($m)

Direct Opex cost item	FY2018	FY2019	FY2020	FY2021	Total
Network control, safe working and operations	29.7	30.6	31.5	32.4	**124.3**
Infrastructure management	18.3	18.7	19.2	19.7	**75.9**
Business management	21.4	22.0	23.2	23.2	**89.8**
Total – Nominal	**69.4**	**71.3**	**73.9**	**75.3**	**289.9**
Total – Real ($FY2015)	**65.9**	**66.9**	**68.5**	**68.9**	**270.2**

Source: Aurizon Network (2016) UT5 submission to the QCA, Table 54 p.218. Totals may not add due to rounding.

7.2.2 QCA assessment

The QCA proposed a total system-wide and regional operating cost allowance of $246.6m over the UT5 regulatory period, which is 15% lower (down $43m) than Aurizon Network's proposal. A breakdown of the QCA's proposed allowance is presented in the table below.

Table 59 QCA Draft Decision – 2017 DAU (UT5) – Direct Opex: system wide and regional costs ($m)

Direct Opex cost item	FY2018	FY2019	FY2020	FY2021	Total
Network control, safe working and operations	24.1	25.2	26.0	27.9	**103.2**
Infrastructure management	17.8	18.3	18.8	19.3	**74.1**
Business management	16.5	16.9	17.9	17.9	**69.3**
Total	**58.5**	**60.3**	**62.7**	**65.1**	**246.6**

Source: QCA (2017) Draft Decision, p.214.

The QCA's estimate was derived by making the following key adjustments to Aurizon Network's proposed system wide and regional costs:

- adopting 2015-16 as the forecasting base year, rather than 2014-15, removing a number of step changes (including removing proposed cash bonus adjustments from 2015-16 base year costs);
- decreasing the below-rail allocation of Network Finance costs from 100% to 90%;
- increasing the allocation of costs to non-coal carrying train services for 'Network Train Operations' from 2% to 12%; and
- applying the QCA's CPI inflation forecast and updated WPI inflation forecasts.

7.2.3 Aurizon Network's response

Aurizon Network supports the following changes proposed by the QCA

Update to the FY16 Base Year

Aurizon Network supports the QCA's proposed change to the Base Year to FY16.

Moving the cash bonus adjustment from the 2015-16 cost base

Aurizon Network prepared its UT5 proposal using 2014-15 actual costs as the base year and provided the 2015-16 information as it became available during the QCA's assessment. When providing the 2015-16 information, Aurizon Network made an adjustment of $2.4m for employee cash bonuses to reflect bonuses paid in 2014-15.

The QCA did not accept the proposed adjustment stating that 'a review of the Aurizon Network's recent bonus expenses reveals that cost incurred in 2014-15 were around 60 per cent higher than those incurred in 2013-14, and around 110 per cent higher than those in 2015-16'.[115]

Aurizon Network acknowledges that moving to a revised position is warranted given the QCA acknowledged that bonuses in 2015-16 were unusually low.

Whilst Aurizon Network is willing to agree that the bonuses paid in 2014-15 were high (compared to prior years), it is clear from our and the QCA's own analysis that the 2015-16 bonuses were anomalous and should not be considered an appropriate base line for future expense. Aurizon Network also notes that the 2015-16 cash bonuses were heavily impacted by one-off significant adjustments totalling $528m made at an Aurizon Holdings group level including the write off of strategic projects and asset impairments[116], the majority of which do not relate to the Aurizon Network business.

Aurizon Network has reviewed the cash bonus expense for 2012-13 to 2015-16 and determined the average expense over the 4 year period. We consider that this average expense should be included in the 2015-16 base year as it minimises the impact of significant one-off adjustments. The resulting revised adjustment to the 2015-16 base year is estimated at $1.1m across the system wide and regional cost centres.

Parameter update / Cost escalators

Aurizon Network supports the updated WPI forecasts proposed by the QCA based on 2017-18 Queensland Treasury budget papers, but does not accept the revised CPI adopted by the QCA.

As noted in section 4.1.3, it is highly desirable to minimise forecast errors and the materiality of any ex-post adjustments on operating costs. Accordingly, for the purpose of maintenance and operating cost escalation Aurizon Network has applied an inflation estimate of **1.84%** for each of the four years from 2017-18 to 2020-21.

In summary, the cost escalators that have been applied to the 2015-16 base year costs are set out in the table below.

Table 60 Aurizon Network – Response – cost escalators

Direct Opex cost item	FY2017	FY2018	FY2019	FY2020	2020-21
Wage Price Index	2.00	2.25	2.50	3.00	3.00
CPI	1.83	1.84	1.84	1.84	1.84

Permanent way development training

Beginning 2016-17, Aurizon Network centralised the training and development function under the Manager Permanent Way position reporting to the Head of Network Operations. Previously these costs were incurred in the various maintenance teams and recovered through labour rates onto the maintenance activities. The training provided includes:

> Mandatory Enterprise;
> Generic Enterprise;

[115] QCA (2017) Draft Decision, 2016, p.196.

[116] Aurizon, Annual Report, 2015-16, p.50.

- Certificates & Higher Education;
- Licences;
- Safe working & Plant & Equipment; and
- Operator & Post Trade Competencies.

Consistent with UT4, Aurizon Network pursued recovery of these costs as part of the maintenance allowance as they were inherently built into the base year used for the calculation of the proposed maintenance allowance. Given the Draft Decision adopts 2016-17 as the base year for maintenance, these costs are no longer included in the maintenance allowance and therefore Aurizon Network seeks to recover these costs through the opex allowance. The costs are separately identifiable and incurred in the permanent way development cost centre from 2016-17. Aurizon Network has included costs of $1.7m related to this training as an adjustment to the 2015-16 base year.

Aurizon Network also notes that the QCA accepted the 2015-16 base year costs associated with the Manager – Permanent Way. We concur with this decision and therefore the proposed step change included in the 2015-16 base year model is not required.

In addition, the QCA Draft Decision applies a reduction to corporate costs to take account of transformational savings to be achieved post the 2015-16 base year. One of these initiatives related to reducing external safety training costs, which was in Evaluation stage when the information was presented to the QCA consultants. The initial cost savings estimated for this initiative was $2m per year for Aurizon Network. Aurizon Network in total spent $1m on Conferences, Seminars and Courses (i.e. external training) during 2015-16. It would therefore be impossible to achieve savings of $2m on safety related training alone. The benefits realisation for the initiative continue to be refined and it is currently estimated we will make savings of 2% for 2017-18, increasing to 8% by 2020-2021. Changes that are being implemented as part of this initiative include:

- training profiles have been reviewed and modified which has adjusted the amount of training required by individuals;
- the Corporate Safety training team have provided assistance to Network in relation to accessing a range of external training companies to provide quotations for services, rather than relying on one provided for all training needs;
- increasing the scope of training that can be conducted by Aurizon's internal registered training organisation to reduce requirement for external spend; and
- reviewing scope and delivery of training packages with the intent of reducing the actual training time that is required.

These savings have been included as a step change to the costs of Permanent Way Development who are responsible for safety training for Aurizon Network.

At a broader level, while we support this change in order to reduce the areas of disagreement, we are concerned with the QCA's approach that refuses to accept 'step ups' but imposes 'step downs' because, both types of changes are an inherent part of effective business management. Any requirement on Aurizon Network to reflect productivity improvements should relate to 'net' rather than 'gross' productivity gains. Furthermore, the QCA's approach of 'banking' productivity gains under assessment is not generally regarded as consistent with incentive regulation which is designed to encourage business to seek efficiencies on the basis that it will retain some of that benefit during the regulatory period.

Aurizon Network does not support the following changes proposed by the QCA

Our views on these aspects of the QCA's assessment that we do not support are presented below.

Increasing the allocation of costs to non-coal carrying services for Train Operations

We note that the QCA did not accept our proposal for a 2% cost allocation to non-coal carrying services for Network Train Operations and instead proposed an allocation of 12% based on train kilometres.

Aurizon Network maintains its position as set out in its 2017 DAU submission that there is significantly less effort required in managing non-coal traffic compared to coal traffic. Aurizon Network also notes that the QCA's non-coal carrying train kilometre % allocation was incorrectly calculated. We therefore do not support the QCA's proposal to allocate 12% of below-rail costs to non-coal traffic.

The QCA commented that:

> *The QCA maintains that a deduction based on the proportion of non-coal train kilometres is more likely to reflect the resources used by Aurizon Network in providing train control services to non-coal train operators, given these costs are a function of scheduling and the time spent on the track.*[117]

At no stage during the QCA review of Aurizon Network's UT5 submission, was there any other enquiries or a site visit to the train control centre to review and assess the level of effort spent in relation to providing access to non-coal services. The QCA has again relied on a desk top review and an inappropriate allocation methodology to formulate their decision.

Aurizon Network subsequently gathered further evidence to calculate the allocation of costs to non-coal traffic based on both scheduling and time spent on track given the QCA deemed train kilometres were a function of these two variables.

- *Scheduling*—Aurizon Network has previously stated that non-coal train services operate as time tabled traffic and are subject to minimal rescheduling. The Vizirail system data tracks manually actioned scheduling and highlights in recent times that non-coal scheduling changes comprise less than 4% of total scheduling changes;
  - Aurizon Network invites the QCA to review this data as part of its current deliberations; and
- *Time spent on the track*—Aurizon Network has obtained evidence from Vizirail and intends to use this metric as the basis for the non-coal deduction for UT5 even though our view is that it is still over stating the effort required as can be seen from the scheduling information above.

The time on network is outlined in the table below split between coal, maintenance and non-coal services highlighting that non-coal services on average over the last four years make up less than 5% of total time spent by all services on the network.

Table 61 Aurizon Network – Allocation of costs between coal and non-coal traffic – time spent on track

Time on Network	UOM	FY2014	FY2015	FY2016	FY2017	Average
Coal	Hrs	375,885	391,495	384,272	376,050	
	% of total	92.7%	90.7%	89.8%	89.2%	90.6%
Maintenance	Hrs	7,418	19,340	24,148	25,324	
	% of total	1.8%	4.5%	5.6%	6.0%	4.5%
Non-coal	Hrs	21,975	20,671	19,442	20,229	
	% of total	**5.4%**	**4.8%**	**4.5%**	**4.8%**	**4.9%**

Source: Aurizon Network

Aurizon Network is proposing to use the average over a four year period to avoid any bias that would otherwise be inherent in selecting a single year. Aurizon Network notes that the 2016-17 year was significantly impacted by Tropical Cyclone Debbie making it an anomalous year and the only year that hasn't seen a decline in the non-coal service as a percentage of the total services.

[117] QCA (2017) Draft Decision, p. 204.

Therefore the non-coal deduction proposed by Aurizon Network will be 4.9%, based on the most objective measure of usage.

If, however, the QCA is not minded to approve a cost allocation to non-coal traffic of 4.9%, as supported by the data above, then it is prudent in our view that the QCA correctly calculates the deduction based on their train kilometre methodology. Aurizon Network has identified the following issues of concern with the QCA's calculation:

> non-coal train kilometres used by the QCA referred to non-coal 'billed' kilometres which included other items by default (e.g. maintenance services) for which Aurizon Network earns no revenue but are critical to the operation of the CQCN;
> non-coal kilometres includes repositioning or transit services for coal trains; and
> coal train kilometre figures provided to the QCA for cross-system hauls were being reported in both systems and are therefore double counted.

Aurizon Network has recalculated train kilometres to address these issues. The results are presented in the table below.

Table 62 Aurizon Network – Allocation of costs between coal and non-coal traffic – train kilometres

Train kilometres	UOM	FY2014	FY2015	FY2016	FY2017	Average
Coal	Km	12,675,352	12,958,450	12,977,957	12,243,026	
	% of total	91.4%	90.5%	90.3%	89.4%	90.4%
Maintenance	Km	93,302	297,889	386,406	421,269	
	% of total	0.7%	2.1%	2.7%	3.1%	2.1%
Non-coal	Km	1,092,892	1,065,692	999,900	1,032,558	
	% of total	7.9%	7.4%	7.0%	7.5%	7.5%

Source: Aurizon Network

The outcome of the revised calculations, based on the QCA's preferred methodology, and an average over the four-year period 2013-14 to 2016-17, results in a 7.5% non-coal allocation. Aurizon Network again notes that the 2016-17 year was significantly impacted by Tropical Cyclone Debbie making it an anomalous year and the only year that has not seen a decline in the non-coal train kilometres as a percentage of the total train kilometres.

Update to FY 2016 Base Year

Reducing the proposed allowance for the network control school

The QCA reviewed the business case and considered the costs associated with the network control school to be reasonably justified due to the expected critical FTE shortage over the UT5 period. We noted however that the QCA's assessment incorrectly assumed that $0.65m was incorporated into the base year and therefore only approved $0.1m per year (being the incremental costs between $0.65m and $0.75m).

Due to the 2015-16 network control school being delivered across financial years, Aurizon Network removed all costs associated with the school from the base year and then included the full cost of the school as a step change. This was also reflected in the AECOM operating cost model which removed the school costs from the base year.

Therefore we seek to include the full cost of the school as per our UT5 proposal.

Table 63 Aurizon Network – Network Control School – by year ($m)

Network Control School	FY2018	FY2019	FY2020	FY2021
Aurizon Network UT5 proposal	0.75	0.77	0.80	0.83
QCA Proposed	0.10	0.11	0.11	0.11
Response (subject to inflation assumption)	0.75	0.77	0.80	0.83

Note: Amounts quoted pre non-coal deduction

Other adjustments

Reducing the APEX system support and maintenance costs

Aurizon Network's UT5 proposal included a step change reflecting the operating expenditure for ongoing maintenance & support costs associated with the APEX solution. The QCA considered it reasonable that the expenditure be included in the forecast operating cost allowance however proposed a revised estimate based on information received from Aurizon Network during their investigation. This information was provided by Aurizon Network using the vendor estimates available then and based on the capital delivery implementation timeline anticipated at that time.

Since that time, Aurizon Network has substantially progressed discussions with the vendors to implement a 'decoupled' delivery approach to mitigate project and through-life support risks, and to deliver features (and customer benefits) into production at the earliest possible time through a staged release schedule. This revised approach brings forward components of the APEX solution earlier than planned, and while there are costs that arise earlier than anticipated, the roll-out will deliver benefits for customers. The uplift in APEX operating costs reflects the new 'decoupled' contractual framework. The latest estimate of the costs as outlined in the table below.

Table 64 Aurizon Network – APEX system costs – by year ($m)

APEX system costs ($m)	2017-18	2018-19	2019-20	2020-21
Aurizon Network 2017 DAU (UT5) proposal	[redacted]	[redacted]	[redacted]	[redacted]
QCA Proposed Step Change	-	[redacted]	[redacted]	[redacted]
Latest Forecast	[redacted]	[redacted]	[redacted]	[redacted]

Source: Aurizon Network Notes: Amounts quoted are pre-non coal deduction

Decreasing the below-rail allocation of Network Finance costs

We note that the QCA did not accept our cost allocation proposal to allocate 100% of Network Finance costs as direct costs to below rail services. While the QCA noted that the Network Finance team would be predominantly involved in matters directly related to the provision of below-rail services, it considered a revised allocation of 90%, consistent with the allocation applied in the UT4 outcome, to be reasonable. The QCA's consultant (AECOM) formed the view that the Network Finance team was responsible for a number of financial functions across the whole Aurizon Network business, and that in the absence of timesheets that record time spent on various activities, it considered it likely that some portion of Aurizon Network's activities would relate to non-regulated activities.[118]

Aurizon Network's UT5 proposal allocated 100% of Network Finance costs on the basis that the corporate overhead allowance excluded an allocation of costs relating to the Aurizon Group Accounting, Planning & Reporting team regardless of the work undertaken by that team on behalf of Aurizon Network.

Some tasks undertaken by the Aurizon Group Accounting that are not performed by the Network Finance team and would warrant an allocation of costs within the corporate overhead allowances to Aurizon Network include:

[118] QCA (2017) Draft Decision, p.200.

- establish fixed assets policies and procedures;
- process fixed asset additions, disposals, transfers and depreciation;
- reconciliations of fixed asset register to general ledger;
- arrange stocktakes of fixed assets;
- provide fixed asset data to support tax, statutory and regulatory reporting;
- maintenance of financial systems/ general ledger;
- reconciliation of general ledger accounts;
- establishment of accounting policies; and
- technical accounting advice on projects and accounting issues.

Aurizon Network acknowledges that an allocation of costs from the Group Accounting team would be difficult to quantify however the amount would be significantly more than 10% of the Network Finance team's costs hence why the 0% deduction was proposed by Aurizon Network.

By applying the 10% deduction to the Network Finance team the QCA's are implying that 2.4 FTE are 100% dedicated to non-regulated activities which is an unreasonable inference.

Aurizon Network also notes that the AECOM statement mentioned by the QCA[119] in the Draft Decision is not a useful point of reference since the Costing Manual was updated and approved in October 2016 to align to the UT4 Final Decision. Therefore it is not the reduction that Aurizon Network contends is representative of the time/cost devoted to non-regulated activities, it is just stating what was imposed by the QCA from the UT4 Final Decision.

A review of the Network Finance team has been undertaken which identified those individuals involved in non-regulated activities and then apportioned their time spent between regulated and non-regulated activities.

The outcome of this assessment is presented in the table below.

Table 65 Aurizon Network – System-wide and regional costs – Network Finance

Sub Team	FTE	FTE 100% Regulated	FTE involved in non-regulated activities	% of time FTE dedicated to non-regulated activities	Weighted average non-regulated activities
Head of Department	2.0	1	1	5%	2.5%
Reporting & Planning	5.9	4.9	1	10%	1.7%
Statutory & Regulatory Reporting	2.0	2	0	0%	0.0%
Revenue & Billing	4.0	1	3	10%	7.5%
Capital and Investment	4.0	3	1	5%	1.3%
Finance Partnering	6.0	4	2	8%	2.7%
Total	**23.9**				**2.8%**

Source: Aurizon Network

Therefore, the non-regulated deduction proposed by Aurizon Network is 2.8% based on the weighted average of FTE identified as being involved in non-regulated activities.

Disallowing the additional step changes identified in the 2015-16 operating cost model

In providing the QCA with the 2015-16 operating expenditure model during the QCA's Request For Information (**RFI**) process, Aurizon Network included six additional step changes that were not included in the original 2014-15

[119] QCA (2017) Draft Decision, p.200.

operating expenditure or the UT5 submission. These initiatives included enhancing the planning capabilities, processes and approach to enable longer term integrated, and more efficient operation of the CQCN.

The QCA rejected the inclusion of these step changes and considered the cost incremental business-as-usual expenses and that they do not consider step changes as a mechanism to allow the pass-through of incremental costs associated with normal operations.[120]

Table 66 Aurizon Network – Step changes rejected by the QCA

Step Change	Cost Category	Description	Amount
Planning & Engagement increases: Network performance	Network Control, Safe Working and Operations	Recruitment of employees during 2016/17	$516k p/a
Planning & Engagement increases: Network planning	Network Control, Safe Working and Operations	Recruitment of employees during 2016/17	$370k p/a
Planning & Engagement increases: Network customer service	Network Control, Safe Working and Operations	Recruitment of employees during 2016/17	$140k p/a
Safety management system review	VP Network Operations	Requirement to review safety management systems	$225k p/a
Continuous improvement	VP Network Operations	Activities to optimise capital investment and improve operations	$300k p/a
[redacted]	[redacted]	[redacted]	[redacted]

Source: Aurizon Network

Whilst Aurizon Network accepts that the safety management system review and continuous improvement step changes could be deemed business-as-usual expenditure Aurizon Network does not accept the rejection of the resourcing step changes including the planning & engagement and electrical specialist roles. While these positions may not be the direct result of an uncontrollable change, the roles are necessary given the increased volumes and complexity of the below-rail business and are providing value to customers.

If the QCA is going to clawback all of the productivity benefits, then it must allow Aurizon Network to "take back" additional expenditures. Alternately, the cost allowance should be set at a broader level, allowing Aurizon Network to manage its cost structure within that allowance. This would involve recognition that some 'cost savings' will actually be redirected to new initiatives, and not all passed onto users.

The planning & engagement step change included eight FTE's across the Network Performance, Network Planning & Network Customer Service teams to meet operational requirements and ensure the teams were positioned to support the broader Network Operations business. The changes are intended to provide opportunities to achieve standardisation and to consolidate capabilities across the Network Operations CQCN function to more effectively leverage expertise and more clearly articulate areas of accountability and delivery.

The key objects include:
> developing a planning framework that optimises track access to meet volumes throughput;
> flexibly managing market demand and Network aging asset requirements;

[120] QCA (2017) Draft Decision, p.212.

- delivering a single long-range year on year plan to identify current and future access requirements across the four systems in the CQCN;
- delivering a single plan that integrates all work activities (renewals and maintenance) every time the track is taken; and
- providing a clear responsibilities for the Principal Contractor Work Health and Safety and Rail Safety Management during all Integrated Possession works.

Aurizon Network has included the costs associated with the planning and engagement step change as per the 2015-16 operational expenditure model.

The electrical specialist step change included costs associated with one FTE in the Commercial team. Given the large sunk investment in electric traction and the complexity of the energy system's regulatory regime, Aurizon Network identified the potential for cost optimisation and stranding of the electric assets as a key business risk. It is imperative that Aurizon Network has adequate resourcing, internal expertise and capability to understand and influence energy regulation and markets.

UT5 (Clause 3.4(c)(viii)) states that the supply of Below Rail Services includes providing the use of electric transmission infrastructure on electrified sections of the Rail Infrastructure. Providing this will enable Access Holders or Train Operators to run electric train services within the CQCN. Subject to clause 2.6 of the undertaking, the sale or supply of electric energy for traction, includes managing electric energy supply from other parties to Access Holders or Train Operators where requested to provide that electric energy.

In addition to managing policy and energy regulation, there are a number of opportunities to reduce Aurizon Network's energy costs which have been identified including:

- assessment of connection points to develop the most cost efficient network by eliminating connection points where electric service can be maintained more effectively through upgrade or improved management of other connection points;
- connecting other entities (such as solar farms) to Aurizon Network connection points to reduce costs;
- working with energy providers and the AER to secure lowest possible connection charges; and
- more efficiently managing energy procurement, through progressive purchasing and pricing.

These savings will result in a direct pass through to the CQCN customers, as well as assisting to manage Aurizon Network's asset stranding risk. Aurizon Network requires this resource to provide expert advice and bring knowledge of energy markets and regulation to the business. Aurizon Network has not been able to identify an external consultant with this mix of expertise and capability, and we see an ongoing need for this position to manage one of the business's key risks.

Aurizon Network has included the costs associated with the step change as per the 2015-16 operational expenditure model.

Reducing the proposed allowance for commercial planning and development additional FTEs

We note that the QCA has made no step change to the 2015-16 base year costs to reflect the additional 3.8 FTE employed by Aurizon Network to manage the additional workload arising from UT4. The QCA noted that the 3.8 FTE were employed during 2015-16 and therefore the costs will be reflected in the 2015-16 base year. Aurizon Network notes however that the FTE were employed between April 2016 and June 2016 therefore the full costs of the FTEs have not been included in the 2015-16 base year. Aurizon Network has included a step change to reflect the costs associated with these FTE had they been employed for the full financial year.

Other adjustments not covered by the QCA Draft Decision

Regulatory compliance – professional services

Aurizon Network proposes a minor uplift of expenditure of $0.75m to recognise anticipated expenditure associated with Aurizon Network's compliance with upcoming regulatory processes that will be incurred during the UT5

term. This expenditure was not included in Aurizon Network's UT5 expenditure proposals, and was therefore not considered in the QCA's Draft Decision and therefore requires an additional adjustment. This relates to:

- QCA reviews (declaration and certification) – Aurizon Network is expected to incur professional services costs for legal and economic advice in preparing submissions to QCA regulatory processes for re-declaration of Aurizon Network's below-rail assets under the QCA Act and certification of the rail access regime ($ 0.5m FY20);
- UT6 development – We anticipate additional consultancy expenditure will be required to assist Aurizon Network prepare its proposal and respond to QCA assessments, particularly where there is uncertainty in QCA review methodology ($0.25m FY20).

Summary

Aurizon Network's revised position for a proposed UT5 allowance for the recovery of system wide and regional costs is summarised in the table below.

Table 67 Aurizon Network – Response – System-wide and regional costs ($m)

Direct Opex cost item	FY2018	FY2019	FY2020	FY2021	Total
Network control, safe working and operations	29.1	29.8	32.2	32.7	**123.8**
Infrastructure management	18.1	18.5	18.9	19.4	**74.8**
Business management	19.7	20.2	21.9	21.2	**83.0**
Total – Nominal	**66.9**	**68.4**	**73.0**	**73.3**	**281.7**

Totals may not add due to rounding.

7.3 Corporate overheads

Aurizon Network's operating expenditure proposal includes an allowance for the corporate costs of Aurizon Holdings Limited. This allowance is provided in recognition of the efficient costs that Aurizon Network would be expected to incur if it operated on a stand-alone basis, including, but not limited to, costs to provide for:

- CEO and Board
- Human resources
- Finance[121]
- General counsel[122]
- Company secretary
- Internal audit
- Health, safety and environment
- Information Technology

7.3.1 Aurizon Network's submission (2017 DAU)

Aurizon Network submitted corporate costs for the UT5 period of $203.8m, representing costs incurred within the Aurizon Group that Aurizon Network would reasonably incur if it operated on a stand-alone basis.

[121] Costs of Network Finance are included within Business management costs rather than corporate overhead as they directly relate to the Network business. Other financial services performed within the Aurizon Group in addition to the activities performed by the Network Finance team include: Treasury, Tax, Accounts Receivable, Accounts Payable, Payroll, Investor Relations, Procurement and Real Estate.

[122] Costs of Network Legal are included within Business management costs rather than corporate overheads as they directly relate to the Network business. This does not cover all the Legal costs that would be incurred by Aurizon Network as a stand-alone business.

A breakdown of this proposed allowance is presented in the table below.

Table 68 Aurizon Network – 2017 DAU – corporate overheads ($m)

Corporate overhead cost item	FY2018	FY2019	FY2020	FY2021	Total
Board and CEO	2.1	2.1	2.2	2.2	**8.6**
Finance	3.0	3.1	3.2	3.3	**12.6**
Enterprise real estate	14.8	15.4	15.8	16.0	**62.1**
Human Resources	3.7	3.8	3.9	4.1	**15.6**
General counsel and company secretary	1.5	1.5	1.6	1.6	**6.2**
Information technology	18.0	18.3	18.6	18.9	**73.8**
Safety, health and environment	2.5	2.6	2.6	2.7	**10.4**
Other enterprise services	3.4	3.6	3.7	3.8	**14.5**
Total - nominal	**49.1**	**50.5**	**51.6**	**52.7**	**203.8**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.225. Totals may not add due to rounding.

These costs were ascertained using substantially the same allocation methodology approved for UT4, with the exception of:

> Network Finance and Network Legal costs are included in Business Management rather than corporate overhead;
> shared finance service costs are allocated based on the number of transactions performed (for accounts receivable and accounts payable) and FTEs (for payroll) rather than the direct cost allocator. This is in line with the general principle of applying causal allocators where they are available; and
> enterprise real estate costs have been analysed in detail to determine those costs that can be directly attributed to Network.

The 2014-15 year was used as the base year for the allocation methodology.

In addition to being aligned with the methodology adopted in the UT4 approved undertaking, Aurizon Network's methodology was also aligned with commonly accepted principles for an appropriate cost allocation methodology, being that it should:

> directly attribute costs whenever practicable;
> consider the inherent accuracy of each driver's data source;
> treat similar types of costs consistently;
> make appropriate trade-offs between simplicity and accuracy; and
> maintain consistency with industry norms.

7.3.2 QCA assessment

The Draft Decision proposes an allowance of $167.3m for the UT5 period, a net reduction of $36.5m to Aurizon Network's proposal. The breakdown included in the Draft Decision is presented below.

Table 69 QCA Draft Decision on Aurizon Network – corporate overheads ($m)

Operating expenditure category	FY2018	FY2019	FY2020	FY2021	Total
Corporate overhead allowance	40.3	41.2	42.3	43.5	**167.3**

Source: QCA (2017) Draft Decision, p.231. Totals may not add due to rounding.

The QCA's estimate was derived by making the following key adjustments to Aurizon Network's proposed costs:

- a change to the base year from 2014-15 to 2015-16;
- application of an FTE allocator to Aurizon Holdings Group Information Technology costs rather than the direct cost allocator as submitted by Aurizon Network;
  - the QCA proposes to apply an FTE allocator in the absence of an allocator based on software licence numbers being available; and
- enforcement of a 'step-down' change to the 2015-16 base year costs through a clawback of anticipated transformation savings from Aurizon Network during FY17 and FY18.

These changes are summarised in in section 7.3.3.

Aurizon Network does not support the Draft Decision on the appropriate way to amend its cost proposal as it does not result in an allowance sufficient to meet the efficient cost of service provision for a stand-alone entity, including a risk-appropriate return on investment. As noted in section 7.1.3, the QCA's intended approach to clawback transformation savings from Aurizon Network is not consistent with outcomes of incentive based regulation which is typically designed to encourage the Network business to 'outperform' and become more operationally efficient when there is a reasonable expectation that any efficiency benefits that are captured are retained and re-directed back to ongoing service provision.

7.3.3 Aurizon Network's response

We have assessed each of the QCA's proposed adjustments in corporate overhead costs over the UT5 period and our position is summarised in the table below.

Table 70 Summary of key differences between Aurizon Network and QCA – Corporate overhead costs ($m)

Corporate overheads	QCA Draft Decision Total ($m)	Aurizon Network Response
Aurizon Network DAU	**203.8**	
Base year adjustment (excluding any bonus adjustment)	(6.8)	Agree
• Bonus Adjustment	3.7	Disagree
• WPI change	(1.6)	Agree
• CPI change	2.3	Disagree
• IT Allocator change	(24.4)	Disagree
• FTE Allocator change	2.2	Agree
Step changes: real estate consolidation	(1.8)	Disagree
Transformation savings	(10.1)	Disagree
QCA Draft Decision	**167.3**	

Aurizon Network supports the following changes proposed by the QCA

Aurizon Network accepts the following adjustments that the QCA has proposed in section 7.6.5 to Aurizon Network's proposed overhead costs:

Base Year Adjustments

> substituting proposed 2014-15 base year costs with 2015-16 costs (results in a reduction of $6.8m), except for the removal of the proposed cash bonus adjustments from 2015-16 base year;
> reduction to reflect operational sites to be decommissioned;
> increase to reflect the impact of an updated FTE allocator ($2.2m increase); and
> application of the QCA's updated WPI inflation forecasts ($1.6m decrease).

Aurizon Network does not support the following changes proposed by the QCA

Aurizon Network does not support the following adjustments that the QCA has proposed in section 7.6.5 of the Draft Decision to Aurizon Network's proposed overhead costs:

> reduction in employee bonuses to reflect the 2015-16 base year plus an adjustment of approximately $0.6m per year;
> reduction to shared IT costs to reflect use of an FTE allocator rather than direct cost allocator ($24.4m reduction);
> transformation savings—reduction to reflect identified savings from transformation initiatives ($10.1m reduction);
> removal of incremental step changes in real estate costs as part of the corporate office consolidation process ($1.8m reduction); and
> application of the QCA's CPI inflation forecasts ($2.3m increase).

Each of these issues is discussed further below, with the exception of CPI which is discussed above under section 7.2.3.

Base Year Adjustment

Aurizon Network supports the QCA's intended approach to apply FY2016 as the base year for corporate costs (excluding the adjustment to bonuses), with some amendments, as shown in the table below.

Table 71 Aurizon Network - 2015-16 Base year changes ($m)

QCA Draft Decision	40.3
Bonus increase (excluding effects of restructure)	1.0
Increase in FTE allocator to 16.2%	0.2
Increase in Direct cost allocator to 25%	0.3
Change in allocation methodology for IT costs	7.8
Effect of restructure	9.0
Aurizon Network re-submitted costs	**58.6**

Bonuses

Employee bonus expense in 2015-16 was significantly lower than the previous years due to the Aurizon Group Board not awarding short-term incentives to the CEO or his direct reports (the key management personnel). Cash bonuses paid to staff below this level were also lower than in previous years, as mentioned in section 7.2.3 above. As a result of adopting 2015-16 as the base year, an adjustment is necessary to normalise that year's bonuses. The QCA has accepted their consultants' recommendation to adjust the base year by $0.6m to reflect the allocated value of short-term incentives awarded to key management personnel in 2014-15. Aurizon Network supports this adjustment being made, but contends that the adjustment should be increased to $1.6m per year, incorporating an adjustment for both key management personnel and other staff. Our proposed adjustment has been calculated using average bonus expenses for the four years 2012-2013 to 2015-16 for each corporate cost centre included in the

allocation to Aurizon Network, multiplied by the allocator (FTEs or direct costs) applying to each cost centre. Four years is representative of an Access Undertaking period and using the past 4 years average bonus is the same approach as has been taken for the calculation of system wide and regional costs.

Effect of restructure

As noted on page 190 of the Draft Decision, a new Aurizon Group organisational structure has come into place effective 1 July 2017. The organisation structure moved from a functional based model to a business unit model designed along the core areas of Aurizon Group's business, including Network, as well as central support and planning functions. Under the restructure, Infrastructure Engineering and Infrastructure Delivery services which had previously been provided by Aurizon Operations moved into Aurizon Network.

These changes have had an impact on the FTE numbers and costs for Network. While the QCA Draft Decision has assumed that the same structure is in place for UT5 as at the time of the 2017 DAU, Aurizon Network contends it would be appropriate to update the operating cost allowance for these changes.

Corporate overhead relating to these two areas moved into Aurizon Network has historically been recovered through the charging of a corporate overhead margin on the direct costs of services performed. As the majority of the work performed by Infrastructure Delivery is capitalised onto projects, the corporate costs associated with this area have effectively been recovered through a capital claim, resulting in an increase in the RAB, rather than through the corporate cost allowance. That is, the payment for the services performed, including the margin, forms part of Aurizon Network's capital costs. The direct costs of the services performed will still be capital costs to Aurizon Network, however, it is proposed to discontinue the charging of the margin, and instead recover the corporate costs attributable to these services through the corporate cost allowance. Now that these services are not being performed by another legal entity (Aurizon Operations) and are within Aurizon Network, we propose that there should be a consistent methodology with respect to the recovery of corporate costs – that being that the same methodology as proposed for UT5 for all other divisional areas within Aurizon Network (including maintenance costs and business management costs). This change will result in an increase in corporate overhead allowance, but a decrease in capital costs (reflected in the capital indicator) going forward. The corporate overhead allowance included in this submission is higher than in the 2017 DAU mainly due to this change in methodology. A reduction has been made to the Capital Indicator representing the amounts of the corporate overhead relating to Infrastructure Delivery that are now proposed to be recovered through the operating cost allowance.

The amount of each of the proposed adjustments discussed in this section below incorporate the effects of the organisational restructure on 1 July 2017 i.e. increase in FTE and Direct Costs allocator, real estate footprint and IT consumption costs.

The 2015-16 base year costs increase by $9.0m as a result of the recalculation of the allocators, increase in real estate footprint of $1.4m for operational sites and $0.7m for corporate premises and the change in methodology for IT costs described below. The additional cost for corporate premises have been calculated by increasing the share of 192 Ann Street costs to 40% and 900 Ann Street costs to 21% based on 117 more FTEs being based in Brisbane.

Update to Cost allocators

Aurizon Network notes the QCA's decision to accept the recommendation from AECOM to increase the FTE allocation % to 16.1% was based on December 2016 actuals, the latest available at the time of AECOM's review. Based on FY17 actuals, the allocation percentage increases to 16.2%. The FTE allocator increases to 21.1% with the inclusion of the Infrastructure Delivery and Infrastructure Engineering teams from the restructure discussed above.

AECOM did not recommend any change to the 'Costs' allocator, as projections for the expected level of business activity for the Aurizon Group were not available and hence the projected 'Costs' allocator for future years could not be calculated. The assumption was made that the Aurizon Group would continue to operate at FY16 levels except for a slight reduction due to the Transformation Program. The 'Costs' allocator for FY17 has subsequently been calculated using the financial statements for Aurizon Network Pty Ltd and Aurizon Holdings Ltd for the year ended 30 June 2017 and was used in the preparation of the 2017 Below Rail Financial Statements. The 'Costs' allocator for

FY17 was 25.0%. With the inclusion of the Infrastructure Delivery and Infrastructure Engineering teams, the direct 'Costs' allocator increases to 30.7% as a result of the addition of $89.1m in costs (pre capitalisation) to both the numerator and denominator of the direct 'Costs' ratio.

Information technology costs

In the Draft Decision, the QCA has changed the allocation methodology for corporate Information Technology costs from direct costs, as approved in UT4, to an FTE allocator.

A benchmarking report from ITNewcom, commissioned by Aurizon Network during the UT4 process and included as part of the UT5 submission, found that IT costs for a stand-alone business like Aurizon Network would amount to $18m per year. The proposed allowance from the Draft Decision of $46m for the UT5 period falls well short of the benchmarking. The QCA has acknowledged the report in the Draft Decision, however it has not made any comment on its assessment of the findings from that report, or noted any deficiencies in the benchmarking report to support an allowance significantly short of the amounts ITNewcom had proposed. It should be noted that the cost estimate from ITNewcom is annual run cost based on 2013-14 and hence does not include the software maintenance and support services costs for the Advanced Planning and Execution System (APEX) or Network Asset Management Systems (NAMS) software systems. It was also prepared using the Aurizon Network structure at that time and hence does not allow for IT costs relating to the employees restructured into Network on 1 July 2017.

An allocator based on FTEs is inappropriate for IT costs as IT services are not consumed equally amongst employees. Some office based FTEs will utilise multiple devices, while train drivers and some maintenance workers will not have any IT devices allocated to them and may utilise a common computer device for administrative purposes from time to time. AECOM also did not propose that FTE was the most appropriate allocator for IT costs. The QCA noted in their Draft Decision that the change to the FTE allocator was made on the recommendation of AECOM that a more appropriate allocator for IT costs would software licence numbers, but *in the absence of an allocator based on software licence numbers, IT costs should be allocated by FTE count rather than direct costs* (page 223).[123]

In accordance with Aurizon Network's costing methodology, the general direct cost and FTE allocators are only applied when specific costs attributed to Network cannot be identified or causal allocators cannot be determined. Subsequent to the lodgement of the 2017 DAU and in line with the Aurizon Holding Group's move from a functional organisational structure to business units on 1 July 2017, significant work has been undertaken to identify costs of software applications and to attribute these to the respective business units, and to identify devices used by each business unit. We consider an allocation based on directly identified application costs and end user computer costs (allocated by number of devices) is more reflective of the costs that would be incurred by Network as a stand-alone company than using an FTE allocator or licence numbers.

The costs have been resubmitted on the basis of the attribution work done by the Group for application costs. The budgeted IT costs for 2017-18 were grouped into the categories shown below. The actual IT costs for 2015-16 have been grouped into these same categories in the same proportions.

[123] QCA (2017) Draft Decision, p.223.

Table 72 Allocation of IT costs

	Allocation Basis	% of Group FY18 Budget costs	FY16 Actual	Network Direct	Other Business Direct	Shared
			$m	$m	$m	$m
Applications – Licences	% of applications licence costs	17.2%	[redacted]	2.5	[redacted]	7.0
Applications – Other	% of application licence costs	29.6%	[redacted]	4.4	[redacted]	11.9
Infrastructure – End User Computing	Devices	3.4%	[redacted]	0.5	[redacted]	1.2
Infrastructure – Licences	% of Infrastructure licence costs	15.3%	[redacted]	0.2	[redacted]	6.3
Infrastructure – Other	% of Infrastructure licence costs	18.0%	[redacted]	0.2	[redacted]	7.5
Telecommunications		6.2%	[redacted]			4.3
Other		10.3%	[redacted]			7.1
		100.0%	[redacted]	**7.8**	[redacted]	**45.3**

The costs of licences have been allocated to the business units based on which applications are used within those business units. Licences costs for use of SAP software, comprises the largest cost of the applications shared within the enterprise. SAP is used extensively throughout Aurizon Network for its accounting system and comprises general ledger, payroll, and fixed assets functionality. The platform for the Network Asset Management System, Support costs (described as 'Infrastructure – Other' in the table above) in relation to the applications and infrastructure have been allocated in the same proportions as the licence costs.

Table 73 Application License costs by Business Unit

Network	Other Business Units	Enterprise-wide	Total
21%	21%	58%	100%

End user computer costs consist of Microsoft licences, email and calendars and desktop support. This has been allocated based on the number of devices utilised within each of the business units. Network has 20% of devices directly.

Table 74 Devices by Business Unit

Coal	Bulk	Network*	Intermodal	Other	Total
614	328	1,207	392	3,461	6,002
10%	5%	20%	7%	58%	100%

** This includes 151 relating to the business unit restructure on 1 July 2017*

There are minimal costs within Infrastructure that are business unit specific. The majority of the costs relate to servers, data centre costs and storage which are enterprise-wide costs. Where costs are business unit specific, they have been split accordingly, with Network having a 2% direct cost allocation. Support costs have been allocated in the same proportions to the costs able to be allocated directly. The support costs include computer leasing, computer support and service desks.

The remaining IT costs (e.g. support services) have been allocated to Network using the direct cost allocator rather than the FTE allocator proposed by QCA for total IT costs. As noted above, IT services are not consumed equally

amongst employees which makes an allocator based on FTEs inappropriate. Further, the total IT costs allocated to Network under this costing method results in an allocation more in line with the benchmarking for IT run costs.

The total IT costs of $21.7m for the 2015-16 base year submitted in the revised MAR comprises $7.8m allocated using licenses and devices and $13.9m of enterprise wide costs allocated using the directs costs allocator.

Table 75 Comparison of alternate allocation methodologies

Allocation method	Allocator	$m
IT cost using Direct cost allocator (Aurizon Network 2017 DAU)	30.7%	[redacted]
IT cost using FTE allocator (QCA Draft Decision)	21.1%	[redacted]
IT cost using new allocation methodology (Aurizon Network revised position)		
• Direct (based on the licence costs and devices		$7.8
• Allocation of shared costs ($45.3m x 30.7%)		$13.9
Sub-total		**$21.7**

As noted above, Aurizon Network does not support the use of FTEs as an allocator for IT costs. An allocation based on directly identified application costs and end user computer costs is more reflective of the costs that would be incurred by Network as a stand-alone company than using an FTE allocator or licence numbers. The resultant amount is similar to the application of the direct cost allocator to total IT costs as was originally submitted. It also comparable to the benchmarking done for standard run-costs for a stand-alone entity.

Step changes: real estate consolidation

The QCA has disallowed the additional costs that will be incurred from June 2018 due to the consolidation of two corporate offices (192 Ann Street and 175 Eagle Street) at 900 Ann Street and the QCA does not consider the cost would be reasonably included in Aurizon Network's efficient cost base if it were a stand-alone entity.

This type of forensic examination of costs on an individual cost centre basis and requirement for detailed justification for changes in these costs is more consistent with cost-based regulation than incentive-based regulation. As long as Aurizon Network continues to operate within its overall spending allocation and is incentivised to manage its costs and deliver efficiencies, then these costs should be considered reasonable.

Notwithstanding our high level concerns, Aurizon Network has assessed the Draft Decision and contends that the A-grade office at 900 Ann Street is an efficient cost whereby the rent for 900 Ann Street is within the range for gross face rents in the CBD fringe for large ASX listed companies.

Rent for city fringe properties is generally lower than CBD. However, rent for 900 Ann Street is higher than current rent at 192 Ann Street which is due to the style and grading of the buildings. The building at 900 Ann Street has been built to A-grade specification and the condition expected for an ASX listed company. It is assumed that Aurizon Network as a stand-alone entity would also be a listed company, consistent with assumptions made in the assessment of WACC.

The report prepared by KPMG which was provided to the consultants during the review of the 2017 DAU has been updated to include recent evidence of market rent in both Brisbane CBD and city fringe, based on leases executed in the last year. While it has not been included in the report as the lease was not executed in the last year, it is also noted that net face rent for 145 Ann Street from November 2018 will be in excess of $900psm. The report highlights that Aurizon's lease of 900 Ann Street is comparable to other large tenants in the city fringe, particularly when the cost of the building specification is considered. An example of a recent lease contract for an ASX listed company is the lease of 180 Ann Street with a gross face rent of $700-$750/psm, [redacted] This analysis is included at Appendix I to this response submission.

The costs submitted in the UT5 proposal included lease of 192 Ann Street until the end of September 2018 when the lease expires, and then increased lease costs for the new building thereafter. The timelines relating to the relocation

have further developed since the 2017 DAU was made and it is expected the new building will become occupied in June 2018. Accordingly, the costings have been revised to include 3 additional months of rent for 900 Ann Street. Aurizon will continue to incur lease costs for 192 Ann Street until the lease expiry in September 2018 as it is very unlikely that a tenant to sub-lease for a short space of time would be found. It is not considered unreasonable for there to be up to a three month overlap in the lease payments for both properties to allow for unexpected delays and to ensure successful relocation. An additional $0.7m has been included in the resubmitted costs in relation to the earlier relocation to 900 Ann Street in FY19.

Transformation savings

The 2017 DAU included a $1.9m adjustment to the 2014-15 base year to allow for transformation savings, this was based on targeted savings built into the 2015-16 corporate plan.

Aurizon Network notes the QCA intends to clawback these savings. These savings are a direct result of the Aurizon Network achieving operational efficiencies. Such efficiency gains, when retained by the Network business, act as incentives to enable the business to continue to invest in the broader supply chain where the benefits are shared with users of the below-rail Network.

Subsequent to the lodgement of UT5, a Transformation team was established within the Aurizon Holdings Group to provide a focus on the reporting and governance of transformational initiatives. A register of transformational initiatives for cost savings to be achieved within 2016-17 and 2017-18 was established and an extract of this register of corporate initiatives with an indirect impact on Network was provided to the QCA and its consultants in April 2017. Based on the recommendation of its consultant, the QCA has included transformation savings of $10m over the duration of UT5 as a step change to the 2015-2016 base year which already included some transformational savings. This included all initiatives that had been categorised as Locked In, Cashflowing and Implementing on the register. Half of the estimated savings from initiatives categorised as under evaluation were also included.

Approximately half of the transformation savings included in the corporate cost allowance in the Draft Decision relates to an initiative to reduce external safety training costs. This initiative was still under evaluation at the time the register was provided to the QCA consultants, but had estimated potential savings of $2m per year for Aurizon Network. The benefits from the initiative continue to be refined but the cost savings will be far less than was originally entered into the initiatives register. Whatever cost savings are achieved will result in cost reductions in Aurizon Network directly and would not flow through to Aurizon Network as a corporate cost. In the initiatives register, benefits realisation for this initiative have been reassigned from corporate Safety, Health and Environment to the Network business. The costs of the corporate Safety, Health and Environment team will not be impacted as a result of this initiative as costs of external training are incurred within Aurizon Network directly. Accordingly, the transformational savings included in the corporate cost allowance should be reduced by $4.1m for the duration of UT5 ($1m in 2017-18, escalated by CPI each subsequent year). Savings relating to this initiative have been included as a step change to the system wide business management costs – permanent way development training (refer section 7.2.3).

Summary

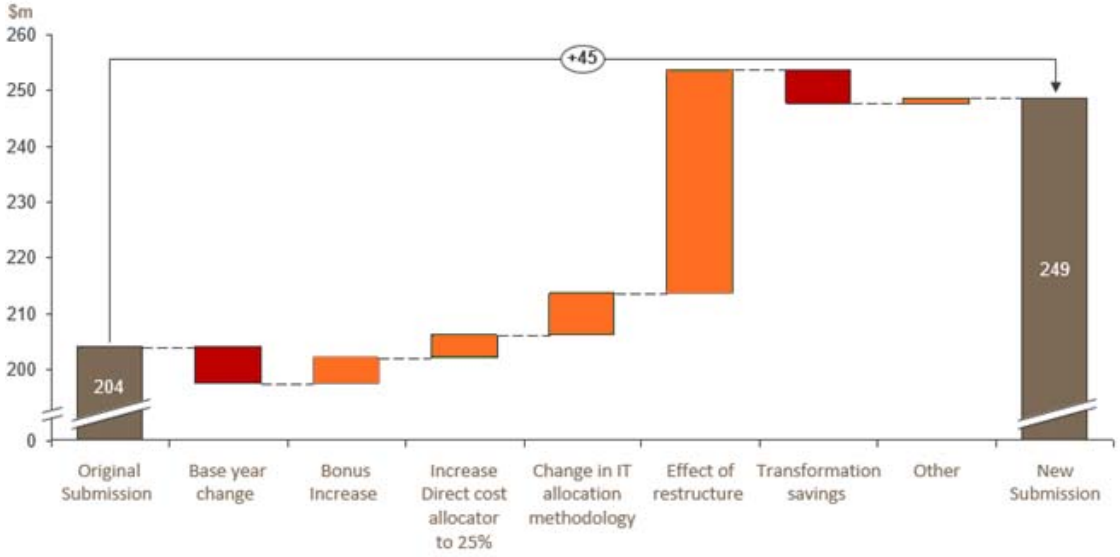
Aurizon Network's revised position for a proposed UT5 allowance for the recovery of corporate overheads is set out in the table below. The increase of $44.8m from the 2017 DAU substantially relates to the change in methodology for the recovery of corporate overhead relating to the division restructured into Network effective 1 July 2017 as illustrated in the figure below.

Table 76 Aurizon Network – Response – corporate overheads ($m)

Corporate overhead cost item	FY2018	FY2019	FY2020	FY2021	Total
Board and CEO	2.5	2.6	2.6	2.7	**10.4**
Finance	3.9	4.0	4.1	4.3	**16.3**
Enterprise real estate	16.8	18.5	18.3	18.7	**72.3**
Human Resources	5.1	5.2	5.4	5.5	**21.2**
General counsel and company secretary	1.7	1.7	1.8	1.8	**7.0**
Information technology	22.5	23.0	23.5	24.0	**93.0**
Safety, health and environment	4.4	4.5	4.7	4.8	**18.4**
Other enterprise services	3.9	4.0	4.0	4.1	**16.0**
Transformation savings	(1.3)	(1.5)	(1.6)	(1.6)	**(6.0)**
Total - nominal	**59.6**	**62.0**	**62.8**	**64.3**	**248.6**

Totals may not add due to rounding.

Figure 32 Aurizon Network – Response – corporate overheads ($m)



7.4 Risk and insurance allowances

In providing access to the declared service, Aurizon Network is exposed to a range of risks which are outside its control. These risks are typically asymmetric in nature and Aurizon Network is not compensated for bearing them under the cost of capital methodology applied by the QCA.

As a result, Aurizon Network's operating expenditure proposal included an allowance for:

> external insurance policy premiums (e.g. Industrial and Special Risks, general liability etc.); and

> self-insurance premiums (e.g. derailments and dewirements),

which mitigate its exposure to unforeseen events and allow for the recovery of efficient costs associated with managing asymmetric risks.

With the exception of selected bridges, tunnels and feeder stations that are explicitly specified on the external insurance policy, the premiums do not provide any insurance cover for below rail track infrastructure.

7.4.1 Aurizon Network's submission (2017 DAU)

Aurizon Network's proposed risk and insurance arrangements consist of a combination of commercial insurance policies, self-insurance premiums for uninsured risks and below-deductible insured risks, and pass-through (review event) provisions. Aurizon Network engaged Jardine Lloyd Thompson (JLT) and Finity Consulting (Finity) to estimate the proposed insurance and self-insurance allowances respectively.

The methodology for estimating the commercial insurance premiums is largely consistent with the UT4 approach, with the major difference being the inclusion of premiums for marine cargo, contract works and crime.

Aurizon Network's 2017 DAU proposal for risk and insurance costs for the UT5 regulatory period was $37m which represented a 7% reduction, in real terms, than the approved UT4 allowances.

Table 77 Aurizon Network – 2017 DAU (UT5) - Annual insurance premiums ($m)

Category	FY2018	FY2019	FY2020	FY2021	Total
External Insurance	3.0	3.1	3.1	3.2	**12.4**
Self-Insurance	6.0	6.2	6.3	6.4	**24.9**
Total	**9.1**	**9.3**	**9.5**	**9.7**	**37.5**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.237. Totals may not add due to rounding.

7.4.2 QCA assessment

The QCA Draft Decision has denied premiums for civil liability and indemnity ($0.25m for UT5) and marine cargo ($0.52m for UT5) being included in the allowance.

Table 78 QCA Draft Decision on Aurizon Network – insurance premiums ($m)

Category	FY2018	FY2019	FY2020	FY2021	Total
Commercial insurance costs					
Non-electric	2.5	2.5	2.6	2.6	**10.2**
Electric	0.4	0.5	0.5	0.5	**1.8**
Self-Insurance	5.1	5.3	5.4	5.5	**21.3**
Total	**8.0**	**8.2**	**8.4**	**8.6**	**33.2**

Source: QCA (2017) Draft Decision, p.243. Totals may not add due to rounding.

7.4.3 Aurizon Network's response

Aurizon Network does not support the Draft Decision on the appropriate way to amend its draft Access Undertaking as outlined within Section 7.6.5 of the Draft Decision. The Draft Decision is to reduce the allowance for commercial insurance costs by $0.8m and the allowance for self-insurance by $3.3m over the UT5 regulatory period.

Commercial insurance costs

As previously stated, professional indemnity insurance provides coverage in respect of claims for civil liability arising from the provision of professional services to third parties. Such services may include:

- engineering studies
- training
- feasibility studies
- project management work
- design of third party rail infrastructure
- rail infrastructure management
- access management
- protection services (TPA's)
- rail grinding

Aurizon Network does not support that it is not appropriate for the proposed premium to be included in the allowance. Where Aurizon Network provides such professional services to third parties, it's most likely there will be a contractual obligation on Aurizon Network to have in place Professional Indemnity Insurance (amongst other policies). Whilst an estimate of the fee income for such services might be incidental / immaterial, Aurizon Network does accept risk in providing such services for a breach of professional duty and therefore, it is prudent (and as noted above Aurizon Network will most likely have a contractual obligation) to have in place Professional Indemnity Insurance.

Marine Cargo Insurance provides coverage for property owned or leased by Aurizon whilst in transit. The QCA considers that Aurizon Network should arrange a policy on a per consignment basis, rather than having an annual blanket policy, on the basis that transportation of property would occur infrequently.

Two examples of situations for which marine cargo insurance is taken out by Aurizon Network are: coverage provided for physical loss or damage to unregistered plant and equipment being moved around central Queensland by road transport; and coverage provided for plant procured from overseas or interstate and for which Aurizon Network is responsible for arranging Marine Transit Insurance for the shipment/s. As significant plant and equipment used by Aurizon Network are not off the shelf items, if they do get damaged there is considerable down time that could be lost in repair or replacement, so it is imperative that the plant and equipment be insured.

Recent contracts for the purchase of the ballast undercutter, resurfacing machine and wagons have required Aurizon Network to take out insurance coverage under Aurizon's annual contract works insurance program and effect, amongst other insurances, a marine transit (imports/exports) policy before the date of the purchase order. Details of the insurance program were provided to the supplier as part of the purchase arrangement. While purchases of plant such as the ballast undercutter, resurfacing machine and wagons may occur infrequently during a year, they are certainly not one-off purchases.

Unregistered or conditionally registered plant and equipment is placed onto low loaders or trailers and transported from job to job around the CQCN on a more frequent basis. Plant and equipment such as rail handlers, front end loaders, and a lot of the rail mounted plant is transported/floated from site to site. Float hire is a large and consistent cost that is incurred nearly on a daily basis. While contracts for the hire of floats to transport equipment have a requirement for the contractor to take out public and products liability insurance, the contractor is only liable if they are proved to be negligent in their performance. If an accident occurred at no fault to the contractor Aurizon Network's equipment was damaged, then the contractors' insurance would not cover the damage incurred. However, Aurizon Network's Marine Transit Insurance policy would provide coverage for such an instance.

Aurizon Network does not consider that it is practical to arrange a separate policy every time property is transported around the CQCN. It would not be prudent nor cost effective to arrange insurance on an ad hoc basis. Such an approach to arranging insurance could potentially result in uninsured losses due to a failure to provide notification and request a policy of insurance be procured on every occasion. The prudent approach is to arrange an annual Marine Transit policy so that every shipment / transportation is automatically covered subject to the policy terms and conditions.

The position to include marine cargo insurance in the insurance allowance is also supported by regulatory precedent as Aurizon Network is of the understanding that the cost allowance in the ARTC Hunter Valley Access Undertaking includes marine cargo insurance within its insurance expense.

The Marine Transit premium needs to have some basis for calculating the premium in addition to claims performance. Historically as estimate of values / sending's have not been readily available, the premium has been calculated based on an estimate of revenue.

Self-insurance costs

The QCA has considered the Operational expenditure allowance which includes self-insurance is not reasonable.

Aurizon Network's proposed self-insurance premiums seeks to cover those risks which are un-insurable within the insurance market place. The operational cost allowance seeks to recover self-insurance premiums to cover the following risks:

- Derailment;
- Dewirement;
- Weather related loses;
- Third-party repairs; and
- Liability.

In its Draft Decision, the QCA has expressed its views regarding the trade-offs between losses and maintenance activities. The QCA has outlined that due to Aurizon Network extensive re-railing program during the term of UT5, it 'would be reasonably expected to improve the overall track condition and safety of track and reduce the impact of derailments, therefore leading to a reduction in losses.'[124]

The QCA has sought not to allow the recovery of any re-insurance costs or profit margins within the self-insurance premiums. This is based upon Aurizon Network not having formalised the self-insurance function through either a self-insurance fund, or a board resolution that Aurizon Network will cover the costs of uninsured risks. The QCA Draft Decision states:

> *…the QCA considers it reasonable the access holders and their customers receive the comfort of a resolution from Aurizon Network's directors that the business will cover the costs of uninsured risks.*[125]

Summary of Aurizon Network's response

We have considered each aspect of the QCA's assessment of our self-insurance proposal. Aurizon Network is of the belief that there are errors within the QCA analysis, specifically relating to the impact rail renewals will have on the overall track condition. Following this assessment, Aurizon Network considers that the QCA should consider approving the originally submitted self-insurance premiums from Aurizon Network, but in the event that the coal volumes change from what Aurizon Network originally submitted, which will result in a subsequent change to the GTK's, the projected losses for the purposes of calculating a premium for derailments will need to be updated as part of the Final Decision. To complete this exercise, actuarial analysis will be required to calculate the applicable loadings to the estimated losses.

The QCA view that the re-railing activities due to be completed during the term of UT5, will result in an overall improvement in the track condition, is not correct. As outlined within Aurizon Network's November 2016 submission, the collaborative submission in March 2017 and the presentation to industry in March 2017, the renewals and maintenance program within UT5 results in 'the overall condition of the network remaining largely constant'.[126] The

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[124] QCA (2017) Draft Decision, p.238.

[125] QCA (2017) Draft Decision, p.239.

[126] Aurizon Network (2017), Submission following collaboration with Stakeholders, 17 March, p.12.

QCA position that the Aurizon Network's re-railing strategy during UT5 will lead to a reduction in derailments is not correct, as it is expected that this will assist the CQCN maintain a condition of steady-state.

The QCA rejected the overall self-insurance costs, specifically due to the inclusion of re-insurance costs and profit margins. The QCA has assessed that these costs are not reasonable to manage a self-insurance scheme that has not been formally established or endorsed. The QCA has maintained that to provide comfort to Access Holders that uninsured risks will be covered by Aurizon Network, a commitment through a board resolution is required.

Aurizon Network is committed to obtain this resolution from its Board. It is expected that this resolution will be made prior to a Final Decision on UT5. It will be conditional on the UT5 Final Decision having a self-insurance allowance that is in line with Aurizon Network submission and includes allowance for both re-insurance costs and profit margins.

Aurizon Network's premiums were based upon the volume forecast it submitted in November 2016. As projected self-insurance losses are calculated using forecast tonnes, it is appropriate to reforecast the future losses to include any revised forecast tonnes for the purposes of calculating future premiums. Therefore the QCA Final Approval tonnage forecast should allow for this exercise. Aurizon Network has not completed this exercise as part of this response to the Draft Decision.

7.5 Electricity transmission and connection costs

Aurizon Network supplies and sells electricity to railway operators for the purpose of operating electric traction train services in the Blackwater and Goonyella coal systems. This occurs via the distribution of electricity through Aurizon Network's overhead power distribution infrastructure.

Transmission and electrical energy charges reflect the costs associated with:

- distributing electricity transmitted from the National Electricity Market (NEM) to the overhead power infrastructure via connections with Network Service Providers (NSPs); and
- selling electricity, sourced from an electricity retailer who procures it from the NEM.

The supply and sale of electricity does not form part of the declared service. Nevertheless, Aurizon Network has voluntarily procured these services for the benefit of train operators and other supply chain participants.

7.5.1 Aurizon Network's 2017 DAU position

Transmission and electrical energy charges fall under the jurisdiction of the Australian Energy Regulator (AER). The cost forecasts included in Aurizon Network's operating expenditure proposal were based on the latest pricing guidance provided by TNSP's for FY2018. Aurizon Network has applied forecast CPI to estimate these charges for the remaining years of the UT5 regulatory period.

It is important to note that Aurizon Network provides this service at cost. Aurizon Network recovered these costs through the AT5 reference tariffs on the Blackwater and Goonyella Systems. To the extent that actual charges differ from the forecasts included in this operating expenditure proposal, an ex-post reconciliation takes place through the revenue cap process.

Aurizon Network proposed a total cost of $324m over the UT5 regulatory period for electricity transmission and connection costs. These costs were subsequently revised in July 2017 in line with the endorsed variation provisions of the 2016 Access Undertaking.

Table 79 Aurizon Network – Revised - Forecast UT5 transmission and connection costs ($m)

System	FY2018	FY2019	FY2020	FY2021	Total
Blackwater	36.6	37.2	37.8	37.8	**149.3**
Goonyella	35.9	36.6	37.1	37.1	**146.7**
Total – nominal	**72.5**	**73.8**	**74.8**	**74.8**	**296.0**

Totals may not add due to rounding.

7.5.2 QCA assessment

The QCA noted that the transmission charges paid by Aurizon Network are in accordance with an established regulatory framework and considered them to be reasonable but requested the figures be updated to reflect forecast volumes.

7.5.3 Aurizon Network's Response

Aurizon Network supports the Draft Decision which accepts our revised transmission cost forecasts provided to the QCA in July 2017 as reasonable. We note that the three connection points identified by the QCA as pending decommissioning (Dingo, Moranbah South and Rocklands) are now decommissioned. The Draft Decision requires Aurizon Network to update its cost forecasts to reflect the impact of the QCA's independent volume forecasts due to their potential impact on variable transmission costs that are sensitive to electric gross tonne kilometres. We understand this would then allow the QCA to calculate a revised AT5 tariff over the regulatory period.

In recalculating the AT5 tariffs in response to the Draft Decision, we have used the updated transmission cost forecasts to reflect the forecast electric gross tonne kilometres (egtks) provided by Aurizon Network in its response to the Draft Decision. The total revised transmission and connection costs for the UT5 regulatory period are shown in in the table below.

Table 80 Aurizon Network – Response – total transmission and connection cost forecasts ($m)

Operating costs	2017-18	2018-19	2019-20	2020-21	Total
Blackwater	36.2	36.9	37.9	38.7	**149.8**
Goonyella	35.9	36.9	37.9	38.6	**149.3**
Total	**72.1**	**73.8**	**75.9**	**77.3**	**299.1**

Totals may not add due to rounding.

We welcome the QCA's recognition that the revenue cap adjustment process, and cl. 5.2(b) of Schedule F of the 2017 DAU provide for symmetric ex post reconciliation of forecast and actual transmission costs which minimises risk of significant forecast error. We anticipate that any variation in transmission and connection costs resulting over the regulatory period will be addressed through one of these processes.

7.6 Electric traction energy costs

7.6.1 Electric energy

The sale of electricity does not form part of the declared service, and consequently, is neither part of Aurizon Network's operating expenditure proposal, nor its MAR. Nevertheless, Aurizon Network has elected to procure electricity for the benefit of Access Holders through a supply agreement with a registered electricity retailer. Aurizon Network recovers the costs of providing this service to Access Holders through the EC charge. To the extent forecast electricity costs differ from actual costs incurred, the difference will be reconciled through an adjustment to the EC charge for the following financial year.

7.6.2 Aurizon Network's 2017 DAU position

Aurizon Network's original forecast for electrical energy costs for the UT5 regulatory period as submitted in its 2017 DAU submission is outlined in the table below. For clarity, these costs do not form part of Aurizon Network's MAR, and are recovered through the EC charge.

Table 81 Aurizon Network – 2017 DAU (UT5) – Forecast electrical energy costs ($m)

Electric energy (EC) costs ($m)	FY2018	FY2019	FY2020	FY2021	Total
Total – Nominal	52.8	54.9	55.6	56.2	**219.5**
Total – Real ($FY2015)	50.1	51.5	51.5	51.5	**204.6**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.243. Totals may not add due to rounding.

7.6.3 QCA assessment

The QCA noted that Aurizon Network's purchasing strategy was sound and that it was developed in close consultation with industry.

For the purposes of modelling indicative EC reference tariffs components for this Draft Decision, the QCA assumed Aurizon Network's forecast electric traction energy cost for the full 2017-18 year, as implied in its September 2017 DAAU. The QCA then escalated these costs by CPI inflation and converted to indicative EC components using the QCA's updated volume forecasts. The QCA's conclusion on indicative electric energy costs, and EC reference tariff components for the UT5 period is set out below.

Table 82 QCA Draft Decision – electric traction energy costs and reference tariff components

	FY2018	FY2019	FY2020	FY2021	Total
Electric traction energy costs ($m)	70.1	71.8	73.5	75.2	***290.7***
Aurizon Network forecast egtk ('000s)	68,284,683	68,863,759	69,189,894	69,206,062	***275,544,398***
Indicative EC component ($/'000egtk)	$1.027	$1.043	$1.062	$1.087	-

Source: QCA (2017) Draft Decision, p.249. Totals may not add due to rounding.

7.6.4 Aurizon Network's Response

Aurizon Network supports the Draft Decision which accepts our proposed forecast electric traction costs are reasonable. The electricity market has experienced price volatility in recent years. The QCA notes that the progressive purchasing approach "exposes Aurizon network's electric traction customers to significant short-term price risk, which must be managed effectively". We note, that at the time the new purchasing strategy commenced, wholesale energy prices were high. Adopting a progressive purchasing strategy reduces contract timing risk and has enabled Aurizon Network to pass on reductions in wholesale energy prices that are anticipated over the UT5 regulatory period based on existing electricity futures pricing.

We note the Draft Decision sets out indicative EC reference tariffs that reflect the QCA's volume forecasts and escalation of 2017-18 transitional tariffs at CPI. Electric traction costs for the 2017-18 period have been updated with the load procured at this stage and the 2016-17 true up has been included. Any under- or over-recoveries to the transitional tariffs in FY2018 will be reconciled under cl. 2.2 of Schedule F of the 2016 Access Undertaking and will be reflected in the setting of the 2018-19 EC component.

The proposed electric traction energy costs for 2018-19 in the Draft Decision are not consistent with current purchasing which shows a significant reduction in electricity costs. We have therefore updated our forecast based on pricing for 2018-19 and volumes forecast by Aurizon Network. Aurizon Network has procured 64% of electrical energy for the 2018-19 period and therefore expects the forecast to be reasonably reflective of electricity costs. We

have escalated costs from 2019-21 at Aurizon Network's proposed CPI inflation and converted to indicative EC components using Aurizon Network's updated volume forecasts. This approach has been adopted because insufficient energy has been procured to provide meaningful forecasts for 2019-21. EC tariffs will be updated via the operation of clause 2.2 of Schedule F of the UT5 undertaking. The egtk variation year on year has an impact on the tariff in FY20-21 but this has not been factored into the calculations consistent with the Draft Decision. We do not consider the changes to Schedule F proposed in the Draft Decision are appropriate for the reasons outlined in our response to the Draft Decision in section 9.3.2. Indicative electric traction energy costs and reference tariff components are shown in the table below.

Table 83 Aurizon Network Response – electric traction energy costs and reference tariff components

	FY2018	FY2019	FY2020	FY2021	Total
Electric traction energy costs ($m)	67.3	58.3	59.4	60.5	**245.6**
Aurizon Network forecast egtk ('000s)	68,569,978	70,137,273	70,607,021	70,623,681	**279,937,953**
Indicative EC component ($/'000egtk)	$0.98	$0.83	$0.84	$0.86	-

8

Maintenance cost allowance

8. Maintenance Cost Allowance

This chapter examines issues related to Aurizon Network's proposed allowance for maintaining the declared service over the UT5 regulatory period.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 84 QCA Draft Decision and Aurizon Network's Response – maintenance cost allowance – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs based on the maintenance allowance set out in Table 79, Table 80, and Table 81. A maintenance allowance of $817 million reflects the efficient costs of maintaining the declared service over the UT5 undertaking period.	8.1	Aurizon Network disagrees with the Draft Decision and has incorporated a revised maintenance cost allowance of $928.1m in the 2017 DAU for maintaining the declared service over the UT5 undertaking period.
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed allowable revenues and reference tariffs to reflect Aurizon Network's proposed MCI forecasts (updated for actual FY2017 sub-indices), but not Aurizon Network's methodology used to reach its proposed MCI. The QCA's Draft Decision is to apply the following annual MCI forecasts (a) FY2018 - 1.81 per cent (b) FY2019 - 1.91 per cent (c) FY2020 - 1.92 per cent (d) FY2021 - 1.92 per cent For ex post reconciliation of forecast MCI to actual MCI, the QCA requires Aurizon Network to amend the weightings so that: (a) weightings are consistent with efficient maintenance costs (b) weightings reflect an accurate allocation of costs among cost categories (c) depreciation costs are removed from calculation of the MCI weightings. The QCA considers that the ex post reconciliation of forecast to actual inflation (Schedule F, cls. 4.3(c)(i) and 4.4(a)(ii)), insulates Aurizon Network from cost escalation within its maintenance cost forecasts.	8.2	Aurizon Network agrees with the Draft Decision subject to amendment. Aurizon Network has incorporated the QCA's proposed change in the MCI methodology in the 2017 DAU but considers that the forecast growth rates used to determine the MCI logically must be internally consistent with the forecasts for Wage Price Index (WPI) and Consumer Price Index (CPI), used throughout the 2017 DAU. The resulting annual MCI forecasts are: (a) FY2018 – 2.03% (b) FY2019 – 2.15% (c) FY2020 – 2.38% (d) FY2021 – 2.38%

8.1 Overview - Aurizon Network's Position

The QCA's position as set out in the Draft Decision is to not accept Aurizon Network's proposal to recover a maintenance cost allowance of $920.6m for maintaining the declared service over the UT5 regulatory period (see section 8.3 of the Draft Decision). The QCA has proposed a maintenance cost allowance of $817m, which it says reflects the efficient costs of maintaining the declared service over the UT5 regulatory period.

Following our assessment of the Draft Decision, we consider that the QCA's proposed changes will result in outcomes that will not permit Aurizon Network to recover the efficient cost of maintaining the declared service to meet the needs of Aurizon Network's customers and the Central Queensland coal supply chain more broadly. Of most concern is that the Draft Decision appears to be predicated on a view that an efficient maintenance regime is

one that simply minimises Aurizon Network's maintenance costs, and has had no apparent regard to what maintenance regime will most efficiently support the needs of Aurizon Network's customers to effectively promote upstream and downstream competition.

We contend that the QCA has not taken into account the full range of information available to it and, in some instances, has incorrectly interpreted the information provided to it in support of the UT5 proposal and during the QCA's subsequent maintenance investigation that concluded in August 2017.

We have also identified several errors within the analysis prepared by the QCA's consultants. Those errors have material impacts on the proposed maintenance allowance. These errors include instances where the consultants have not appreciated the matters that are relevant in a very practical sense to the maintenance of a complex rail network, as well as instances where the consultants have made subjective adjustments to Aurizon Network's operational assumptions and data, which are claimed to be reflective of an 'efficient' rail operator. The basis upon which these adjustments are claimed to be justified are not supported by robust evidence.

In forming their Draft Decision, the QCA commissioned reports from GHD Advisory (**GHD Report**) and B&H Strategic Services (**B&H Report**). GHD Advisory and B&H Strategic Services were contracted to review Aurizon Network's maintenance proposal (**Maintenance Consultants**), and they conclude that Aurizon Network's maintenance practices are inefficient, but they have not provided evidence of any observed practices of a "more efficient" railway operator, which operates in a similar environment to support this position. Instead, the consultants have relied on their own "rail experience and knowledge".[127]

The approach adopted by the Maintenance Consultants fails to appropriately account for the characteristics of Aurizon Network's narrow-gauge, heavy haul railway; nor does it have regard to the needs of our customers who demand network availability, reliability and resilience.

The B&H report confirms that B&H relied, at least in part, on the GHD report, which is itself flawed for the reasons discussed in this response submission. It should be noted that B&H Strategic Services did not engage directly with Aurizon Network at any stage during the QCA's investigation to discuss and understand Aurizon Network's processes, nor did they visit any of Aurizon Network's operational sites, to view its production and cost control processes to understand how these have evolved and changed over time.

The Draft Decision relies heavily on the conclusions of its Maintenance Consultants, which are directly referenced[128] by the QCA as the basis for imposing a broad 'efficiency factor' in addition to an activity-based cost reduction of $77m over the UT5 regulatory period relative to Aurizon Network's UT5 proposal. The efficiency factor has the effect of reducing Aurizon Network's allowance for maintaining the declared service by a further $26m over the UT5 regulatory period.

Aurizon Network has material concerns about the analysis relied upon by the QCA. We are therefore not incorporating these aspects of the Draft Decision into the UT5 proposal. Our reasons and further supporting information of our position in contained within the response to the individual Draft Decisions below.

8.1.1 Aurizon Network's submission (2017 DAU)

Rail Infrastructure in the CQCN is comprised of complex structural, mechanical and electrical systems, all of which are interdependent. These systems are subjected to significant dynamic force and physical stress through the passage of coal trains and the climatic extremes that are prevalent in the Central Queensland region. An effective maintenance regime is essential for ensuring that these systems are fit for purpose, which in turn, ensures that rail infrastructure in the CQCN is made available to meet the requirements of Aurizon Network's customers.

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[127] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, Appendix C, p.7.

[128] QCA (2017) Draft Decision, p.290.

A breakdown of Aurizon Network's UT5 maintenance cost proposal is presented in the table below.

Table 85 Aurizon Network – 2017 DAU (UT5) – maintenance cost proposal by year ($m)

Maintenance expenditure category	FY2018	FY2019	FY2020	FY2021	Total
Direct Costs					
Ballast Undercutting	64.5	67.2	70.8	73.6	**276.0**
General Maintenance	54.3	55.2	56.1	57.1	**222.7**
Signalling	25.8	26.3	26.8	27.3	**106.0**
Resurfacing	24.5	25.5	26.4	27.0	**103.4**
Rail Grinding	18.8	19.1	19.3	19.6	**76.8**
Traction Power	10.2	10.3	10.4	10.5	**41.4**
Telecommunications	5.0	5.1	5.2	5.3	**20.6**
Maintenance Planning & Support	4.6	4.7	4.8	4.9	**19.0**
Structures	4.5	3.9	4.0	4.2	**16.6**
Subtotal - Direct Costs	**212.2**	**217.2**	**223.8**	**229.4**	**882.6**
Indirect Costs					
Return on Plant	6.8	6.5	9.6	9.0	**31.8**
Return on Inventory	1.7	1.6	1.5	1.5	**6.2**
Subtotal - Indirect Costs	**8.5**	**8.0**	**11.0**	**10.4**	**38.0**
Total - Nominal	**220.7**	**225.2**	**234.9**	**239.8**	**920.6**

Source: Aurizon Network (2016) UT5 submission to the QCA, p.147. Totals may not add due to rounding.

For the total supply chain to operate optimally it must provide flexibility where reasonably required in a manner that is consistent with safety requirements, contractual rights and obligations and the service provider's risk framework.

Aurizon Network recognises that its own success depends on the global competitiveness of the Central Queensland coal supply chain. Aurizon Network has built constructive relationships with supply chain groups through its participation in monthly, bi-monthly and quarterly stakeholder forums including:

> Dalrymple Bay Coal Chain Infrastructure Management Group;
> Capricornia Coal Chain Steering Committee;
> Abbot Point User Group;
> Stakeholders Operational Monthly Meeting;
> Blackwater User Group;
> Moura User Group;
> Integrated Logistics Company, and
> Gladstone Coal Export Executive.

Through its active participation in these forums, Aurizon Network can appropriately consider the diverse operating modes, maintenance requirements and logistical challenges of the broader coal supply chain as part of its planning, scheduling and operational practices.

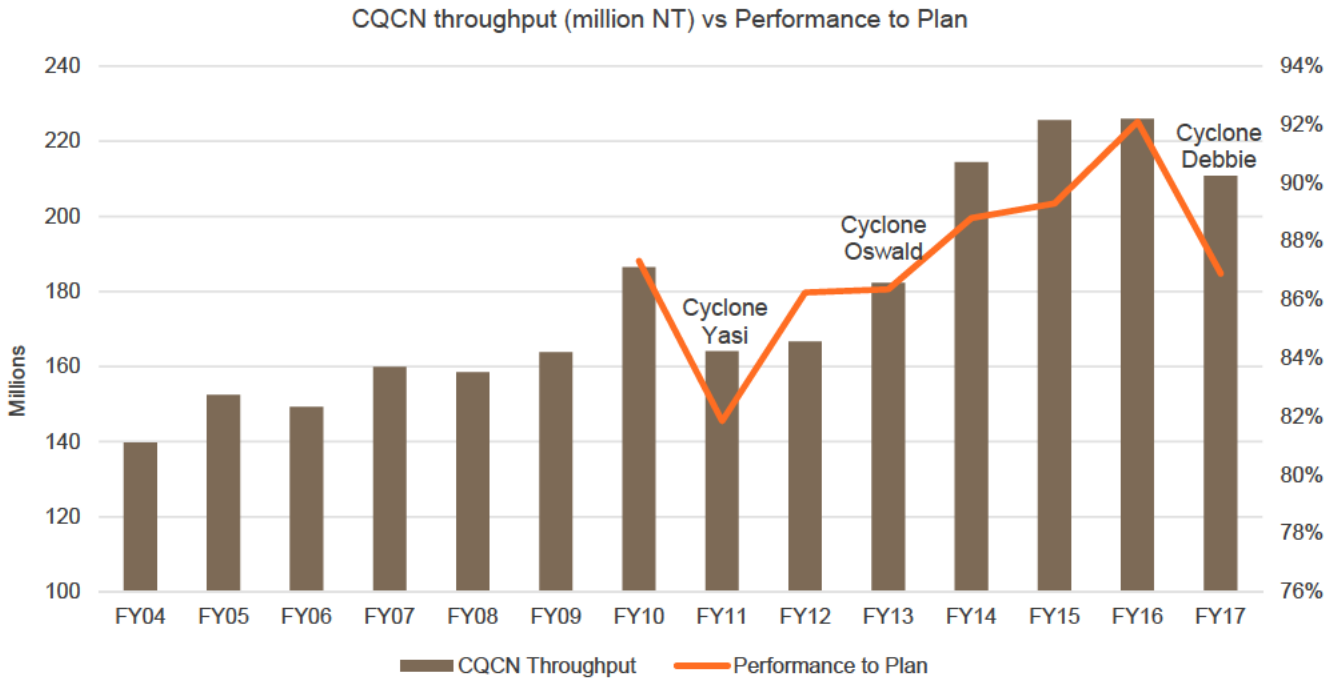
Day of operations engagement with mines, operators, coal export terminals and Aurizon Network's own teams also occurs in "real time", which is critical in terms of managing operational variations in a way that minimises supply chain disruption.

To facilitate the efficient operation of the CQCN, Aurizon Network's asset management strategy is structured with the aim of delivering critical network maintenance activities whilst minimising the consumption of network capacity. In other words, Aurizon Network seeks to strike an appropriate balance between cost, asset availability and asset reliability.

In this context, the maintenance cost allowance proposed by Aurizon Network in UT5 was appropriate for supporting an asset maintenance regime that facilitates the efficiency of the coal supply chain.

The success of this strategy to date is demonstrated by the improvements in key operational performance metrics,[129] and the CQCN throughput records, set annually between FY2014 and FY2016. With the exception of periods affected by extreme tropical cyclone flood events, Aurizon Network's performance to plan has steadily improved, with concurrent increases in throughput being achieved. It should be noted that prior to the flooding associated with Tropical Cyclone Debbie, the annualised net tonne forecast for FY2017 was on-track to exceed the all-time tonnage record of 225.9 million net tonnes, set in FY2016.

Figure 33 CQCN throughput (million NT) vs Performance to Plan



Source: Aurizon Network

Aurizon Network's UT5 proposal included a maintenance allowance of $920.6m (in nominal terms) for the undertaking period. Aurizon Network considered this maintenance allowance to be appropriate for:

- the characteristics of our narrow-gauge, heavy haul railway;
- the diverse, site-specific operating conditions and associated geographical and logistical constraints;
- meeting the expected demand for forecast coal reference services;

[129] As outlined in Aurizon Network's UT5 proposal (s 9.1.2, p.144), these include performance to plan improvements of up to 5% across all coal systems, 65% reduction in below rail cancellations, 41% reduction in below rail delays and increased below rail cycle velocity.

- meeting the service requirements of customers, in particular to be flexible and responsive to operational variation and short term spikes in demand, allowing customers to take advantage of favourable market conditions;
- complying with all relevant rail safety requirements;
- complying with contracted service obligations;
- achieving the quality, reliability and availability requirements to meet customer expectations; and
- maintaining the reliability and availability of the rail network to achieve efficient utilisation of Rail Infrastructure.

Upon review of the Draft Decision, it is apparent that the QCA, and its consultants, have a materially different view on how maintenance activities in the CQCN should be performed. Consequently, the Draft Decision does not give adequate regard to the operational and logistical needs of the broader supply chain instead, prioritising maintenance cost minimisation.

Aurizon Network contends that our existing processes, as outlined within our UT5 proposal, are the most appropriate way to maintain the CQCN because these practices consider the broader needs of the Queensland coal supply chain.

8.1.2 QCA Draft Decision

Summary of Draft Decision 8.1

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise its proposed allowable revenues and reference tariffs based on the maintenance allowance set out in Table 79, Table 80, and Table 81.
- A maintenance allowance of $817 million reflects the efficient costs of maintaining the declared service over the UT5 undertaking period.

The Draft Decision is not to accept Aurizon Network's proposal to recover maintenance costs of $920.6m (in nominal terms) for maintaining the declared service over the UT5 undertaking period.

The Draft Decision states that Aurizon Network's proposed maintenance allowance is substantially greater than what is required to maintain the below-rail service for coal-carrying trains during the UT5 undertaking period, and that this allowance would not promote the economically efficient operation and use of the declared service.[130]

Consequently, the Draft Decision proposes to reduce Aurizon Network's proposed maintenance allowance by $104m, to address perceived inefficiencies in Aurizon Network's operating work practices.

[130] QCA (2017) Draft Decision, p.256.

A breakdown of Draft Decision 8.1 is presented in the table below.

Table 86 QCA Draft Decision on Aurizon Network – maintenance cost allowance proposal by year ($m)

Maintenance expenditure category	FY2018	FY2019	FY2020	FY2021	Total
1. Direct maintenance costs					
Ballast undercutting – mainline	52.1	54.1	57.7	57.8	**221.8**
Ballast undercutting – turnouts	3.8	3.9	4.2	4.2	**16.0**
Maintenance planning & support	5.0	5.1	5.2	5.3	**20.7**
General track	51.3	53.5	55.4	57.0	**217.2**
Grinding – mainline	14.8	15.0	15.2	15.4	**60.3**
Grinding – turnout	4.0	4.1	4.1	4.2	**16.5**
Resurfacing – mainline	16.9	17.2	17.5	17.8	**69.4**
Resurfacing – turnouts	3.4	3.5	3.6	3.6	**14.1**
Signalling	22.4	22.8	23.3	23.8	**92.4**
Structures	4.5	3.9	4.1	4.2	**16.7**
Telecommunications	4.8	4.9	5.0	5.1	**19.7**
Traction power	10.2	10.3	10.5	10.6	**41.5**
Total	**193.2**	**198.3**	**205.8**	**209.1**	**806.3**
2. Indirect maintenance costs					
Return on plant	7.7	8.1	9.4	8.8	**34.1**
Return on inventory	0.8	0.7	0.7	0.7	**2.8**
Total	**201.6**	**207.1**	**215.9**	**218.6**	**843.2**
3. Efficiency adjustment					
Efficiency factor	--	(4.1)	(8.6)	(13.1)	**(25.9)**
QCA allowance	**201.6**	**203.0**	**207.2**	**205.5**	**817.3**

Source: QCA (2017) Draft Decision, p.257. Totals may not add due to rounding.

The QCA has made the following adjustments to Aurizon Network's 2017 DAU maintenance cost proposal:

> adopting FY2017 as the forecasting base year for all maintenance categories excluding rail grinding, structures and traction power;
> reducing ballast undercutting costs to reflect the Draft Decision to remove additional scope proposed by Aurizon Network in FY2020 and FY2021;
> approving costs for one GPR run, rather than two, at a cost of $0.9m;
> applying a post-tax nominal WACC to the written-down value of the fixed asset register;
> decreasing the return on inventory, using information provided in UT3 to estimate inventory assets required for maintenance activities and applying a post-tax nominal WACC;
> removing the escalation of depreciation charges and deriving depreciation costs from the updated fixed asset register;
> incorporating an efficiency factor;
> accounting for increased forecast volume; and
> the application of a revised MCI methodology.[131]

[131] QCA (2017) Draft Decision, p.258.

8.1.3 Aurizon Network's assessment of QCA Draft Decision

Despite proposing a volume forecast for the UT5 regulatory period that is approximately 130 million tonnes (or 15%) higher in aggregate than UT4, the QCA has recommended a maintenance allowance which is ultimately lower on a $ per track kilometre basis than the allowance approved in the UT4 regulatory period, i.e. in accordance with the Draft Decision, Aurizon Network would be required to maintain additional infrastructure, to support substantially higher throughput, with a lower maintenance budget per kilometre of track.

It should be acknowledged by the QCA that in lieu of network expansions, supply chain capacity is constrained. Furthermore, an inverse relationship exists between the network capacity that is available for coal services and the capacity required by Aurizon Network to perform maintenance activities, i.e. as throughput increases, Aurizon Network faces increased pressure from its customers to deliver critical maintenance activities within shorter timeframes and in a manner which minimises the consumption of system capacity. The combination of reduced track access and increased scope[132] will ultimately create greater pressure on unit rates and resource availability.

We have considered each aspect of the Draft Decision and contend that, given the aggregate impact of the QCA's adjustments, it does not provide an allowance that is sufficient for Aurizon Network to recover the efficient costs of maintaining the declared service over the UT5 undertaking period. The Draft Decision is thereby, inconsistent with the s.168A pricing principles of the QCA Act and the objects of Part 5 of the QCA Act.

The Draft Decision's focus on cost minimisation creates an environment that is likely to result in lower service standards available to users through reduced operational flexibility, which could ultimately undermine supply chain throughput.

From the information contained in the Draft Decision it is not apparent whether the QCA or its Maintenance Consultants, engaged customers to understand their needs or the level of service that they require from the CQCN.

Such information is highly relevant in the context of determining a maintenance cost allowance that is appropriate for both the characteristics of the CQCN and the requirements of those who use it.

In essence, the Draft Decision adopts a "one size fits all" approach based on prioritising maintenance cost reductions. It appears as if the QCA and its consultants have made no attempt to assess whether this is the most efficient outcome for the coal supply chain overall.

Such an approach is unlikely to achieve the object of s.69E of the QCA Act, that is to "…promote the economically efficient operation, use of, and investment in …. with the effect of promoting effective competition in upstream and downstream markets".

Aurizon Network cannot support many aspects of the Draft Decision as it pertains to maintenance. Its primary concerns relate to the following matters:

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[132] A number of maintenance activities are either tonnage-driven or tonnage-sensitive. Additional throughput will ultimately increase the scope of maintenance required through increased asset degradation through the passage of rollingstock.

- the focus on maintenance cost minimisation with no apparent consideration of consequential impacts on supply chain throughput;
- the analysis prepared by the QCA's consultants contains several material flaws, which undermine the basis upon which they conclude Aurizon Network's mechanised production operations are inefficient;
- in selecting FY2017 as the forecasting base year, the QCA has not appropriately considered the impact of abnormal influences which includes the impact of severe flooding as a result of Tropical Cyclone Debbie. The diversion of resources to the flood recovery effort had the effect of temporarily, and somewhat artificially, reducing labour costs attributable to the General Track Maintenance activities in FY2017. These labour costs should be included in the underlying base year for UT5;
- volume-related maintenance scope adjustments should also be provided for mainline and turnout resurfacing; and
- the QCA's pre-disposition to applying a further cost reduction for non-coal traffic. Aurizon Network contends that a non-coal deduction is inappropriate given the material difference in dynamic force exerted on the track structure by coal and non-coal train services. Aurizon Network has provided a detailed analysis to demonstrate these differences in section 8.6 below.

Our reasons and further supporting information of our position are contained within our response below.

8.1.4 Summary of Aurizon Network's response

Aurizon Network submits that the maintenance cost allowance, and the maintenance practices effectively directed by the QCA and its Maintenance Consultants in the Draft Decision, will require substantive changes to the way in which CQCN maintenance activities are planned, coordinated and ultimately delivered.

The QCA and its consultants have advocated a view that Aurizon Network's well-established maintenance regime is now out of line with the QCA's view of 'efficient' maintenance practices. In essence, the Draft Decision provides for a "lowest cost" maintenance delivery without giving adequate consideration to the operational and logistical changes that would be required to give effect to such a strategy. Furthermore, the consequential impacts of such a strategy have not been considered. The Draft Decision does not permit Aurizon Network to generate sufficient revenue to meet the efficient cost of delivering maintenance activities in accordance with an asset management paradigm that emphasizes throughput, availability and network efficiency. This is inconsistent with the expectations of our key stakeholders, who demand a resilient network that can deliver tonnage forecasts in a safe and reliable way. They also require flexibility (where appropriate to do, so i.e. it will not compromise safety) to accommodate broad operational variability and demand spikes, to meet their and their end customers' needs. The increased demand for flexibility is seen through the number of short-term transfers, from 35 in 2015 to 80 in 2017, an increase of 56%.

The effective cost of adopting the recommendations of the QCA's Maintenance Consultants is, as noted by QRC Chief Executive, Ian Macfarlane:[133]

> *…worth $4 billion in export income and would cost the State Government around $500 million in lost royalties each year, enough to pay the wages for 7,388 teachers, or 7,060 police constables or 7,430 registered nurses.*

Aurizon Network is committed to operating and maintaining a safe, resilient and reliable network and will continue to meet its contractual obligations to its customers. We have, however, considered each aspect of the QCA's assessment of our maintenance cost proposal. We continue to believe that our existing processes are the most appropriate way to maintain the CQCN because they consider the broader needs of the Central Queensland coal supply chain. This approach not only benefits our customers directly by being responsive to their needs, but helps to create financial and economic benefits for the State of Queensland.

For clarity, in response to this Draft Decision:

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[133] QRC (2018) Media Statement, 12 February.

Aurizon Network cannot accept a maintenance allowance which requires it to adopt operating practices that are diametrically opposed to the objectives it has been working towards in partnership with the supply chain so as to ensure efficiency in the operation of the CQCN rail network.

Accordingly, our response provides for a maintenance allowance in line with our existing maintenance delivery strategy. Furthermore, it does not include a reduction in coal tonnage volumes that is expected to result if Aurizon Network were to adopt the operating practices suggested by the QCA and its Maintenance Consultants.

Aurizon Network's response to Draft Decision 8.1 seeks to address the following matters:

Revised costs for Ballast Undercutting and Resurfacing have been calculated on a bottom-up basis

Aurizon Network has prepared a detailed, bottom up cost model for the ballast undercutting expenditure category. This model incorporates the full range of activities that occur as part of to the ballast cleaning function, including transport to and from site, undercutting production, spoil disposal, related resurfacing operations and ongoing maintenance of the required plant. The model has been calibrated to recent performance outcomes for the ballast cleaning function, for example in terms of achievable linear production rate, ballast screenability and volume of ballast required.

Aurizon Network has also prepared a detailed, bottom up cost model for its resurfacing expenditure category. The model has similarly been calibrated to reflect operational performance outcomes for the resurfacing function, specifically having regard to the performance outcomes achieved by the new resurfacing fleet.

Ballast Undercutting

As outlined in its UT5 proposal for Ballast Undercutting, Aurizon Network retained the unit rate provided by the QCA in its UT4 Final Decision (**UT4 Ballast Rate**), which set a total allowance for Ballast Undercutting at $273m (exclusive of GPR costs) for the UT5 regulatory period. It should be noted that our decision to retain the UT4 Ballast Rate represented a continued efficiency challenge for Aurizon Network, whose original bottom-up cost estimate[134] for the UT5 regulatory period required an allowance of $281m.

The Draft Decision does not accept Aurizon Network's application of the UT4 Ballast Rate for UT5 and proposed a material reduction ($35m) to Aurizon Network's proposed ballast undercutting allowance.

In response to the Draft Decision, Aurizon Network submits a revised bottom-up cost model for ballast undercutting activities, which reflects a total cost of $280.0m for the UT5 regulatory period (excluding the costs proposed for two GPR surveys). The revised bottom-up estimate for Ballast Undercutting retains a forecast efficiency gain over the UT5 regulatory period. Key to achieving this efficiency gain is:

- increasing targeted rates of production of:
  - 250 m/hr in screenable operating conditions; and

[134] Aurizon Network's original bottom-up Ballast Undercutting cost model was provided to the QCA on 4 August 2017 via an RFI as part of the QCA's maintenance investigation.

  - 180 m/hr where total excavation is required;
- average production time of 4 hours per shift;
- achieving a production split of 70% screenability; 30% total excavation; and
- extending the expected useful life of the new Ballast Undercutting Machine (RM902) from its design life of 15 years, to 18 years.

UT5 proposed a mainline ballast undercutting scope of 149km in FY2020 and FY2021, which was aligned to the introduction of new high production ballast undercutter, the RM902. The RM902 has a higher production capability than the existing undercutter; the RM900.

As Aurizon Network articulated to the QCA during its maintenance investigation[135], the increased productive capability of the RM902 was a key rationale for the decision to invest in high production equipment. The RM902 will enable Aurizon Network the deliver this critical, preventative maintenance activity in a way which minimises the below rail impact on system availability. This is particularly important when ballast undercutting is required in heavily trafficked locations across the CQCN.

Ballast undercutting is a high fixed-cost operation due primarily to the capital-intensive nature of the plant and equipment involved and the specialised labour force. In addition, the existing RM900 is life-expired with a low residual value[136], and is being replaced by a new, undepreciated machine.

It should be noted that the Draft Decision to reduce the proposed scope of mainline ballast undercutting from 149km to 140km for FY2020 and FY2021, will ultimately increase the unit rate that can be achieved for mainline ballast undercutting.

Resurfacing

For the resurfacing activity, Aurizon Network's revised bottom-up cost model reflects a total cost of $88.3m for the UT5 regulatory period. This reflects a forecast efficiency gain over its UT5 proposal of 15%, and an increase relative to the Draft Decision of 6%. Key to achieving this efficiency gain is:

- increasing targeted rates of production of:
  - 1,200 m/hr for planned work, which is aligned to GHD's recommendation; and
  - From 600 m/hr to 1,200 m/hr for reactive / emergency work, representing a significant efficiency challenge;
- average mainline production time of 3.5 hours per shift;
- increasing average planned turnout production from 2.5 to 3 turnouts per shift; and
- limiting the use of Aurizon Network's switch tampers when performing mainline work. These machines will primarily be deployed for turnout jobs.

For clarity, Aurizon Network supports the Draft Decision not to deduct costs attributable to Aurizon Network's 5th resurfacing consist from the maintenance cost proposal. While this deduction was recommended by the QCA's Maintenance Consultants, Aurizon Network contends that the Maintenance Consultants have misunderstood the full scope of CQCN resurfacing activities that these new consists were purchased to deliver. Aurizon Network has provided further commentary on this matter in section 8.5.2 below.

[135] Aurizon Network, Response to QCA RFI's 25 and 31, provided in May 2017 and April 2017 respectively.

[136] Plant depreciation in the maintenance allowances is based on 'Depreciated Actual Cost' rather than Gross Replacement Value which exacerbates the pricing impact when end-of-life plant is replaced.

Aurizon Network's revised bottom-up cost models for Ballast Undercutting and Resurfacing represent the most comprehensive and robust estimate of the efficient costs required to delivering these essential maintenance activities for the CQCN.

If in the Final Decision, the QCA does not accept Aurizon Network's proposed bottom-up costs, Aurizon Network submits that the QCA must normalise the forecasting base year for these activities (as outlined below) to reflect costs incurred and operating conditions that are reasonably expected to continue for the duration of the UT5 regulatory period.

Forecasting base year

We note the Draft Decision is to not accept Aurizon Network's proposal to adopt FY2015 as the forecasting base year for the UT5 regulatory period (see section 8.3 of the Draft Decision). The QCA proposed to use FY2017 as the forecasting base year for all maintenance categories except for rail grinding, structures and traction power.

To promote the pricing principles outlined in s.168A of the QCA Act, specifically:

> s.168A(a): to generate revenue at least enough to meet the efficient cost of service provision; and
> s.168A(d): provide incentives to reduce costs or otherwise improve productivity

it is critical that the base year applied by the QCA represents the underlying costs that are reasonably expected to be incurred during the UT5 regulatory period, excluding any abnormal or adverse influences.

The QCA states that "the choice of FY2017 as the base year accounts for 60 per cent of the variation"[137] between the Draft Decision and Aurizon Network's maintenance cost proposal. Given the size of this variation between base years, it is apparent that the QCA has not given adequate consideration to the specific factors that lead to this cost variation from other considered base years, and whether these specific factors are reasonably expected to continue for the duration of the UT5 regulatory period.

Aurizon Network contends that the QCA has not adequately considered the impact of several unusual circumstances during FY2017, which had the effect of temporarily, and somewhat artificially, reducing FY2017 maintenance costs. These include:

> General Track Maintenance:
  – Diversion of Network Maintenance Plan (NMP) resources to substantial flood rectification work post Tropical Cyclone Debbie. The size and impact of TC Debbie was unprecedented and was the first event in the history of the CQCN to impact all coal systems simultaneously for a prolonged period.
  – During this time network maintenance resources (labour) were diverted away from NMP work to focus on and expedite the flood recovery effort. All costs attributable to the flood recovery, including 'ordinary labour' were booked to a specific 'Flood and Disaster Recovery' cost code, which were not part of the FY2017 cost data considered by the QCA.
  – For clarity, the 'ordinary labour' costs were not recovered through the FY2017 Flood Review Event Submission. In the absence of the flood event, these labour resources would be performing NMP activities, and consequently, their costs should be added to the underlying UT5 cost base.
  – This adds an additional $2.7m to the underlying cost base for General Track maintenance.

> Ballast Undercutting – ballast screenability:

[137] QCA (2017) Draft Decision, p.259.

- The rate of screenability that can be achieved will vary depending on the condition and in particular, the moisture content of ballast at each specific job site. Ballast screenability during FY2017 was 3% higher than the UT4 average of 71%. This means that fewer undercutting jobs required total ballast replacement, and Aurizon Network could clean and return a greater proportion of ballast material to track throughout the year. This subsequently reduced the quantum of new ballast that had to be purchased in FY2017. It would therefore be reasonable for the underlying cost of ballast materials for the UT5 regulatory period to be aligned to the average rate of screenability achieved during UT4.
- Adjusting for the impact of ballast screenability adds an additional $1.1m to the underlying cost base for UT5.

> Ballast Undercutting – cascaded ballast:
- During FY2017, Aurizon Network expended its stockpile of 'cascaded ballast'; that is ballast material that was not fully utilised during completed or cancelled jobs in FY2016. In the context of FY2017 costs, this material was essentially "free" and had the impact of reducing total FY2017 spend on ballast material. These costs should form part of the underlying cost base for UT5. Aurizon Network has sought to reduce the timeframe between pre-dig testing and job execution, which promotes 'just-in-time' delivery of ballast material to site. As a consequence, cascaded ballast 'savings' will be not repeatable during UT5.
- Adjusting for the impact of cascaded ballast adds an additional $0.72m to the underlying cost base for Ballast Undercutting - Mainline.

> Plant maintenance - Ballast Undercutting and Resurfacing:
- Plant maintenance requirements will typically vary each year depending on the componentry and level of service that is required. Aurizon Network has prepared a detailed cost estimate detailing the maintenance requirements of each machine that is required to perform ballast undercutting and resurfacing activities. On the basis of this detailed schedule, the underlying cost base for UT5 should be increased by $5.1m and $2.4m respectively to reflect the expected average costs of plant maintenance required over the UT5 period.

> FY2017 cost base for Structures cost category:
- The QCA has misinterpreted the information provided in relation to the structures category. The increase in FY2017 structures costs are not in any way related to the flood recovery effort (NB: all costs associated with the flood recovery are captured through the 'Flood and Disaster Recovery' cost code).
- Rather, additional costs incurred in the structures category relate to Aurizon Network's preventative 'flood-readiness' program, which takes place prior to the Central Queensland wet season. The flood-readiness program allocates additional funds to perform those maintenance activities (e.g. culvert cleaning) that mitigate flood impacts to improve network resilience.
- This type of preparation saw a 15km stretch of track at Aroona (Blackwater system), which was underwater by up to 3m, recovered within 4 days of waters receding.
- Contrary to the Draft Decision, the UT5 base should also reflect the FY2017 costs for this maintenance cost category.

The aggregate impact is to increase the underlying cost base for the UT5 regulatory period as outlined in Table 87 below.

Table 87 Aurizon Network – Additions to FY2017 base cost to address abnormal influences

Maintenance expenditure category	FY2015 ($m)	Attributable to
Ballast undercutting – mainline	7.0	Impact of above-average ballast screening, cascaded ballast, plant maintenance cycle
Ballast undercutting – turnouts	--	
Maintenance planning & support	--	
General track maintenance	2.7	Ordinary labour costs diverted from 'business as usual' maintenance activities to prioritise flood rectification
Grinding - mainline	--	
Grinding - turnout	--	
Resurfacing - mainline	1.3	Plant maintenance cycle
Resurfacing - turnouts	1.1	Plant maintenance cycle
Signalling	--	
Structures^	2.1	Additional flood preparation and network resilience initiatives
Telecommunications	--	

^ *This represents the difference between average annual structures costs (as per the Draft Decision) and FY2017 costs incurred.*

Aurizon Network submits these revisions are uncontentious as they align with the QCA's intended approach.

Following our assessment of the Draft Decision, Aurizon Network submits that the QCA's FY2017 base year must be adjusted to normalise the abnormal influences outlined above. Aurizon Network considers that this is most effectively achieved by:

- for non-mechanised maintenance (excluding the traction expenditure category), Aurizon Network has directly adopted the FY2017 cost base, adjusting the General Track Maintenance costs for abnormal influences associated with Tropical Cyclone Debbie;
- for traction and rail grinding, Aurizon Network supports the Draft Decision to accept the 2017 DAU (UT5) proposal for these expenditure categories;
- for ballast undercutting and resurfacing, Aurizon Network developed a base year cost estimate using a bottom up costing model. This allows for the impact on maintenance costs associated with different operating practices to be directly assessed and anticipated efficiency gains to be modelled. However, in order to demonstrate consistency with the approach used for other expenditure categories, Aurizon Network has reconciled the bottom up cost model with the actual costs incurred in FY2017, adjusted for the abnormal influences outlined above.

An efficiency factor should not be applied

We note the Draft Decision proposes an efficiency factor, which has the effect of reducing Aurizon Network's maintenance cost allowance for the UT5 regulatory period by a further $26m.

The use of an efficiency factor within the current regulatory regime is not an effective mechanism for regulated entities to provide more efficient costs. Over the course of the UT4 regulatory period, in the absence of such a factor, Aurizon Network has delivered its maintenance scope, has implemented transformational improvements and is seeking further innovative approaches which will ultimately achieve more efficient costs. In the QCA Draft Decision on UT4, the QCA concluded that due to Aurizon Network's '…inclusion of efficiency improvements in Aurizon

Network cost base, there is no need to apply a general x-factor parameter'.[138] As outlined within this response, we have taken the same approach and included efficiency improvements within the cost base.

In making this Draft Decision, the QCA has relied heavily on the analysis prepared by its maintenance consultants (particularly GHD) and their conclusions that Aurizon Network's operating practices, as they pertain to maintenance, are inefficient. The other QCA maintenance consultant, B&H Strategic Services, recommended that a 3% efficiency factor was required per annum based upon evidence supplied by GHD. However, for the points highlighted above, the analysis and data relied upon to formulate this is incorrect.

Following our assessment of the Draft Decision, we are concerned that the basis upon which these conclusions are reached is incorrect. The QCA's consultant has based its assessment of efficient maintenance cost on the adoption of operating practices that will pursue cost minimisation at the expense of operational flexibility, which will ultimately undermine overall system throughput. Further, Aurizon Network has identified several instances where the consultants have either:

- incorrectly interpreted the Aurizon Network information that was provided to them; or
- inappropriately substituted Aurizon Network's operational data with their own, unsubstantiated assumptions.

Aurizon Network submits that the Maintenance Consultants' analysis contains a number of material flaws, which undermine the basis of their analysis and conclusions.

Aurizon Network contends that accepting the Draft Decision to apply an efficiency factor will result in outcomes that are not sufficient to permit Aurizon Network to recover efficient cost of maintaining the declared service. As Aurizon Network has incorporated forecast efficiencies in the revised proposed maintenance costs, there is no basis for the application of any further efficiency factor.

We are therefore unable to accept the Draft Decision. Our reasons and further supporting information of our position are contained within our response to the individual Draft Decision below.

Volume related scope variation

The QCA has proposed a volume forecast that is 15% higher than the UT4 Final Decision, but has only provided an allowance for a moderate increase in scope of General Track Maintenance activities.

Greater throughput results in heavier wear on the Rail Infrastructure and accelerates asset degradation. The Draft Decision does not adequately account for the increased maintenance scope for all volume dependant activities, specifically within mechanised production.

As noted in the FY2016 CQCN Condition Based Assessment (CBA):[139]

> *the risk to Aurizon Network is that under increasing tonnages transported across formations designed to legacy standards and not for these loads, the backlog of sites under TSRs [Temporary Speed Restrictions] could grow due to lack of access or resources to address these TSRs. This may lead to Aurizon Network being forced into an inefficient reactive maintenance regime.*

The reference to "these loads" is to the 36% increase in CQCN throughout between FY2012 and FY2016, the respective dates in which the CBA's were completed. Volumes for the UT5 regulatory period are forecast to exceed FY2016 levels.

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[138] QCA Draft Decision, Aurizon Network 2014 Draft Access Undertaking – Maximum Allowable Revenue, p.110.

[139] Advisian (2017) CQCN Condition Based Assessment FY2016, May, p.ii – iii.

Following our assessment of the Draft Decision, Aurizon Network supports, in principle, the QCA's adjustment to General Track Maintenance activities to reflect the increase in forecast volumes. However, Aurizon Network cannot accept that this is the only maintenance category that will see an increase in required scope.

In accordance with the intervention rates specified in its Asset Maintenance and Renewals Policy, and its Network Strategic Asset Plan (NSAP) model, Aurizon Network has determined that a modest increase in both scope and costs should also be provided for mainline and turnout resurfacing. Using its bottom up cost model, which determines the maintenance scope and cost requirements for each individual coal system, Aurizon Network has proposed a revised mainline and turnout resurfacing allowance which appropriately accounts for the expected increase CQCN throughput.

We propose that the Final Decision should therefore be to accept the Draft Decision as it pertains to scope variations, with a moderate scope increase for resurfacing of 2-4% per annum.

A maintenance cost reduction for non-coal train services is inappropriate

While the Draft Decision does not propose a maintenance deduction for non-coal train services, it states that it is "predisposed to making an allowance for non-coal services, but [has] not done so at this stage".[140]

Aurizon Network strongly disagrees with any proposal to further reduce its maintenance cost allowance for non-coal train services because:

- the maintenance scope proposed in the 2017 DAU was set with regard to the forecast volumes of coal train services only, i.e. net of any non-coal traffic;
- the characteristics of non-coal train services result in a materially lower rate of asset degradation than coal train services. For example, the high axle loads of coal traffic drives maintenance activities like ballast undercutting and point tamping; and
- non-coal train services operate across only a small proportion of CQCN Rail Infrastructure.

Our reasons and further supporting information of our position are contained within our response below.

8.1.5 Aurizon Network's revised maintenance cost proposal

Our response to Draft Decision 8.1 results in a revised maintenance cost allowance of $928.1m, which is summarised in the table below.

Table 88 Aurizon Network – Response to Draft Decision 8.1 – maintenance cost allowance proposal by year ($m)

Maintenance expenditure category	FY2018	FY2019	FY2020	FY2021	Total
1. Direct maintenance costs					
Ballast undercutting - mainline	62.0	63.7	67.6	71.2	**264.6**
Ballast undercutting - turnouts	4.5	4.4	4.5	4.6	**18.0**
Maintenance planning & support	5.0	5.1	5.3	5.4	**20.8**
General track	53.8	56.7	58.7	60.4	**229.6**
Grinding - mainline	14.8	15.1	15.3	15.6	**60.7**
Grinding - turnout	4.0	4.1	4.2	4.3	**16.6**
Resurfacing - mainline	15.9	18.0	17.8	18.4	**70.1**
Resurfacing - turnouts	4.1	4.4	4.9	4.7	**18.2**
Signalling	22.4	22.9	23.5	24.1	**93.0**

[140] QCA (2017) Draft Decision, p.260.

Maintenance expenditure category	FY2018	FY2019	FY2020	FY2021	Total
Structures	6.3	6.4	6.6	6.7	**26.0**
Telecommunications	4.8	4.9	5.0	5.2	**19.9**
Traction power	10.2	10.4	10.5	10.7	**41.8**
Total	**207.9**	**216.1**	**224.0**	**231.3**	**879.3**
2. Indirect maintenance costs					
Return on plant	10.0	10.6	12.3	11.5	**44.3**
Return on inventory	1.2	1.1	1.1	1.1	**4.4**
Total	**11.2**	**11.7**	**13.3**	**12.6**	**48.8**
3. Efficiency adjustment					
Efficiency factor	--	--	--	--	--
Total – Nominal	***219.1***	***227.8***	***237.3***	***243.9***	***928.1***
QCA Draft Decision	***201.6***	***203***	***207.2***	***205.5***	***817.3***
Variance to QCA Draft Decision	***17.5***	***24.8***	***30.1***	***38.4***	***110.8***

Totals may not add due to rounding.

Aurizon Network's proposed revised maintenance cost allowance is 14% higher than the allowance provided in the Draft Decision. A cost comparison by activity is provided below.

Table 89 Aurizon Network – Response to Draft Decision 8.1 – Total Costs by Activity ($m)

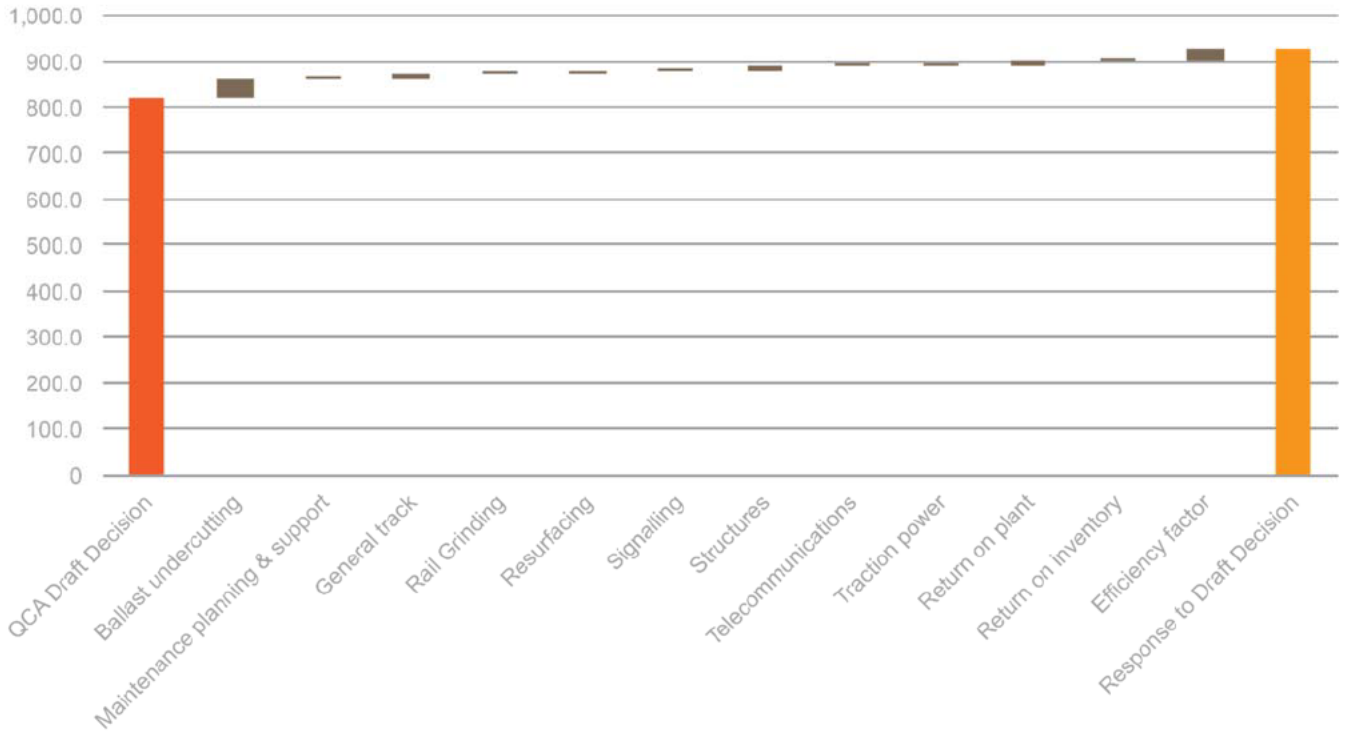
Maintenance Costs ($m)	2017 DAU	QCA DD	DD vs 2017 DAU	Aurizon Network Response	Response vs 2017 DAU	Response vs DD
1. Direct maintenance costs						
Ballast undercutting - mainline	253.3	221.7	(31.6)	**264.6**	11.3	42.9
Ballast undercutting - turnouts	22.8	16.1	(6.7)	**18.0**	(4.7)	1.9
Maintenance planning & support	19.0	20.6	1.6	**20.8**	1.8	0.2
General track	222.7	217.2	(5.5)	**229.6**	6.9	12.4
Grinding - mainline	60.4	60.4	--	**60.7**	0.4	0.4
Grinding - turnout	16.4	16.4	--	**16.6**	0.2	0.2
Resurfacing - mainline	85.4	69.4	(16.0)	**70.1**	(15.3)	0.7
Resurfacing - turnouts	17.9	14.1	(3.8)	**18.2**	0.2	4.1
Signalling	106.1	92.3	(13.8)	**93.0**	(13.0)	0.7
Structures	16.6	16.7	0.1	**26.0**	9.3	9.3
Telecommunications	20.6	19.8	(0.8)	**19.9**	(0.7)	0.1
Traction power	41.4	41.6	0.2	**41.8**	0.5	0.2
Total Direct Costs	***882.6***	***806.3***	***(76.3)***	**879.3**	**(3.3)**	**73.0**
2. Indirect maintenance costs						
Return on plant	31.8	34.0	2.2	**44.3**	12.5	10.3
Return on inventory	6.2	2.9	(3.3)	**4.4**	(1.7)	1.5
Total Indirect Costs	***38.0***	***36.9***	***(1.1)***	**48.8**	**10.8**	**11.9**

Maintenance Costs ($m)	2017 DAU	QCA DD	DD vs 2017 DAU	Aurizon Network Response	Response vs 2017 DAU	Response vs DD
3. Efficiency adjustment						
Efficiency factor	**--**	***(25.8)***	***(25.8)***	**(0.0)**	(0.0)	25.8
Total Maintenance Allowance	***920.6***	***817.4***	***(103.2)***	**928.1**	**7.5**	**110.7**

Totals may not add due to rounding.

The movements relative to the Draft Decision are represented graphically in Figure 34 below.

Figure 34 Maintenance Products driving cost variance from Draft Decision ($m)



Source: Aurizon Network

Aurizon Network's response to the QCA's preliminary view is provided in more detail below.

8.2 Forecasting Base Year

The Draft Decision is not to accept Aurizon Network's proposal to adopt FY2015 as the forecasting base year for the UT5 undertaking period. The QCA has adopted FY2017 as the forecasting base year for all maintenance categories excluding rail grinding, structures and traction power.

8.2.1 Summary of response to the Draft Decision

Our response to the Draft Decision is summarised in the table below.

Table 90 Aurizon Network – Response to Draft Decision 8.1 – Factors impacting cost movements

Total UT5 Maintenance Cost Variance ($m)	Variance to 2017 DAU	Variance to Draft Decision	Comments
1. Direct maintenance			
Ballast undercutting—mainline	11.3	42.9	Disagree – our response is based on a bottom-up cost and scope estimate, and incorporates updated planning and plant maintenance requirements. The 2017 DAU submission adopted the QCA's UT4 unit rate, and already incorporated an efficiency challenge relative to our original bottom-up cost estimate of $281m. The variance to Draft Decision is inflated, because QCA has adopted a cost base which needs to be normalised for factors that will not be repeated during UT5
Ballast undercutting—turnouts	(4.7)	1.9	Disagree – our response is based on a bottom-up cost and scope estimate. We have increased shift productivity targets in our revised costs, which has resulted in a $4.7m reduction from the 2017 DAU proposal
Maintenance planning & support	1.8	0.2	Agree – small variance due to MCI impact
General track	6.9	12.4	We agree with the Draft Decision in principle but submit that the UT5 cost base should be normalised to account for omitted labour costs that would perform NMP work in a typical year
Grinding—mainline	0.4	0.4	Agree – small variance due to MCI impact
Grinding—turnout	0.2	0.2	Agree – small variance due to MCI impact
Resurfacing—mainline	(15.3)	0.7	Disagree – our response is based on a bottom-up cost and scope estimate. We have increased shift productivity targets for response/emergency work in our revised costs, which has resulted in a material a $15.3m reduction from the 2017 DAU proposal
Resurfacing—turnouts	0.2	4.1	Disagree – our response is based on a bottom-up cost and scope estimate. We have increased shift productivity targets in our revised costs
Signalling	(13.0)	0.7	Agree – small variance due to MCI impact
Structures	9.3	9.3	We disagree with the Draft Decision in principle but submit that the UT5 cost base should be normalised to account for omitted labour costs that would perform NMP work in a typical year
Telecommunications	(0.7)	0.1	Agree – small variance due to MCI impact
Traction power	0.5	0.2	Agree – small variance due to MCI impact
Total Variance - Direct Cost	**(3.3)**	**73.0**	
2. Indirect maintenance costs			
Return on plant	12.5	10.3	Agree with the Draft Decision to apply post-tax nominal WACC. The WACC has been updated to reflect our response to the WACC Draft Decision
Return on inventory	(1.7)	1.5	Disagree – we have forecast maintenance inventory consumption at 37%, which reflects the average of actual monthly maintenance inventory consumption for FY2017; the QCA's proposed base-year

Total UT5 Maintenance Cost Variance ($m)	Variance to 2017 DAU	Variance to Draft Decision	Comments
			We agree with the Draft Decision to apply post-tax nominal WACC. The WACC has been updated to reflect our response to the WACC Draft Decision
Total Variance – Indirect Cost	**10.8**	**11.9**	
3. Efficiency adjustment			
Efficiency factor	**--**	**25.8**	Disagree – Maintenance Consultants have made a number of material flaws in their analysis, which invalidate the conclusion that Aurizon Network's maintenance practices are inefficient.

8.2.2 Aurizon Network's response to the Draft Decision

To promote pricing principles outlined in s.168A of the QCA Act, specifically:

> s.168A(a): to generate revenue at least enough to meet the efficient cost of service provision; and
> s.168A(d): provide incentives to reduce costs or otherwise improve productivity s.168A(d);

it is critical that the base year is applied by the QCA represents the underlying costs that are reasonably expected to be incurred during the UT5 regulatory period, excluding any abnormal or adverse influences.

The Draft Decision is not to accept Aurizon Network's proposal to adopt FY2015 as the forecasting base year for the UT5 regulatory period (see section 8.3 of the Draft Decision).

The Draft Decision adopted FY2017 as the forecasting base year for all maintenance categories except for rail grinding, structures and traction power.

The QCA states that "the choice of FY2017 as the base year accounts for 60 per cent of the variation" between the Draft Decision and the 2017 DAU. That observation should have caused the QCA and its Maintenance Consultants to consider whether there were any particular factors that may have led to such a significant variation, and whether these factors are likely to be prevalent for the duration of the UT5 regulatory period.

Maintenance spend typically varies across years due to several factors. For example:

> volume throughput;
> weather (e.g. rainfall);
> age, asset condition and maintenance cycles of rail infrastructure;
> age and maintenance cycles of plant and equipment;
> the cost of labour, materials, consumables and inputs;
> variable ballast profiles and fouling rates; and
> project distance from major depots and population centres.

Aurizon Network contends that the QCA has not adequately considered the impact of several abnormal or adverse influences which occurred during FY2017. These influences had the effect of temporarily reducing the maintenance costs incurred during FY2017. As part of its review, the QCA requested that Aurizon Network provide FY2017 direct maintenance cost data, which it subsequently used to substantiate the change in cost base year. At no time, did the QCA nor its consultant ask for any further clarification on some of the abnormal events that would have been evident within the data or when extrapolated over the other years of the UT5 term. Following our assessment of the Draft Decision, Aurizon Network supports in principle the QCA's intended approach of adopting FY2017 costs as the base year for non-mechanised maintenance activities (with the exception of the traction power expenditure category where the QCA has accepted Aurizon Network's 2017 DAU proposal). However, Aurizon Network proposes to

'normalise' the base year, such that it represents a reasonable estimate of costs expected to be incurred under typical operating conditions.

For mechanised maintenance activities (with the exception of rail grinding where the QCA has accepted Aurizon Network's 2017 DAU proposal), Aurizon Network considers that a bottom up costing model provides the most valid method of establishing an efficient base year cost. A bottom up cost model for the ballast undercutting and resurfacing expenditure categories provides a granular assessment of the factors that influence the ultimate cost of these activities, and in particular allows the impact of varied maintenance practices to be directly assessed.

Aurizon Network has reconciled its bottom up cost model for ballast undercutting and resurfacing with FY2017 costs, identifying a number of circumstances in which the FY2017 costs were temporarily suppressed given unusual operating conditions. If the QCA were to retain its Draft Decision view that the costs of ballast undercutting and resurfacing should reflect FY2017 costs as a base year, it would similarly be necessary to adjust the base year costs for these identified circumstances, so that it represents a reasonable estimate of costs expected to be incurred under typical operating conditions.

8.2.3 Base year costs – non-mechanised maintenance

Ordinary labour costs associated with FY2017 flood rectification

On 28 March 2017, Tropical Cyclone Debbie hit the Queensland coastline south of Bowen, bringing an extended period of heavy rainfall, high winds and subsequent flooding to northern and central Queensland. The impact of the cyclone was so severe that it resulted in the simultaneous closure of all four (4) coal systems for the first time in the CQCN's history.

Following the impact of Tropical Cyclone Debbie on the CQCN infrastructure, a review of the closure strategy for the remainder of the financial year was undertaken by Aurizon Network. The general network condition and addressing remedial tasks from the cyclone event were an important consideration through this assessment. Delivering volumes for customers and supply chain partners was also an essential consideration during this planning phase. Accordingly, a number of the Critical Asset Alignment Calendars were adjusted to reflect the impact of the recovery works on otherwise planned works.

Following identification and inspection of all flood affected sites and the determination of a scope of works, every site in that scope was allocated a unique identifier, and assigned a revision code (in this case "DEBBIE17"). This ensured that Aurizon Network could identify all costs associated with the flood rectification work, in an auditable and transparent manner.[141]

During the substantial flood rectification effort, resources that would otherwise be performing Network Maintenance Plan (NMP) tasks were diverted away from NMP work to focus on and expedite the flood recovery.

Despite being booked to "DEBBIE17" work orders, ordinary labour costs associated with labour internal to Aurizon Network were excluded from the Review Event submission on the basis that in the context of previous Review Events, the QCA has not accepted such costs as additional Incremental Costs.[142] However, because these ordinary labour costs were booked to "DEBBIE 17" work orders, they did not form part of the FY2017 cost data considered by the QCA in establishing the forecasting cost base for the UT5 regulatory period.

The flood rectification effort had the effect of under-stating FY2017 NMP spend by $2.74m for general track maintenance. Aurizon Network contends that in the absence of the flood event, these 'flood-related' ordinary labour costs would have been reflected in FY2017 costs, as they would have been incurred when performing general track maintenance scope as part of the NMP.

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[141] Aurizon Network (2017) Review Event - 2017 Tropical Cyclone Debbie, September, p.24.

[142] Aurizon Network (2017) Review Event - 2017 Tropical Cyclone Debbie, September, p 27.

We note the Draft Decision has not taken into consideration the impact of diverting labour resources (and their associated 'ordinary labour' cost) from NMP work to the flood recovery effort. This matter is highly relevant in the context of adopting FY2017 as the forecasting base year for the UT5 regulatory period. Following our assessment of the Draft Decision, we are concerned that this will result in outcomes that are not sufficient to permit Aurizon Network to achieve the efficient cost of performing general track maintenance activities during the UT5 regulatory period.

Consequently, these costs should form part of the underlying cost base for the UT5 regulatory period. The amounts relevant to each coal system are presented in Table 91 below.

Table 91 Aurizon Network – Additions to FY2017 base cost attributable to Ordinary labour costs (FY2015$)

System	General Track Maintenance (FY2015$m)*
Blackwater	0.5
Goonyella	1.7
Moura	0.1
Newlands	0.3
Total	**2.7**

*Aurizon Network has provided these tables in real FY2015 terms to align to the Draft Decision financial models.

Aurizon Network submits this revision aligns with the QCA's intended approach.

Structures

We note the Draft Decision is to accept Aurizon Network's 2017 (UT5) DAU proposal in relation to the structures maintenance category. Aurizon Network's UT5 proposal applied a forecasting base year of FY2015 for the UT5 regulatory period. The QCA has rejected the use of the FY2015 base year for the vast majority of Aurizon Network's maintenance cost categories in preference to using more recent information from FY2017. However, the QCA has not adopted this approach for the structures expenditure category, commenting that:

> *Aurizon Network has stated that its FY2017 expenditure on structures was inflated by the one-off impact of cyclone Debbie. The QCA has therefore accepted Aurizon Network's forecast UT5 cost for this maintenance category.*[143]

Network resilience in the face of extreme weather events is a matter of utmost importance to the CQCN, the broader coal supply chain and its domestic and international customer base. As a result, Aurizon Network's FY2017 maintenance program reflected a reprioritisation of maintenance resources towards the preventative 'flood-readiness' program.

Aurizon Network contends that the QCA has misinterpreted the information provided in relation to the FY2017 costs incurred for the structures maintenance category. The FY2017 Maintenance cost report prepared by Aurizon Network explains the increased structures maintenance cost as follows:

> *Overspend [relative to the UT4 allowance] of $3m in the 'structures' category attributable to additional drainage and culvert maintenance as part of our flood readiness programme.*[144]

For clarity, the increase in FY2017 structures maintenance costs was not in any way related to the flood recovery effort. As mentioned above, all costs associated with the flood recovery were captured through a dedicated 'Flood

[143] QCA (2017) Draft Decision, p.286.

[144] Aurizon Network (2017) FY2017 Maintenance Cost Report, October, p.11.

and Disaster Recovery' cost code (DEBBIE17). This ensured that all costs associated with the flood recovery effort remained separate and distinct from any NMP activities.

The additional costs incurred in the structures category in FY2017 relate to Aurizon Network's preventative 'flood-readiness' program, which takes place prior to the Central Queensland wet season. This specifically included:

> additional funding to increase the scope of the culvert cleaning program. Culvert cleaning promotes improved drainage and reduces the risk of washout by ensuring that culverts in high-risk areas are free of silt, debris and other obstructions; and
> adopting a more comprehensive inspection regime in known flood areas, i.e. a preventative 'condition based' inspection regime was implemented, replacing a previously reactive 'defect-based' regime.

The flood-readiness program allocates funds to perform those essential maintenance activities that mitigate flood impacts to improve the resilience of the CQCN. In light of recent extreme weather events and the consequential impact on supply chain throughput, the FY2015 cost base is insufficient to recover the efficient costs of delivering a structures maintenance regime that is fit for purpose.

The FY2016 Condition Based Assessment[145] illustrates:

> *a clear link between Temporary Speed Restrictions (TSR), the impact on Weighted Section Run Times (WSRT) and the Queensland wet season from November to April. This indicates that many of the TSRs are driven by issues that are sensitive to wet weather, such as formation quality or ballast contamination.*

[145] Advisian (2017), CQCN Condition Based Assessment FY2016, May, p.ix.

The results for the Goonyella system illustrate this wet weather impact in Figure 35 below.

Figure 35 Link between the Queensland wet season, TSR and Weighted Section Run Times

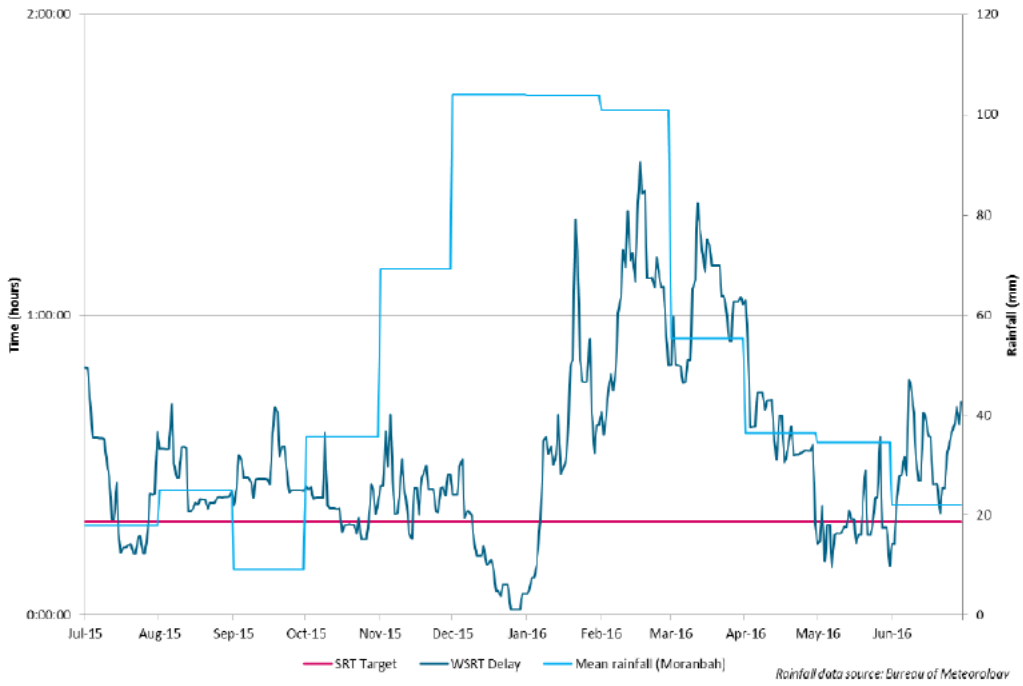


Figure ES.5: WSRT against SRT target for the Goonyella system

Adequate drainage is essential for mitigating the adverse impacts of wet weather on the CQCN.

Aurizon Network is concerned that, by accepting the resulting lower maintenance costs in other categories, but not the higher structures maintenance costs, the Draft Decision will result in outcomes that in aggregate are not sufficient to permit Aurizon Network to achieve an efficient cost of maintenance.

We are therefore unable to accept the Draft Decision and in response, have incorporated FY2017 as the forecasting base year for the structures maintenance category.

Aurizon Network submits that this revision is uncontentious as it aligns with the QCA's intended approach, and is consistent with the Draft Decision applied by the QCA to the vast majority of CQCN maintenance activities.

The amounts relevant to each coal system are presented in Table 92 below.

Table 92 Aurizon Network – Difference between Structures base cost (FY2015$)

Structures ($m)	QCA Draft Decision – Annual Average	Aurizon Network Response – FY2017 Spend	Difference (FY2015$m)
Blackwater	1.8	2.5	**0.6**
Goonyella	1.6	2.0	**0.4**
Moura	0.2	0.5	**0.3**
Newlands	0.2	1.0	**0.8**
Total	**3.8**	**5.9**	**2.1**

8.2.4 Base year costs – mechanised maintenance

As noted above, Aurizon Network has relied upon a bottom up costing model for the development of base year cost estimates for ballast undercutting and resurfacing activities. This provides a granular assessment of the factors that influence the ultimate cost of these activities, and in particular allows the impact of varied maintenance practices to be directly assessed.

Aurizon Network has reconciled its bottom up cost model for ballast undercutting and resurfacing with FY2017 costs, identifying a number of circumstances in which the FY2017 costs were temporarily suppressed given unusual operating conditions. If the QCA were to retain its Draft Decision view that the costs of ballast undercutting and resurfacing should reflect FY2017 costs as a base year, it would similarly be necessary to adjust the base year costs for these identified circumstances, so that it represents a reasonable estimate of costs expected to be incurred under typical operating conditions.

Bottom up cost models for ballast undercutting and resurfacing

Aurizon Network has prepared a detailed, bottom up cost model for the ballast undercutting expenditure category. This model incorporates the full range of activities that occur as part of the ballast cleaning function, including transport to and from site, undercutting production, spoil disposal, related resurfacing operations and ongoing maintenance of the required plant. The model has been calibrated to recent performance outcomes for the ballast cleaning function, for example in terms of achievable linear production rate, ballast screenability and volume of ballast required.

As for ballast undercutting, Aurizon Network has prepared a detailed, bottom up cost model for its resurfacing expenditure category. The model has similarly been calibrated to reflect recent performance outcomes for the resurfacing function, specifically having regard to the performance outcomes achieved by the new resurfacing fleet.

In the course of reviewing the Draft Decision, and the QCA's consultant's recommendations in relation to the efficient delivery of rail network maintenance costs, Aurizon Network has closely examined the operating assumptions that underpin its cost models. With the exception of areas where the QCA's consultant has based its recommendations on operating practices that will impose excessive rigidities on the supply chain or where it has made errors, Aurizon Network has challenged itself to achieve suggested productivity improvements.

Ballast Undercutting

As outlined in its UT5 proposal for Ballast Undercutting, Aurizon Network retained the unit rate provided by the QCA in its UT4 Final Decision (**UT4 Ballast Rate**), which set a total allowance for Ballast Undercutting at $273m (exclusive of GPR costs) for the UT5 regulatory period. It should be noted that our decision to retain the UT4 Ballast Rate represented a continued efficiency challenge for Aurizon Network, whose original bottom-up cost estimate[146] for the UT5 regulatory period required an allowance of $281m.

The Draft Decision does not accept Aurizon Network's application of the UT4 Ballast Rate for the 2017 DAU (UT5) and proposed a material reduction ($35m) to Aurizon Network's proposed ballast undercutting allowance.

In response to the Draft Decision, Aurizon Network submits a revised bottom-up cost model for ballast undercutting activities, which reflects a total cost of $280.0m for the UT5 regulatory period (excluding the costs proposed for two GPR surveys). The revised bottom-up estimate for Ballast Undercutting retains a forecast efficiency gain over the UT5 regulatory period. Key to achieving this efficiency gain is:

- increasing targeted rates of production of:
  - 250 m/hr in screenable operating conditions; and
  - 180 m/hr where total excavation is required;
- average production time of 4 hours per shift;

[146] Aurizon Network's original bottom-up Ballast Undercutting cost model was provided to the QCA on 4 August 2017 via an RFI as part of the QCA's maintenance investigation.

> achieving a production split of 70% screenability; 30% total excavation; and
> extending the expected useful life of the new Ballast Undercutting Machine (RM902) from its design life of 15 years, to 18 years.

Aurizon Network UT5, proposed a mainline ballast undercutting scope of 149km in FY2020 and FY2021, which was aligned to the introduction of new high production ballast undercutter, the RM902. The RM902 has a higher production capability than the existing undercutter; the RM900.

As Aurizon Network articulated to the QCA during its maintenance investigation[147], the increased productive capability of the RM902 was a key rationale for the decision to invest in high production equipment. The RM902 will enable Aurizon Network to deliver this critical, preventative maintenance activity in a way which minimises the below rail impact on system availability. This is particularly important when ballast undercutting is required in heavily trafficked locations across the CQCN.

Ballast undercutting is a high fixed-cost operation due primarily to the capital-intensive nature of the plant and equipment involved and the specialised labour force. In addition, the existing RM900 is life-expired with a low residual value[148], and is being replaced by a new, undepreciated machine.

It should be noted that the Draft Decision to reduce the proposed scope of mainline ballast undercutting from 149km to 140km for FY2020 and FY2021, will ultimately increase the unit rate that can be achieved for mainline ballast undercutting.

Resurfacing

For the resurfacing activity, Aurizon Network's revised bottom-up cost model reflects a total cost of $88.3m for the UT5 regulatory period. This reflects a forecast efficiency gain over its UT5 proposal of 15%, and an increase relative to the Draft Decision of 6%. Key to achieving this efficiency gain is:

> increasing targeted rates of production of:
  – 1,200 m/hr for planned work, which is aligned to GHD's recommendation; and
  – From 600 m/hr to 1,200 m/hr for reactive / emergency work, representing a significant efficiency challenge;
> average mainline production time of 3.5 hours per shift;
> increasing average planned turnout production from 2.5 to 3 turnouts per shift; and
> Limiting the use of Aurizon Network's switch tampers when performing mainline work. These machines will primarily be deployed for turnout jobs.

[147] Aurizon Network, Response to QCA RFI's 25 and 31, provided in May 2017 and April 2017 respectively.

[148] Plant depreciation in the maintenance allowances is based on 'Depreciated Actual Cost' rather than Gross Replacement Value which exacerbates the pricing impact when end-of-life plant is replaced.

The efficient costs required to facilitate the delivery of an effective CQCN ballast undercutting and resurfacing operation are outlined below.

Table 93 Aurizon Network – Bottom-up Ballast Undercutting cost proposal by year ($m)

Ballast Undercutting	FY2018	FY2019	FY2020	FY2021	Total
Original 'bottom-up' model	67.2	70.7	70.9	72.5	**281.3**
2017 DAU	64.5	65.7	70.8	72.1	**273.0**
QCA Draft Decision^	55.9	58.0	61.9	62.0	**237.8**
Aurizon Network Response					
Ballast undercutting - mainline	62.0	62.4	67.6	69.9	**262.0**
Ballast undercutting - turnouts	4.5	4.4	4.5	4.6	**18.0**
Total Ballast Undercutting	**66.5**	**66.8**	**72.2**	**74.5**	**280.0**
Variance to Draft Decision	10.6	8.8	10.3	12.5	**42.2**

^ *Reflects QCA assessment of direct costs prior to return on asset and a further deduction associated with efficiency factor.*

Table 94 Aurizon Network – Bottom-up Resurfacing cost proposal by year ($m)

Resurfacing	FY2018	FY2019	FY2020	FY2021	Total
2017 DAU	24.5	25.5	26.4	27.0	**103.4**
QCA Draft Decision^	20.3	20.7	21.1	21.5	**83.5**
Aurizon Network Response					
Resurfacing - mainline	15.9	18.0	17.8	18.4	**70.1**
Resurfacing - turnouts	4.1	4.4	4.9	4.7	**18.2**
Total Resurfacing	**20.1**	**22.4**	**22.7**	**23.1**	**88.3**
Variance to Draft Decision	(0.2)	1.8	1.7	1.6	**4.8**

While it is not practical to describe all aspects of these detailed bottom up cost models in this submission, Aurizon Network's detailed models have been provided to the QCA for its review.

Normalised FY2017 costs

In order to provide greater confidence in the outputs of Aurizon Network's bottom up cost models for ballast undercutting, Aurizon Network has reconciled these with its actual costs incurred for these activities in FY2017.

The costs incurred in FY2017 for ballast undercutting were lower than the UT4 average due, in part, to a number of anomalies which are not expected to be repeatable throughout the UT5 regulatory period. Consequently, if the QCA were to reject Aurizon Network's bottom up cost models for ballast undercutting in favour of adopting FY2017 costs as the base year, the base year costs would need to be adjusted to reflect the financial impact of these anomalies, which are outlined in further detail below.

In summary, this reconciliation shows that, given the challenging productivity initiatives incorporated in the cost models, these models produce a base year cost forecast similar to Aurizon Network's adjusted FY2017 costs.

Table 95 Comparison of ballast undercutting cost models to adjusted UT5 base cost (FY2015$)

Cost category	FY2017 Cost Incurred ($m)	Cost Adjustment ($m)	Scope Adjustment^ ($m)	Adjusted Cost Base ($m)	Bottom up Cost Model ($m)	Difference (FY2015$m)
Ballast undercutting - mainline	48.1	7.0	1.6	56.7	60.0	**3.3**
Ballast undercutting - turnouts	1.7	--	1.9	3.6	4.1	**0.6**
Total	**49.8**	**7.0**	**3.5**	**60.3**	**64.1**	**3.8**

^ *Accounts for differences between scope completed in FY2017 and forecast UT5 scope*

The remaining differences can be explained by the following factors:

Use of cascaded ballast

During FY2017, the mechanised production team had access to stockpiles of 'cascaded ballast' at select locations where mainline undercutting was performed. The term "cascaded ballast" refers to ballast material that, in the context of FY2017 costs incurred, was essentially "free".

This cascaded ballast material had been purchased and delivered into stockpile on site(s) in FY2016 to complete mainline and turnout undercutting jobs that were scheduled that same year. Some of these jobs did not utilise the total quantum of ballast ordered because:

- ballast condition at individual worksites did not require the full quantum of ballast ordered:
  - for example, where ballast screenability at the worksite is better than expected. Dry weather conditions in FY2016 meant that several projects achieved higher than expected ballast screenability, and hence did not fully utilise the ballast stockpile ordered.
  - this is less likely to occur in future as Aurizon Network has since improved the accuracy of its ballast ordering by compressing the timeframe between ballast screenability testing (pre-digs) and the planned commencement of the works. This facilitates 'just-in-time' ballast delivery and reduced variability in ballast condition;
- in some instances, the total planned scope could not be completed for operational reasons, e.g. traffic delays impacting scope delivery, which meant that a lower total quantum of ballast was utilised; and
- bad weather and changes in customer demand meant some FY2016 jobs were cancelled and deferred to FY2017.

As a result of the above factors, approximately 19,000m^3 of ballast material was cascaded from FY2016 to be used in FY2017 undercutting jobs.

The utilisation of this cascaded ballast and the associated cost savings are provided, by work site and job type, in the table below.

Table 96 Aurizon Network – FY2017 Mainline Undercutting - base cost savings attributable to cascaded ballast

System	Job#	Closure Section	Cost saving ($)
Goonyella	7001	Goonyella - Riverside Main	56,277
Goonyella	7008	Black Mountain - Bolingbroke Up	54,756
Blackwater	7004	Bajool - Rocklands Down	7,605
Blackwater	7011	Wycarbah - Westwood Yard Up	9,126
Goonyella	7033	Wotonga - Nth Goonyella	99,626
Newlands	7034	Briaba - Almoola Up	139,286
Goonyella	7048	Yukan - Black Mountain Up	112,554
Goonyella	7117	Braeside-Mindi Up/Dn	30,626
Goonyella	7123	Wotonga - Moranbah North Main	22,168
Goonyella	7127	Mindi - Sth Walker Up/Dn	15,781
Newlands	7106	Almoola Yard Up	77,821
Blackwater	7103	Bajool Yard Down	39,553
Newlands	7132	McNaughton - Sonoma Main	8,695
Blackwater	7130	Fairhill Yrd Lp-Gregory Mn	67,745
Total			**741,617**

Total may not add due to rounding.

The use of this cascaded ballast had the effect of under-stating total FY2017 spend on ballast material by $0.74m for mainline undercutting jobs respectively. Aurizon Network contends that in the absence of the cascaded ballast, these costs would have reasonably been incurred in FY2017 when completing the ballast undercutting scope.

The efficient cost base for the UT5 regulatory period should reflect the amount of ballast actually required to be used in the undercutting function. Not adjusting the FY2017 costs for the impact of cascaded ballast would result in outcomes that are not sufficient to permit Aurizon Network to achieve the efficient cost of performing ballast undercutting activities during the UT5 regulatory period.

Consequently, the following costs (outlined in Table 97 below) should be added to the FY2017 cost base in order to reflect a sustainable estimate of ballast material costs.

Table 97 Additions to Mainline Undercutting base cost attributable to cascaded ballast (FY2015$)

System	Total (FY2015$m)
Blackwater	0.12
Goonyella	0.38
Moura	--
Newlands	0.22
Total	**0.72**

Ballast screenability

During the mainline ballast undercutting production process, ballast is excavated from beneath the track and cycled through the ballast cleaning machine (the RM900 or in future the RM902). Depending on the state of the underlying ballast material and the nature of the fouling (e.g. dry coal ballast and fines are relatively easier to screen than wet ballast and fines), it will either be returned to track, or disposed of (spoiled).

Screenability refers to the proportion of ballast that can be returned to track during a ballast undercutting job. By way of example, consider a ballast undercutting project of 1,000m in length in which 700m is screened, and 300m requires total excavation. The average screenability rate of this project would be 70% with the majority of undercut ballast being returned to track. The remaining 30% is spoiled and needs to be replaced.

In locations where ballast has high moisture content and/or is too heavily fouled and degraded to be reusable, it is possible that no ballast can be returned to track. This is referred to as "total excavation". In this instance, the rate of screenability is 0%.

It should be noted that ballast screening is only possible where the RM900 (or in future the RM902) can be utilised (circa 110km of the 140km scope). All mainline ballast undercutting scope that is performed by the excavator undercutter requires total excavation.

The proportion of ballast screenability has a significant influence on the costs associated with each ballast undercutting job. There is typically an inverse relationship between the cost of undercutting and the proportion of ballast screenability. Consider a notional kilometre of track with a consistent ballast depth. Holding all other factors constant, the cost of undercutting that kilometre will reduce as the proportion of screenability increases because:

- with higher screenability, a lower quantum of 'new' ballast is required to replace what has been screened and spoiled; and
- the RM900 achieves lower production rates in heavily fouled ballast as it is relatively more difficult to undercut; analogous to cutting long, overgrown grass with a push mower versus short grass. Similarly, heavily fouled ballast will fill the spoil wagons quicker, which is a highly relevant consideration in the context of shift productivity that can be achieved.

During FY2017, mainline ballast undercutting experienced above-average rates of ballast screenability. In adopting FY2017 as the proposed base year for the UT5 regulatory period, the Draft Decision will have the effect of under-stating the efficient cost of mainline ballast undercutting for the UT5 regulatory period.

Ballast screenability in FY2017 was 74%. By comparison, the average rate of ballast screenability across the whole UT4 regulatory period (FY2014 – FY2017 inclusive) was 71%.

The Draft Decision has not taken the impact of these varying maintenance cycles into consideration. This matter is highly relevant in the context of adopting FY2017 as the forecasting base year for the UT5 regulatory period. Following our assessment of the Draft Decision, we are concerned that this will result in outcomes that are not sufficient to permit Aurizon Network to achieve the efficient cost of performing plant maintenance activities during the UT5 regulatory period.

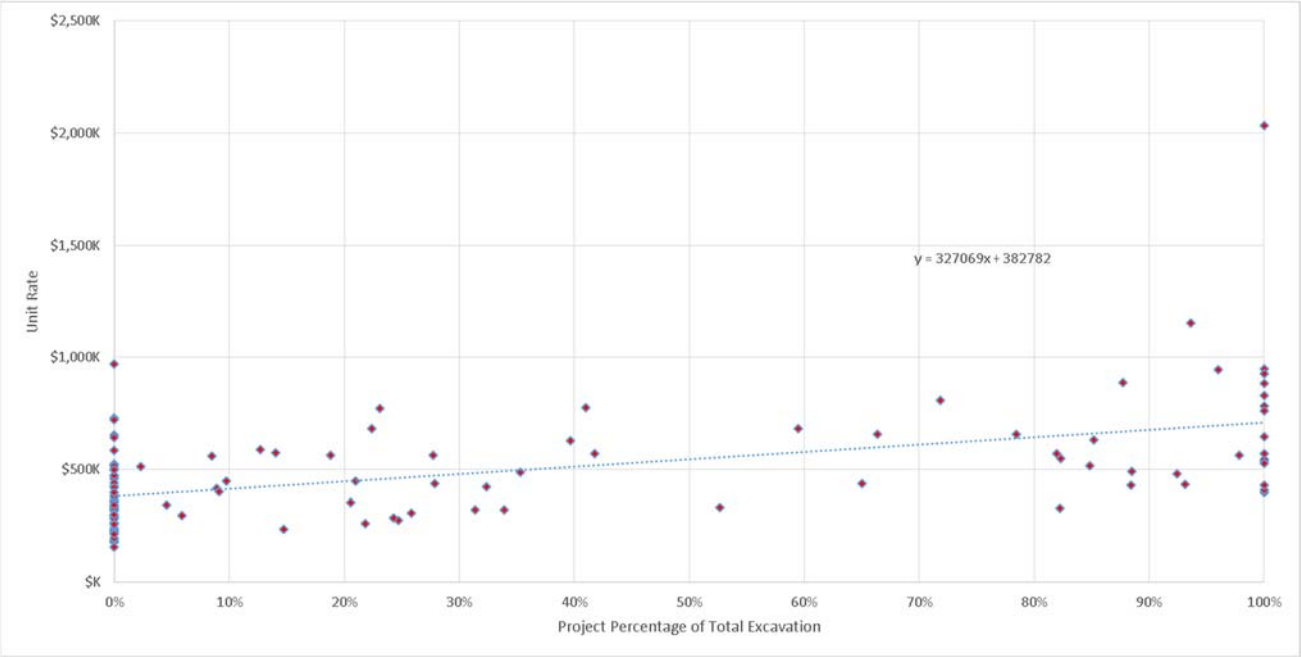
Ballast screenability can be highly variable depending on the site-specific characteristics of each undercutting job. As a result, using an average screenability for a single year as the basis for future cost estimates, may materially over or understate the actual ballast requirement. Aurizon Network considers it more appropriate to use a longer term average ballast screenability rate. In this regard, average screenability for the six (6) year period commencing FY2011 was 65%, increasing to 71% on average across the UT4 regulatory period. Aurizon Network suggests that the average rate of ballast screenability achieved over the UT4 regulatory period would be an appropriate benchmark for the purpose of estimating efficient base year cost.

Consequently, the FY2017 cost base for mainline ballast undercutting should be increased by $1.18m to reflect a longer term average screenability rate. This amount was determined by modelling the relationship between the portion of ballast screenability, and the costs incurred for all mainline ballast undercutting jobs performed between FY2015 and FY2017 inclusive.[149]

[149] Volumetric data was not captured in FY2014; accordingly, FY2014 unit costs have been omitted from this analysis.

This relationship is represented graphically in Figure 36 below.

Figure 36 Aurizon Network – Relationship between ballast screenability and costs incurred



Source: Aurizon Network

Using the linear trend of the above data set, Aurizon Network has:

> identified each 1% decrease in screenability equates to an additional ballast material cost of $3,271 per km;
> identified a 2.67% difference between FY2017 screenability and the UT4 average; and
> applied the resulting cost differential to the FY2017 cost base for 'ballast undercutting – mainline'.

In responding to the Draft Decision, Aurizon Network accepts the QCA's proposal to set the scope of mainline ballast undercutting scope at 140km for each year of the UT5 regulatory period. Assuming that the average rate of ballast screenability is 3% lower per annum[150] during UT5 than was achieved in FY2017, an additional $1.18m should be added to the base year. Formulaically, this is represented as:

Unit cost per km ($ per %variance) x Screenability Variance (%) x Scope (km); or

$3,211 x 2.67 x 140km = $1.18m[151]

[150] Based on the UT4 average.

[151] Variances exist due to rounding.

Aurizon Network has then allocated this additional cost among coal systems in proportion to FY2017 mainline ballast undercutting scope delivered. The amounts relevant to each coal system are presented in Table 98 below.

Table 98 Aurizon Network – Additions to Mainline Undercutting base cost attributable to ballast screenability (FY2015$)

System	Total (FY2015$m)
Blackwater	0.46
Goonyella	0.46
Moura	0.07
Newlands	0.15
Total	**1.14**

Aurizon Network submits this revision is uncontentious as it aligns with the QCA's intended approach of selecting a base year that is representative of the costs reasonably expected to be incurred during each year of the UT5 regulatory period.

Plant maintenance cycle

To fulfil its maintenance requirements in a safe, reliable and efficient manner, it is essential that Aurizon Network's maintenance plant is well maintained.

The maintenance cycles for mechanised production plant (e.g. the ballast undercutter, spoil wagons and resurfacing fleet) varies year on year due to the componentry that needs to be changed out. The ballast cleaning and resurfacing plant have varying annual maintenance cycles, such that the costs of maintaining this essential equipment will vary year on year for the life of the plant.

Plant maintenance for FY2017 was a comparatively low cost year for plant maintenance. In adopting FY2017 as the proposed base year for the UT5 regulatory period, the Draft Decision will have the effect of under-stating the efficient cost of plant maintenance for the UT5 regulatory period.

A comparison between FY2017 plant maintenance costs for Ballast Undercutting and Resurfacing, and the average forecast plant maintenance across the UT5 regulatory period (FY2018 – FY2021 inclusive) is outlined in Table 99 below.

Table 99 Aurizon Network – Addition to FY2017 base cost attributable to plant maintenance costs (FY2015$)

Mechanised Plant Maintenance	FY2017 ($m)	UT5 Average	Difference (FY2015$)
Ballast Undercutting	7.2	12.5	5.3
Resurfacing	7.0	9.4	2.5
Total	**14.1**	**21.9**	**7.8**

To facilitate the increase in productive capability, the RM902 is a substantially larger machine than the RM900. The difference in scale and physical characteristics are the primary drivers for the increase plant maintenance requirement. The main differences are outlined below.

Table 100 Comparison of key attributes of Aurizon Network's Ballast Undercutter

RM900	RM902
11 belts	37 belts
2 screeners	4 screeners
3 engines	17 engines
3km of hydraulic hose	17km of hydraulic hose
	The requirement for pneumatics, electronics and electrics of the RM902 is approximately double the requirement of the existing undercutter

We note the Draft Decision has not taken the impact of these differences in plant maintenance into consideration. This matter is highly relevant in the context of adopting FY2017 as the forecasting base year for the UT5 regulatory period. Following our assessment of the Draft Decision, we are concerned that this will result in outcomes that are not sufficient to permit Aurizon Network to achieve the efficient cost of performing plant maintenance activities during the UT5 regulatory period.

Aurizon Network contends that an efficient base year would provide a plant maintenance allowance that is aligned to the average maintenance requirements expected for the UT5 regulatory period.

Consequently, the FY2017 cost base for ballast undercutting and resurfacing should be increased by an amount equivalent to the difference between plant maintenance cost incurred, and the average cost of maintenance cycles planned for the UT5 regulatory period. The amounts relevant to each coal system are presented in Table 101 below.

Table 101 Aurizon Network – Addition to FY2017 base cost attributable to plant maintenance costs (FY2015$)

System	Ballast Undercutting - Mainline ($m)	Ballast Undercutting - Turnouts ($m)	Resurfacing – Mainline ($m)	Resurfacing – Turnouts ($m)
Blackwater	2.5	0.04	0.6	0.5
Goonyella	2.3	0.04	0.6	0.5
Moura	0.1	0.01	0.1	0.0
Newlands	0.2	0.01	0.1	0.1
Total	**5.2**	**0.10**	**1.4**	**1.1**

Aurizon Network submits this revision is uncontentious as it aligns with the QCA's intended approach.

8.3 Volume related scope variation

The Draft Decision does not accept Aurizon Network's proposed volume forecasts for the UT5 regulatory period, and has put forward a forecast that is, on aggregate 12% higher than Aurizon Network's forecast.

The QCA has proposed to:

> reduce Aurizon Network's proposed scope for 'ballast undercutting – mainline' in FY2020 and FY2021, such that the scope for all years of the UT5 undertaking period is 140km;
> increase Aurizon Network's allowance for General Track Maintenance, assuming cost variability on a $/GTK basis; and

> accept the maintenance scope proposed in the 2017 DAU for all other maintenance activities, without adjusting for increased volume.

Following our assessment of the Draft Decision, we have no substantive issues in relation to the QCA's intended approach with respect to all CQCN maintenance activities with the exception of mainline and turnout resurfacing.

We are concerned that the proposed changes in CQCN volume, without an appropriate scope and cost adjustment for mainline and turnout resurfacing, will result in outcomes that are not sufficient to permit Aurizon Network to meet the expected maintenance requirements of the CQCN and achieve efficient costs of delivering these activities.

Aurizon Network therefore proposes that the Final Decision should be to amend the 2017 DAU in accordance with the Draft Decision, except in relation to resurfacing activities, where Aurizon Network has proposed a conservative scope increase for both mainline and turnout resurfacing.

Aurizon Network's response to the Draft Decision is outlined in Table 102 below.

Table 102 Aurizon Network – Response to Draft Decision 8.1 – Volume related scope variation

Maintenance category	QCA Draft Decision	Aurizon Network Response	Rationale
Ballast undercutting - mainline	Reject 2017 DAU Proposal	Agree	Despite agreeing with the Draft Decision, it should be noted that higher throughput will result in increased fouling, which is likely require an increased undercutting scope in the future.
Ballast undercutting - turnouts	Accept 2017 DAU Proposal	Agree	Despite agreeing with the Draft Decision, it should be noted that higher throughput will result in increased fouling, which is likely require an increased undercutting scope in the future.
Maintenance planning & support	N/A	N/A	
General track maintenance	Increase	Agree with amendment	Aurizon Network has updated the QCA's scope adjustment to reflect its (lower) volume forecast as proposed in this response to the Draft Decision
Grinding - mainline	Accept 2017 DAU Proposal	Agree	
Grinding - turnout	Accept 2017 DAU Proposal	Agree	
Resurfacing - mainline	Accept 2017 DAU Proposal	Disagree	Higher throughput will result in increased track degradation, and will require a 2% to 4% increase in forecast resurfacing - mainline scope.
Resurfacing - turnouts	Accept 2017 DAU Proposal	Disagree	Higher throughput will result in increased track degradation, and will require a 2% to 4% increase in forecast resurfacing – turnout scope
Signalling	Accept 2017 DAU Proposal	Agree	Despite agreeing with the Draft Decision, it should be noted that some aspects of signalling maintenance are sensitive to volume. Aurizon Network

Maintenance category	QCA Draft Decision	Aurizon Network Response	Rationale
			expects higher throughput to increase response work.
Structures	Accept 2017 DAU Proposal	Agree	
Telecommunications	Accept 2017 DAU Proposal	Agree	
Traction power	Accept 2017 DAU Proposal	Agree	Despite agreeing with the Draft Decision, it should be noted that some aspects of traction maintenance are sensitive to volume. Aurizon Network expects higher throughput to increase response work.

8.3.1 Application of volume adjustment to General Track Maintenance

The Draft Decision applies a cost adjustment to General Track Maintenance in recognition of the QCA's revised volume forecasts. The QCA's approach converts FY2017 General Track Maintenance costs into a unit rate, expressed in $ per GTK. Assuming 50% of General Track Maintenance costs are variable, the QCA applies the adjusted unit rate to the GTK difference between the 2017 DAU and Draft Decision volume forecasts.

While Aurizon Network can accept the QCA's proposal, in principle, the QCA appears to have made an error when determining the unit rate for the Blackwater system. The QCA has calculated the unit rate for the Blackwater system, with reference to the FY2017 costs for 'Ballast Undercutting – mainline', rather than 'General Track Maintenance'.

Aurizon Network considers that the calculation should be corrected such that it is based on FY2017 General Track Maintenance costs for the Blackwater system.

Aurizon Network submits that this revision is uncontentious as it aligns with the QCA's intended approach.

8.4 Indirect Costs

The Draft Decision is to not accept Aurizon Network's proposal for Return on Assets and Return on Inventory. The QCA has proposed a revised methodology for calculating return on maintenance assets and based its calculation for return on maintenance inventory on analysis prepared as part of the UT3 regulatory period.

While Aurizon Network can accept, in principle, the QCA's proposed changes to the return on assets calculation, it cannot accept the application of UT3 analysis in determining the quantum of inventory required for maintenance activities.

Aurizon Network's response to each of these matters is outlined below.

8.4.1 Return on Assets

Aurizon Network accepts, in principle, the Draft Decision as it relates to the return on assets. Aurizon Network supports with the QCA's proposed changes as it relates to the asset base roll forward for maintenance plant.

Aurizon Network has calculated the return on the assets using a post-tax nominal WACC of 7.03%, which is consistent with the QCA's methodology, but aligned to the WACC parameters outlined in our response to the WACC Draft Decision, provided in chapter 5.

The resulting return on assets for the UT5 regulatory period is summarised in the table below.

Table 103 Indirect maintenance costs: Return on maintenance assets

Return on Maintenance Asset ($m)	FY2018	FY2019	FY2020	FY2021	Total
Total	10.0	10.6	12.3	11.5	**44.3**

Aurizon Network submits that the application of a post-tax nominal WACC is uncontentious as it aligns with the QCA's intended approach.

8.4.2 Return on Maintenance Inventory

The Draft Decision is to not accept Aurizon Network's proposed return on maintenance inventory. While the QCA has accepted the forecast total inventory holdings, they have referred to analysis prepared in UT3 to apportion those inventory holdings between maintenance and non-maintenance activities. The QCA provide no further basis for their calculation, but their financial model assumes a 30% allocation of total inventory to CQCN maintenance activities.

Following our assessment of the Draft Decision, we are concerned that the proposed changes will result in outcomes that are not sufficient to permit Aurizon Network to achieve efficient costs attributable to its maintenance inventory holdings. We are therefore unable to accept the Draft Decision.

Aurizon Network contends that the QCA has not appropriately substantiated the basis upon which it proposes to apply an inventory consumption rate for maintenance activities of 30%.

Aurizon Network has assessed the consumption of inventory for maintenance and capital activities for each month of FY2017, the QCA's proposed forecasting base year. The results of this assessment are provided in the table below, which outlines how Aurizon Network has disaggregated total inventory holdings to identifying the proportion utilised for CQCN maintenance activities. The negative amounts reflect adjustments for inventory that is not relevant to Aurizon Network's CQCN maintenance activities, such a capital work, and Aurizon Operations Rail Grinding operation.

Table 104 Aurizon Network's Inventory Consumption for CQCN Maintenance Activities – FY2017

Inventory Holdings ($m)	Jul-16	Aug-16	Sep-16	Oct-16	Nov-16	Dec-16	Jan-17	Feb-17	Mar-17	Apr-17	May-17	Jun-17
Total Stock-on-Hand (SOH)	67.3	66.3	70.2	65.1	63.8	63.6	63.3	61.2	60.8	58.4	58.3	52.4
Less SOH at Capex Depots	(33.3)	(31.4)	(35.1)	(30.4)	(28.1)	(27.8)	(27.0)	(25.9)	(26.4)	(24.5)	(25.1)	(23.8)
Les SOH for Rail Grinding	(2.0)	(2.0)	(2.0)	(1.9)	(1.9)	(1.9)	(2.0)	(1.9)	(1.8)	(1.8)	(1.8)	(1.7)
Less consumption for Non-Maintenance work	(10.1)	(9.8)	(12.8)	(10.0)	(11.5)	(6.8)	(12.0)	(11.0)	(7.5)	(11.4)	(4.6)	(7.8)
Total CQCN Maintenance Inventory	21.8	23.1	20.3	22.8	22.2	27.1	22.2	22.4	25.1	20.7	26.7	19.2
% of total SOH	32%	35%	29%	35%	35%	43%	35%	37%	41%	35%	46%	37%

The average monthly inventory consumption for CQCN maintenance activities during FY2017 was $22.8m; or 37%. Aurizon Network considers it appropriate to calculate the return on maintenance inventory with reference to this average, as it is derived from evidence of actual inventory consumption for CQCN maintenance activities during FY2017; the QCA's suggested forecasting base year.

Aurizon Network has significantly reduced its inventory holdings over the UT4 regulatory period, and this lower holding has been used to forecast maintenance inventory requirements for the UT5 regulatory period.

After determining the inventory holdings reasonably expected to be required for CQCN maintenance activities during the UT5 regulatory period, Aurizon Network has calculated the return on the assets using a nominal post-tax WACC of 7.03%, which is consistent with the QCA's methodology, but aligned to the WACC parameters outlined in our response to the WACC Draft Decision, provided in chapter 5.

The resulting return on maintenance inventory for the UT5 regulatory period is summarised in the table below.

Table 105 Indirect maintenance costs: Return on Maintenance Inventory

Return on Maintenance Inventory ($m)	FY2018	FY2019	FY2020	FY2021	Total
Forecast SOH	46.5	43.4	40.8	40.8	
Forecast SOH – CQCN Maintenance @ 37%	17.0	15.9	14.9	14.9	
Total Return on Maintenance Inventory	1.2	1.1	1.1	1.1	4.4

Total may not add due to rounding.

8.4.3 Ground Penetrating Radar Costs

The Draft Decision provides for one (1) GPR survey to be completed during the UT5 regulatory period. In making its decision, the QCA states that "No evidence was provided by Aurizon Network to justify why GPR runs are now required on a two-year schedule, rather than the three-year schedule adopted in UT4."[152]

The UT4 regulatory period spanned FY2014 to FY2017. During this time, Aurizon Network completed two GPR surveys on a two-year cycle; the first being in July 2014, the second in August/September 2016. In light of this, Aurizon Network cannot support the QCA's assertion that Aurizon Network adopted a three-year GPR schedule during UT4.

Aurizon Network's 2014DAU originally proposed that GPR surveys be conducted annually, as the data collected is critical to the planning and execution of an evidence-based preventative ballast undercutting program. The QCA acknowledged the value of the GPR in its 2014DAU MAR Draft Decision[153] where it states, "We also consider the continued use of GPR will generate a robust objective data set that can be used to enhance knowledge of the condition of the ballast and how this changes over time."

While the QCA's Final Decision on the 2014DAU only included funding for Aurizon Network's 2014 GPR survey, it provided for the cost of subsequent surveys to be recovered through the ex-post Revenue Adjustment Amount process provided for in the Access Undertaking. This process has been followed in relation to the 2016 GPR survey.

Aurizon Network agrees that GPR is the most efficient means of delivering an evidence-based, best practice ballast undercutting program for the CQCN.

The level of ballast fouling at a particular location is dynamic and varies through a combination of factors:

> fouling generally increases as the result of day-to-day traffic, topography, wind and wet weather; and
> fouling is reduced through maintenance and capital activities, including ballast top-up and uplift, track resurfacing, undercutting and the capital asset renewal programme.

Due to the dynamic nature of ballast fouling, Aurizon Network considers that best maintenance practice would be achieved with GPR surveys being conducted at least every 12 months. However, Aurizon Network's 2017 DAU seeks funding for two (2) GPR surveys within the maintenance cost allowance, which is consistent with the two-year cycle for GPR surveys performed during the UT4 regulatory period.

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[152] QCA (2017) Draft Decision, p.288.

[153] QCA, 2014 Draft Access Undertaking – Maximum Allowable Revenue, September 2014, pg. 140

GPR promotes evidence-based Ballast Undercutting scope decisions

The GHD Report refers to GPR surveys as best practice over extensive work areas. Specifically;

> *GPR has been adopted by a number of major rail network owners as a means of identifying scope for ballast undercutting, as it can be undertaken relatively quickly compared with traditional test pits and provides a continuous reading through the work area. For extensive work areas, this is the only realistic method of defining the work.*[154]

Aurizon Network agrees with this assessment and submits that GPR is the only means to provide:

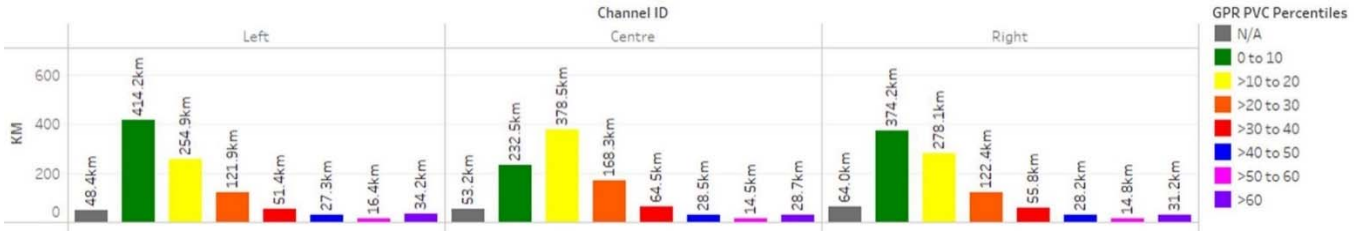
- non-intrusive testing of ballast fouling, which means there is no significant impediment or capacity impacts to revenue trains or paths available to revenue trains;
- non-subjective data-driven metrics (quantified) specific to ballast condition (not subjective opinion);
- granular data specific to ballast; every metre of track and each of the left and right shoulder as well as between the running rails is recorded.

GPR data is directly calibrated to Aurizon Network's metric for measurement of fouling, i.e. percentage void contamination (PVC). This has the benefit of specifically addressing fouling on a volumetric basis (rather than a mass basis), which is necessary due to the different specific gravities of ballast and coal.

Aurizon Network analyses its GPR data to:

- understand the extent of ballast fouling at various increments of fouling on a kilometre basis. An example of the GPR percentile data is provided in Figure 39 below;
- develop trends in fouling change and determine fouling rates based on time and tonnage throughput metrics;
- to ensure year-on-year data comparisons by developing consistent linear referencing throughout its GPR data sets; and
- assess and correlate against other datasets, such as undercutting history, resurfacing events, ballast top-up and CAPEX renewals.

Figure 37 Example of GPR PVC Percentiles



Source: Aurizon Network

GPR is utilised (along with other track-based metrics) to scope Aurizon Network's annual preventative ballast undercutting program in order to ensure the right areas are being targeted for intervention at the right time. Consequently, the data generated by GPR is essential from a strategic planning and logistical perspective for developing the annual ballast undercutting program.

In the absence of GPR data, it is not possible to draw comprehensive and quantified conclusions as to the extent of ballast fouling across the CQCN. Quite simply, the Draft Decision to provide for one GPR survey per regulatory period will not provide Aurizon Network with timely and relevant information to implement an effective, efficient and evidence-based ballast undercutting program.

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[154] GHD Report for the QCA, November 2017, Appendix B, pg. 18-19

In the event that Aurizon Network was limited to a single GPR survey during the UT5 regulatory period, alternative supplementary testing would be required in order to guide the ballast undercutting program. This would require that Aurizon Network revert to carrying out intrusive 'spot' testing via several hundred 'test-pits' across the CQCN every year. Samples taken from these test pits would then require PVC testing off-site at NATA-accredited laboratories. The result of implementing this approach would see a negative capacity impact.

Due to the varying nature of contamination rates and ballast profile in certain locations, spot testing will ultimately result in non-granular data. For example, executing a test pit every kilometre of mainline track would require approximately two thousand test pits, however each test pit would still only provide data specific to that test pit. As a consequence, Aurizon Network would need to:

> infer likely fouling levels at locations in-between test pits, resulting in increasingly qualitative and subjective information; and
> assume the most appropriate cut-in and cut-out locations.

Ultimately, ballast undercutting locations will be determined in a more 'reactive' way based on track geometry, resurfacing history and qualitative information sought from Track Inspectors, supplemented by PVC data gleaned from irregular GPR surveys and from intrusive test pits. The reversion to a more reactive ballast undercutting program will have consequential flow-on impacts for other maintenance activities and broader supply chain performance.

The increased subjectivity resulting from a lack of good-quality data is likely to further increase the likelihood of scrutiny and critique regarding the ballast undercutting scope development and has the potential to undermine the significant progress Aurizon Network has made in promoting evidence-based decision making in support of the preventative ballast undercutting program.

Not only will a requirement to re-introduce spot testing lead to less effective and efficient maintenance planning. Conducting spot tests is a labour-intensive process and requires significantly greater access to the track, given the invasive nature of the testing. Further, the cost of these 'spot tests' would need to be added to Aurizon Network's FY2017 base year costs, as no such testing was conducted in that year.

Aurizon Network considers that, once the costs of the required supplementary testing is recognised, reverting to a single GPR survey supplemented by test pit samples would result in an increase in both the direct survey and testing costs of testing, and would also have a negative impact on track availability and train operations due to the intrusive nature of the testing.

Reflecting these concerns, Aurizon Network submits that the Draft Decision is inconsistent with the objectives of the Act, as it pertains to promoting the efficient operation of the CQCN and for delivering efficient cost of service. Aurizon Network cannot support the Draft Decision and submits that the QCA's final decision on the 2017 DAU be amended to provide funding for two GPR surveys (to be conducted in FY2019 and FY2021) within the UT5 maintenance cost allowance.

Efficient cost of GPR surveys

The Draft Decision provides for one (1) GPR survey, at a cost of $0.9m. This Draft Decision is based on the recommendations of its consultant, B&H Strategic Services, who determined that that costs of Aurizon Network's FY2017 GPR survey were inefficient. On the basis of their own desktop review and bottom-up cost estimate, B&H Strategic Services concluded the efficient cost of a GPR survey to be $0.9m, a significant reduction on Aurizon Network's forecast cost of $1.5m.

It should be noted that B&H Strategic Services did not engage directly with Aurizon Network at any stage during their investigation to discuss and understand our operational of costing processes.

Aurizon Network has reviewed B&H Strategic Services' desktop review and bottom-up cost estimate in detail. It is evident that B&H Strategic Services lacks a general understanding of the GPR programme, including the planning and logistical considerations and day-of-operation constraints that impact the programme.

This review has highlighted that, in a number of instances, B&H Strategic Services has incorrectly interpreted the information provided in support of the costs of the FY2017 GPR survey. Consequently, B&H Strategic Services' analysis contains several errors, which materially understate the efficient costs of conducting a GPR survey.

In particular, B&H Strategic Services has:

> misinterpreted the costing methodology in respect of the machine used to conduct the GPR survey;
> misunderstood the basis upon which plant and labour rates are calculated and how these were applied to the GPR shifts;
> not adequately accounted for the full scope of work in the GPR project, including planning, logistics and post-survey data analysis; and
> developed an alternative, desktop costing model, which does not adequately account for relevant constraints, e.g. engineering design and accreditation requirements for B&H's suggested vehicle alternative.

Given that the costs of the 2016 GPR survey were submitted as part of the 2016 Revenue Adjustment Amount (Revenue Cap) process, a fulsome critique of the B&H Strategic Services analysis will be made as part of this process.

Notwithstanding these major flaws, Aurizon Network has reviewed its bottom up cost model of the GPR survey costs, with a view to identifying efficiencies which may be pursued, similar to the approach taken with major mechanised maintenance activities. This has resulted in a revised forecast efficient cost of each GPR survey of $1.3m, which reflects the costs of the FY2016 GPR survey, as submitted to the QCA.

Response to the Draft Decision

Aurizon Network is unable to accept the Draft Decision which provides a single GPR survey during the UT5 regulatory period with a cost allowance of only $0.9m. We are concerned that the Draft Decision will result in outcomes that are not only insufficient to allow Aurizon Network to achieve the efficient cost of the GPR survey and required supplementary testing, but will cause further inefficiencies due to the limited data undermining effective planning for the ballast undercutting program. Aurizon Network proposes that the Final Decision should be to accept the cost of conducting two GPR surveys during the UT5 regulatory period, as proposed in the 2017 DAU at a forecast cost of $1.3m per survey.

Aurizon Network's response to the Draft Decision is provided in Table 106 below.

Table 106 Ground Penetrating Radar Costs

Ground Penetrating Radar Costs ($m)	FY2018	FY2019	FY2020	FY2021
Total	--	1.3	--	1.3

8.5 Application of Efficiency Factor

The Draft Decision proposes to apply a broad efficiency factor to Aurizon Network's maintenance cost allowance, to address perceived inefficiencies identified by the QCA's Maintenance Consultants in relation to Aurizon Network's operational practices. The impact of the efficiency factor is material, reducing the maintenance cost allowance provided by the Draft Decision by $26m.

This efficiency factor is applied in addition to a $77m maintenance cost reduction, which the QCA notes is primarily attributable to their selection of an 'appropriate base year'.

In relation to this base year, the Draft Decision is to:

apply the FY2017 actual expenditure to be the baseline annual expenditure in UT5 for all but three of the maintenance categories. This is appropriate because the FY2017 actual costs reflect the most up-to-date information and provide direct evidence that some of the UT4 productivity improvements have already started to flow through to Aurizon Network's bottom-line.[155]

It seems illogical for the QCA to impose a further $26m cost reduction, when their activity-based cost estimate for UT5 maintenance activities, is derived using an 'appropriate base year' which already incorporates 'up-to-date information' and 'UT4 productivity improvements'.

Furthermore, Aurizon Network submits that the Draft Decision does not set out a proper basis for the application of a 2% per annum cumulative efficiency factor to forecast maintenance costs. By reference to the materials set out in the Draft Decision, the QCA could not be satisfied or have any confidence that the application of such a factor would promote economically efficient operation of and investment in the CQCN.

In applying the 2% per annum cumulative efficiency factor from FY2019 through to FY2021, the QCA relies on what it refers to as "compelling evidence", being analysis undertaken by GHD and B&H Strategic Services. However, GHD does not recommend the application of an efficiency factor and notes significant qualifications with respect to its conclusions.[156] In light of those qualifications as expressed by GHD, it is surprising that the consultant engaged by the QCA to essentially review GHD's work advises the QCA that Aurizon Network could reduce costs at the rate of approximately 3% per annum over UT5.[157]

Aurizon Network submits that the analysis prepared by the QCA's consultants contains several material flaws, which ultimately call into question the very basis upon which the QCA justifies the imposition of this efficiency factor.

We believe that the QCA has made a Draft Decision that is reliant on consultants' recommendations that:

- in a number of cases are erroneous or otherwise based on unsubstantiated and arbitrary assumptions; and
- would require the introduction of operating practices that will lead to inefficient rigidities in the coal supply chain, which will ultimately undermine total system throughput.

As a consequence, neither the GHD report or the B&H Strategic Services report provide an evidential basis for the application of an efficiency factor.

In the Draft Decision the QCA also cites what it refers to as recent regulatory decisions in apparent support of the application of an efficiency factor of 2% or more. The material cited does not provide a logical or rational basis for the application of the QCA's efficiency factor.

The first regulatory decision cited by the QCA in support of its application of the efficiency factor is a decision of the NSW Independent Pricing and Regulatory Tribunal (**IPART**) relating to Sydney Water Corporation. The QCA cites page 110 of the IPART final decision, which relates to the application of a continuing efficiency factor of 0.25% with respect to capital expenditure. In connection with operating costs, IPART does not apply an efficiency factor.

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[155] QCA (2017) Draft Decision, p.286.

[156] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, p.15.

[157] B&H (2017) Assessment of Aurizon Network's UT5 Submission, December, p.iii.

Rather, in light of the efficiencies that Sydney Water forecasts over the period, IPART accepted Sydney Water's forecasts.[158] In fact, in that final decision IPART notes that the efficiency savings that it had included in its draft report were "challenging". The 0.25% continuing efficiency factor that had been recommended by IPART's consultant is of a significant magnitude less than the efficiency factor proposed by the QCA.

To the extent "catch up" as opposed to "ongoing" efficiencies are considered to be relevant, the nature of catch-up efficiencies is that they are specific to a particular regulated entity and other regulatory decisions do not provide any logical support for the application of efficiency factors to other regulated entities. This is certainly the case with the second regulatory decision referred to in the Draft Decision, which relates to efficiency savings determined for Network Rail by the UK Office of Rail and Road. In that decision, Network Rail itself had planned significant efficiency savings, in the order of 15.8% based on a program of rationalisation and centralisation and other programs to improve asset information. Network Rail had forecast an increase in expenditure in order to undertake these programs.[159] These factual circumstances are simply not apt to Aurizon Network's position.

In any case, if other regulatory decisions are to be used in support of the QCA's position on the application of an efficiency factor, the QCA should properly survey these decisions, provide a basis for why those decisions are relevant to the decision to be made by the QCA, and provide a balanced review. This would include reporting that in recent decisions of the Australian Energy Regulator (**AER**) where it has applied measures of forecast productivity growth in developing its operating expenditure estimates, these have been in the order of zero to 0.2%.[160]

As set out in this submission, Aurizon Network has undertaken a bottom-up forecasting process of key expenditure areas, and the revised maintenance numbers reflect forecast efficiency gains over UT5. As forecast efficiency gains have been incorporated in costs, there is no basis for the application of any further efficiency factor. The application of any efficiency factor to those forecasts would not promote economically efficient operation of and investment in the CQCN because, all else equal, the maintenance cost allowance would be below that required to undertake an efficient level of maintenance activities. It would also not have appropriate regard to the pricing principles that prices should generate expected revenue for the service that is at least enough to meet the efficient costs of providing access and provide incentives to reduce costs or otherwise improve productivity.

We are therefore unable to accept the Draft Decision. Our reasons and further supporting information of our position are contained within our response to the individual Draft Decision below.

8.5.1 Response to the Draft Decision

Aurizon Network considered that its maintenance cost proposal for the UT5 undertaking period, and its operational practices pertaining to the delivery of maintenance activities:

- were appropriate for the characteristics of our narrow-gauge, heavy haul railway;
- appropriately balanced the forecast maintenance requirements of the Rail Infrastructure and the associated costs, with the needs of our customers and the broader coal supply chain who demand network availability, reliability and resilience; and
- were appropriate to meet Aurizon Network's legislative and regulatory obligations as it pertains to Rail Safety.

Both the GHD Report and B&H Report are critical of Aurizon Network's maintenance regime, suggesting that its operating practices and the maintenance costs proposed for the UT5 undertaking period were inefficient. The Draft Decision has relied on these reports to justify the imposition of an efficiency factor (penalty), the effect of which is to reduce Aurizon Network's maintenance cost allowance for the UT5 undertaking period by $26m.

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[158] IPART (2016) Review of Prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 – Final Report, June, p 87.

[159] Office of Rail Regulation 2013, *Network Rail's Outputs and Funding 2014-19: Final Determination*, UK Government, October, p 149.

[160] See for example: AER 2016, *Draft Decision: TasNetworks Distribution Determination 2017-18 to 2018-19*, September, p 7-15; AER 2016, *Draft Decision: Powerlink Transmission Determination 2017-18 to 2021-22*, September, p 7-18.

The conclusions reached by the QCA's Maintenance Consultants are based on analysis which contains a number of material errors.

Aurizon Network contends that these errors undermine the basis upon which the QCA seeks to justify the imposition of a broad $26 million "efficiency" deduction.

Aurizon Network strongly disagrees with the conclusions of the QCA's consultants, which find Aurizon Network's operating practices to be inefficient. In particular, the consultants take exception to the mechanised production processes for ballast undercutting and resurfacing, suggesting that 'efficient' work practices would result in:

- the productivity of undercutting assets increasing by 63.5%;[161]
- the costs of delivering mechanised undercutting scope reducing by 19%;[162]
- the average productive use of shift time for the resurfacing operation increasing from 32% to 44.6%;[163] and
- the costs of delivering mechanised resurfacing scope reducing by 37%.[164]

In total, GHD suggested that a reduction on Aurizon Network's 2017 DAU cost proposal of just over $100m would be achievable through the introduction of efficient work practices, with GHD's suggested 'efficiency gains' for these two cost categories accounting for $86.3m - 85% of GHD's total suggested 'efficiency gain'.

Aurizon Network acknowledges the inherent challenge in appropriately understanding a complex maintenance delivery model, in a relatively short period of time. However, the role of the 'expert' in this context must take into consideration whether Aurizon Network's maintenance practices are appropriate for the operating environment and the characteristics of the network. For example;

- the geographically dispersed nature of infrastructure, requiring significant travel time allowances;
- the current form of the CQCN infrastructure was progressively developed from the 1970s and in many cases as part of a lower standard rail network, meaning that the standard of the formation is less than ideal for current use;
- evolutionary development of CQCN was separate and distinct, resulting in a lack of standardisation in infrastructure and processes, although increasing integration is addressing these challenges;
- climatic challenges – including extreme weather and soil conditions; and
- electric and non-electric infrastructure, which has a direct impact on the planning and sequencing of maintenance activities.

Furthermore, Aurizon Network's maintenance strategy is structured with the aim of delivering critical network maintenance activities whilst minimising the consumption of network capacity. In other words, Aurizon Network seeks to strike an appropriate balance between cost, asset availability and asset reliability, which in turn facilitates the efficiency of the coal supply chain

Such characteristics may not typically be apparent in other comparator firms that Aurizon Network is benchmarked against.

Upon review of the information contained within the GHD Report, it appears that GHD's analysis is based on several flawed assumptions – particularly in regard to mechanised production activities. Of particular concern, is GHD's

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[161] QCA (2017) Draft Decision, p.274.
[162] QCA (2017) Draft Decision, p. 273.
[163] QCA (2017) Draft Decision, p.275.
[164] QCA (2017) Draft Decision, p.275.

application of a 'cookie-cutter' approach to maintenance delivery; that is, assuming a one-size fits all approach to every ballast undercutting and resurfacing job in each year of the UT5 regulatory period.

This is compounded by GHD's overly simplistic and unrealistic assumptions on the achievable production rates of major mechanised plant which does not recognise the range of site-specific logistical and operational constraints that Aurizon Network's mechanised production teams must contend with. Aurizon Network submits that GHD's desktop analysis is an inappropriate basis upon which to assert that Aurizon Network's practices are inefficient.

Aurizon Network's critique of each of the consultant's reports is outlined below.

8.5.2 Aurizon Network's comments on the GHD Report

Aurizon Network's comments on the GHD report[165] are outlined below:

Table 107 Aurizon Network – General comments on GHD report

Topic	GHD Position	Aurizon Network Comment
Terms of Reference (pg. 1)	The underlying themes of GHD's engagement included: Efficiency and prudency, achievability, measurability, transparency and accountability. GHD states that "we have considered the tasks in the context of the need to prioritise maintenance cost categories and their associated maintenance products".	This suggests GHD's analysis is focused solely on maintenance cost minimisation with no consideration or assessment of broader supply chain outcomes, including whether this approach is likely to be detrimental to other supply chain stakeholders, e.g. mines, above rail operators and coal export terminals. Such impacts may include, but are not limited to operational misalignment between mine, rail and port, resulting in export terminal bottlenecks and shipping delays.
Information gathering process (pg. 11 – 14)	GHD states that it encountered a number of issues as part of the information-gathering process. They go on to state that certain information requested was not provided.	Given the large volume of information requested by the QCA and its consultants, Aurizon Network implemented a formal Request for Information (RFI) process and register to keep track of all outstanding responses. Information flows between Aurizon Network and GHD, were directed via the QCA. Aurizon Network contends that appropriate responses were provided to all information requests. Furthermore, information that GHD states it did not receive (e.g. the time-in-motion chart for the RM900, and the bottom-up cost models for mainline and turnout ballast undercutting) were provided by Aurizon Network to QCA staff on 4 August 2017.[166]

Aurizon Network has several material concerns in relation to GHD's analysis. Recognising that 85% of GHD's recommended 'efficiency gain' relates to the mechanised ballast undercutting and resurfacing operations, Aurizon Network has focused this response on these issues. Aurizon Network's material concerns are outlined below.

Ballast Undercutting – mainline

Mainline ballast undercutting is primarily undertaken using the RM900 ballast undercutting machine. During the UT5 regulatory period, this machine will be replaced by the new RM902 ballast undercutter, due to be delivered in February 2019.

[165] All references are to: GHD, Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, Nov 2017.

[166] The information provided by Aurizon Network to the QCA was part of a Request For Information (RFI). The request was made during a meeting between Aurizon Network and QCA representatives on 12 July 2017.

As part of the UT3 regulatory process, GHD was also engaged by the QCA to assess Aurizon Network's (then QR Network) UT3 maintenance cost proposal. GHD noted that:

> *"WorleyParsons make a number of very important recommendations, the most important as far as longer term efficiency is concerned is "The Consultant concluded that it would be beneficial to supply chain operations to introduce financial mechanisms which provide incentives to all parties to introduce innovative mitigation solutions or procedures which will minimise the coal fouling issues on the network".*
>
> *This recommendation is vital to prevent spiralling maintenance costs and possible supply chain bottlenecking due to the problems of organising sufficient possession time to carry out the works. QR's ballast treatment proposal in UT3 is only the first stage of a long and continuing battle to bring coal fouling under control and subsequent Undertakings will incorporate even higher maintenance costs than those seen in UT3."*[167]

From Aurizon Network's perspective, the introduction of the RM902 is critical to the ongoing delivery of an efficient ballast undercutting regime, based on a longer-term view of supply chain requirements. The productive capability of the RM902 is critical to improving Aurizon Network's ability to maximise production within a possession regime that must consider broader supply chain outcomes.

In its UT5 review, GHD has concluded that, if Aurizon Network adopted efficient operating practices, then the RM900 consist would deliver a productive capability of 109 metres per possession hour for mainline undercutting. This represents a 63.5 per cent increase in productivity compared to the forecast productivity of the UT5 undercutting program, which is based on a productive capability of 77 meters per possession hour.[168]

Aurizon Network considers that GHD's anticipated production capacity is based on a number of erroneous assumptions, which serve to substantially overstate its estimate of productive capability. In order to demonstrate the effect of these factors, Aurizon Network has replicated GHD's calculation of productive capability of 109m per possession hour for the RM900 ballast undercutter as shown in Table 108 below:[169]

Table 108 Aurizon Network – Replication of GHD mainline ballast undercutting production rate

Aurizon Network interpretation of GHD Report	Measure	All mainline undercutting work
Machine Production Rate - RM900	m/hr	300
Spoil Removal Volume per Linear Meter of Track (spent ballast and coal)	m3	1.0
Produces Spoil per Hour	m3	300
MFS Wagon Capacity (NB: based on 30 wagons)	m3	1,200
Hours to Fill Spoil Wagons	hrs	4.0
Linear Meters of Track Cleaned	m	1,200
Hours to perform other tasks	hrs	7.0
Total Possession time	hrs	11
Total mainline undercutting scope (based on 2017 DAU proposal)	**m**	**578,000**
Total Possession hours to complete work	**hrs**	**5,298**
Production Rate per possession hour	**m/phr**	**109**

[167] GHD (2009) Assessment of Operating and Maintenance Costs for UT3, September, p.41.

[168] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix B, p. 35.

[169] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix B, p.35.

Number of MFS wagons

GHD's analysis assumes Aurizon Network has an operational fleet of 30 MFS wagons for ballast spoil.

In reality, Aurizon Network's mechanised production team has an operational fleet of 24 'new' MFS wagons, which were delivered and commissioned during the UT4 undertaking period. These are configured into 8 operational consists (MMY501 – MMY508), with each consists containing 3 spoil wagons.

The remaining 6 'older' spoil wagons (consists MMY011-13 and MMY022-24) are of lower capacity than the 'new' wagons but are no longer used as they require a complete overhaul at a substantial financial cost before they can be returned to operation. Therefore, GHD's assumption on MFS wagon capacity used to develop its estimated achievable production rate is incorrect.

The assumption on the capacity of the spoil wagons is critical to the achievable production rate, as in some cases, spoil wagon capacity is the constraining factor for ballast undercutting production.

If GHD's simplified production capability model is modified to reflect the actual capacity of the spoil wagons, the effect of this alone is shown in Table 109 below:

Table 109 Correction of GHD mainline ballast undercutting production rate for number of MFS Wagons

Correction for number of MFS Wagons	Measure	Rate RM900
Machine Production Rate - RM900	m/hr	300
Spoil Removal Volume per Linear Meter of Track (spent ballast and coal)	m3	1.0
Produces Spoil per Hour	m3	300
MFS Wagon Capacity (based on 24 wagons)	**m3**	**960**
Hours to Fill Spoil Wagons	hrs	3.2
Linear Meters of Track Cleaned	m	960
Hours to perform other tasks	hrs	7.0
Total Possession time	hrs	10
Total mainline undercutting scope (based on 2017 DAU proposal)	**m**	**578,000**
Total Possession hours to complete work	**hrs**	**6,141**
Production Rate per possession hour	**m/phr**	**94**

Correcting for the number of MFS wagons, reduces GHD's assumed production rate per possession hour from 109m/phr to 94m/phr.

The introduction of the RM902, with a faster linear production rate, would result in production continuing to be constrained by the capacity of the spoil wagons given, as acknowledged by GHD, there is insufficient time within an 11 hour shift for the spoil wagons to be emptied and returned. It should be noted, however, that Aurizon Network is proactively investigating alternative spoil management practices. Location permitting, spoiled ballast could be stockpiled in strategic locations for future recycling. Nevertheless, where the RM902 is reliant solely on spoil wagons to manage spoil (approximately 50% of mainline undercutting jobs), its production rate per possession hour would similarly be constrained by spoil wagon capacity.

Assumed linear production rate of the RM900

GHD's simplified production rate model is based on the assumption that the RM900 will advance at a rate of 300 linear meters per hour (m/h). Further GHD assumes that, once operating, the RM902 will have an average linear production rate of 500m/h. The basis of this assumption is unclear and unsubstantiated. GHD has acknowledged that the RM900 has historically achieved an average linear production rate of approximately 220m/h based on

performance over the UT4 period.[170] However, in calculating its assumed production rate for UT5, GHD subsequently assumes that the RM900 is capable of achieving an average linear production rate of 300m/h, referring simply to a point estimate within a range of 220m/h to 350m/h which was provided by Aurizon Network.

The basis upon which GHD chose to use 300m/h is unsubstantiated. Furthermore, the ability to achieve this rate of production is necessarily based on a number of operational assumptions which the GHD report has not articulated. Simply put, GHD has provided no evidence for its choice of linear production rate, nor any evidence to demonstrate that this rate is achievable on average given actual expected operating conditions.

The rate of production achieved by the RM900, depends on a multitude of factors including site-specific, logistical, operational and geographical constraints that are prevalent in each individual work site.

Typically, a greater rate of production will be achieved in locations characterised by:

> a high percentage of screenable ballast;
> dry track conditions;
> ballast depth that is consistent with the standard ballast profile (i.e. 300mm below the bottom of the sleepers);
> longer continuous cutting distances; and
> flat track gradients.

Conversely, a lower rate of production will be achieved in locations characterised by:

> heavily fouled ballast;
> high moisture levels – if the material is heavily fouled and saturated, it will roll on the belts that have a pitch and not transfer, effectively clogging the machine;
> total excavation;
> inconsistent ballast profile that is deeper than the standard (300mm) ballast profile;
> shorter or sporadic cutting requirements within the section (for example, where sections are interspersed by assets like major level crossings, bridges, turnouts and neutral sections);
> worksites that are a significant distance from spoil locations; and
> steep track gradients in locations where access is difficult (e.g. Black Mountain).

As a result, it is inappropriate for GHD to assume the RM900 can complete all UT5 scope at a consistent 300m/h production rate. It would have been more appropriate for GHD to consider actual operational data which Aurizon Network provided for the UT4 undertaking period, because it accounts for a range of 'real world' operating constraints that cannot realistically be given adequate consideration through a desktop review.

The average linear production rates (linear meters undercut for every hour of production) achieved for each year of the UT4 undertaking period are outlined below. These figures represent the average of actual linear production achieved for all RM900 jobs in each year and fall well below the 300m/h assumed by GHD.

Table 110 Aurizon Network – Mainline ballast undercutting – Average linear machine production rate

RM900	FY2014	FY2015	FY2016	FY2017	UT4 Average
Linear production rate (m/h)	201	206	205	212	**206**

[170] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, p.41.

Despite the RM900 achieving an average linear production rate over the UT4 regulatory period, Aurizon Network's detailed bottom-up model for mainline undercutting incorporates its own efficiency target as it pertains to machine production rate. For undercutting jobs:

> with screenable ballast (70% of scope), a target of 250m/h has been assumed; and
> where total excavation (30% of scope) is required, a target of 170m/h has been assumed.

Aurizon Network's bottom-up mainline ballast undercutting model applies a weighted average machine production rate of 226 m/h, which represents a targeted 10% efficiency improvement on UT4 performance.

If GHD's simplified production capability model is further modified to reflect the targeted linear production rate of the RM900, the effect of this is shown in Table 111 below:

Table 111 Correction of GHD mainline ballast undercutting production rate for targeted linear production capability

Correction for MFS wagons and targeted machine production	Measure	Rate RM900
Machine Production Rate - RM900	**m/hr**	**226**
Spoil Removal Volume per Linear Meter of Track (spent ballast and coal) ^	m3	1.0
Produces Spoil per Hour	m3	226
MFS Wagon Capacity (based on 24 wagons)	**m3**	**960**
Hours to Fill Spoil Wagons	hrs	4.2
Linear Meters of Track Cleaned	m	960
Hours to perform other tasks	hrs	7.0
Total Possession time	hrs	11
Total mainline undercutting scope (based on 2017 DAU proposal)	**m**	**578,000**
Total Possession hours to complete work	**hrs**	**6,772**
Production Rate per possession hour	**m/phr**	**85**

^ For the purpose of this calculation in table 110 we have not corrected GHD's assumption that spoil quantum is the same for screenable and total excavation jobs. This correction is made below.

Correcting for the number of MFS wagons and machine production rate, reduces GHD's assumed production rate per possession hour from 109m/phr to 85m/phr.

RM900 shift productivity – screening vs total excavation

While GHD recognises that on average, 30% of ballast undercutting jobs require 'total excavation', under its simplified calculation of production rate, it appears to incorrectly assume that the volume of ballast entering the spoil wagons is in all cases on average $1m^3$ per linear metre. This assumption is only valid where the ballast can be screened.

This is a shortcoming in GHD's analysis. By definition, total excavation means that 100% of the ballast and contaminants are removed from the track for disposal. In such circumstances, no ballast can be returned to track. It follows that during jobs where total excavation is required, the spoil wagons will fill at a much greater rate (because more materials are being disposed) than would otherwise be the case during jobs where ballast can be screened and returned to track.

Aurizon Network has again adjusted GHD's simplified calculation correcting for different conditions associated with screenable and total excavation jobs. This includes:

- the linear machine production rate, on average a higher machine production rate is achieved by the RM900 for screenable jobs and a lower rate applicable for total excavation;
- the volume of ballast entering the spoil wagons under both screenable and total excavation jobs. Specifically, the volume of ballast entering the spoil wagons per linear meter should be:
  - Screenable (70% of scope): 1m^3, representing 0.5m^3 of spent ballast and 0.5m^3 of spoil; and
  - Total Excavation (30% of scope): 2.45m^3, which represents the average amount of ballast per linear meter.
- additional tasks required for total excavation jobs, including the additional time required to unload the ballast train and to resurface track when ballast undercutting job requires total excavation.

The results of this assessment are outlined in Table 112 below.

Table 112 Aurizon Network – Correction of GHD analysis for different conditions relating to total excavation jobs

Correction for MFS wagons and targeted machine production	Measure	Screenable (70%)	Total Excavation (30%)
Machine Production Rate - RM900	**m/hr**	**250**	**180**
Spoil Removal Volume per Linear Meter of Track (spent ballast and coal) ^	m3	1.0	**2.45**
Produces Spoil per Hour	m3	250	441
MFS Wagon Capacity (based on 24 wagons)	**m3**	**960**	**960**
Hours to Fill Spoil Wagons	hrs	3.8	2.2
Linear Meters of Track Cleaned	m	960	392
Hours to perform other tasks	hrs	7.0	7.0
Additional time for Ballast train unloading	hrs	--	0.6
Additional time for Resurfacing	hrs	--	0.8
Total Possession time	hrs	11	11
Total mainline undercutting scope (based on 2017 DAU proposal)	**m**	404,600	173,400
Total Possession hours to complete work	**hrs**	4,569	4,674
Production Rate per possession hour	**m/phr**	89	37
Blended Production			
Total Production (UT5 Period)	m	***578,000***	
Total Possession Hours (70%/30%)	hrs	***9,243***	
Blended Production Rate per possession hour	**m/phr**	***63***	

When the distinction between screenable and total excavation jobs is also appropriately accounted for, the average productive rate calculated by GHD's simplified model falls to 63 metres per possession hour; not the 109 metres per hour quoted by GHD.[171]

This simplified calculation of production rate has been assessed only for the RM900. [It should be recognised that an increased linear production rate from the RM902 may not increase the overall production rate per possession hour in an 11-hour shift, as shift production can be constrained by factors other than the rate at which the undercutting machine advances, i.e. ballast depth, moisture content and working around fixed structures. However, ballast undercutting is performed during closures of various lengths, and greater production efficiencies will be achieved during longer closures, particularly with the introduction of the RM902. Aurizon Network has recognised this in its detailed bottom up ballast undercutting model for the UT5 regulatory period.

This review of the GHD analysis not only validates the reasonableness of Aurizon Network's stated average production rate for the UT5 regulatory period of 77m per possession hour, but severely undermines the basis upon which GHD concludes that Aurizon Network's operation is inefficient and that a 63.5% increase in productivity and an 18.6% reduction in cost is achievable.

[171] QCA (2017) Draft Decision, p.274.

By appropriately correcting GHD's error to reflect real world operating conditions, Aurizon Network has demonstrated that it's productivity rates are appropriate for the efficient delivery of the ballast undercutting scope proposed for the UT5 undertaking period.

Mainline Ballast Undercutting by Excavator (C14)

In its assessment of efficient ballast undercutting costs, GHD assumes that the RM900/RM902 can perform all mainline undercutting work.[172]

In reality, this is simply not possible. Due to the sheer size and operational logistics of the RM900 consist, there are many mainline locations throughout the CQCN which cannot be undercut by the RM900. This includes:

- 20 meters of track either side of bridges, turnouts and loadouts;
- bridge, turnouts and loadout infrastructure itself;
- 600-650 meters either side of a signal (due to the length of the consist); and
- site-specific operational restrictions in relation to:
  - cuttings;
  - road-crossings;
  - embankments;
  - Wayside Condition Monitoring site (i.e. Supersites);
  - crew change pads;
  - flood rock and gabion baskets;
  - tight radius curves;
  - lime slurry;
  - environmentally sensitive areas;
  - overpasses.

As a result, Aurizon Network commenced excavator undercutting in FY2014 to access these locations, and for smaller undercutting jobs (e.g. track sections of 100m) where the use of the RM900 would be prohibitively expensive, primarily due to the mobilisation and demobilisation costs involved.

The excavator has a number of operational benefits:

- it can undercut closer to infrastructure (bridges, signals etc.);
- it requires a smaller worksite and can operate within other units' closures, freeing up the section for other maintenance activities;
- operates independently of ballast trains which can consume network paths;
- can be on-tracked close to the worksite, which means it does not require network paths (which would otherwise be available to coal traffic) to travel to and from the worksite; and
- it is operated by contractors so can be "turned on / off" as required.

Despite the operational benefits of the excavator, it does operate at a higher unit rate than the RM900 due to the smaller quantum of total output, i.e. scope output per job is typically expressed in metres rather than kilometres. For the UT4 undertaking period, the average unit rate achieved by the excavator undercutter was over 30% higher than the RM900 equivalent. However, for these small jobs, the excavator undercutter is the most efficient and cost-effective solution for the supply chain.

GHD's failure to account for the mainline ballast undercutting by the excavator is a significant omission, given the proportion of total scope delivered and the effective unit rate associated with excavator undercutting. This omission has the effect of significantly understating the unit rates (in terms of both cost and production) that Aurizon Network

[172] QCA (2017) Draft Decision, p.13.

can realistically achieve throughout the UT5 undertaking period for mainline undercutting, and further undermines the basis of the costs savings GHD considers are achievable.

Ballast Undercutting - Turnouts

Excavator Productivity Rate

GHD has based its assessment of efficient turnout ballast undercutting costs on an excavator productivity rate of 15m/h. While this productivity rate may be appropriate when using the excavator on mainline track sections, the undercutting of turnouts is typically more complex given the additional componentry involved, and the increased ballast profile (i.e. volume).

In Aurizon Network's experience, a production rate of 8 to 10 meters per hour is reasonable for turnout undercutting.

Average length of Turnout

For turnout undercutting, GHD assume that "each turnout requires 25m of track at most to be re-ballasted in our bottom up model".[173] GHD identifies that this is the main driver for its recommended reduction in turnout undercutting costs.[174]

There are a multitude of different turnouts in operation throughout the CQCN. The length of the turnouts depends mostly on the angle, which is primarily determined by line speed, turnout type (whether tangential or straight) and rail weight.

While the turnout itself is typically measured from the 'Toe of Switch' (ToS) to the 'Last Long Bearer' (LLB), this does not account for the transition into and out of the turnout, which is operationally considered to be part of the turnout infrastructure.

When considering the full length of the turnout infrastructure, Aurizon Network must allow for the following in addition to the ToS to LLB measurement:

- run-in track at the front of the turnout:
  - 6 transition sleepers + 10 flat sleepers (16 x 0.58m) = 9.28m; and
- two run-out tracks at the back of the turnout:
  - 3-4 short sleepers + 6 transition sleepers (9 x 0.58m) * 2 = 10.44m.

This concept is illustrated in Figure 38 and Figure 39 below, which are graphical representations of a 1 in 12 and 1 in 16 turnout respectively. Together, these turnout angles represent 74% of total CQCN turnouts. It should be noted that their respective measurements are well in excess of GHD's assumed 25m measurement.

[173] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix B, p.9.

[174] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix B, p.43.

Figure 38 Turnout diagram: 1 in 12; 53.62m; represents 40% of total CQCN turnouts

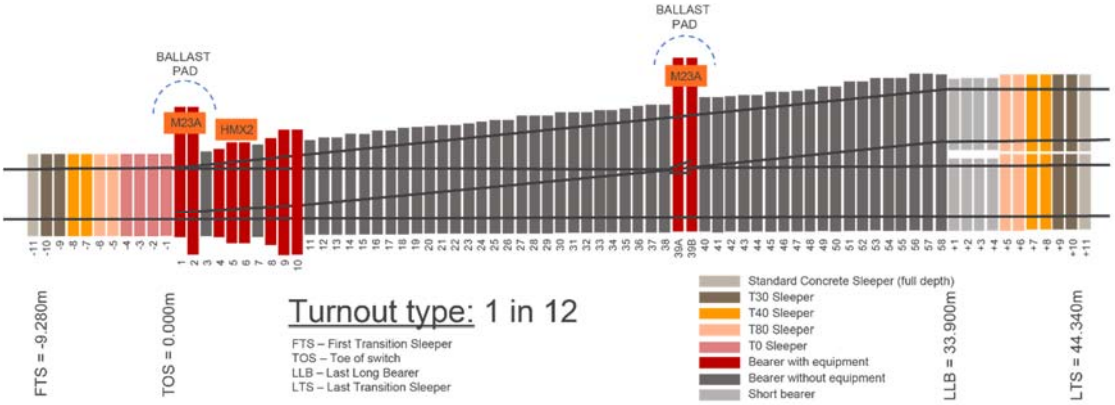
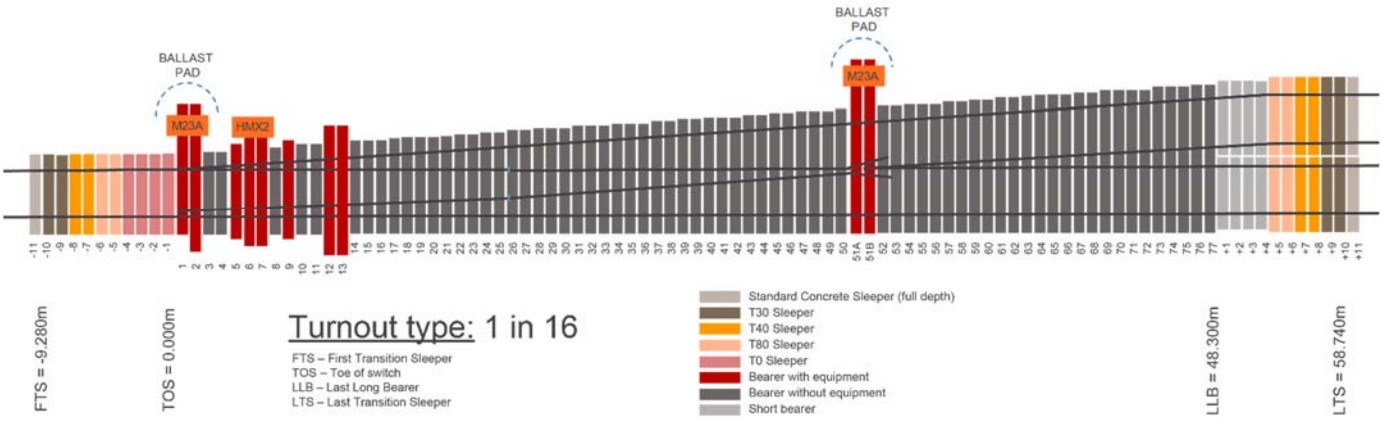


Figure 39 Turnout diagram: 1 in 16; 68.02m; represents 34% of total CQCN turnouts



For turnout undercutting, a minimum distance of 19.72m of track must be reballasted in addition to the ToS to LLB measurement. Depending on the turnout location, further ballast may be required to complete a crossover to an adjacent level crossing or other structure/transition point.

Table 113 below outlines the actual distances of turnout infrastructure installed throughout the CQCN.

Table 113 Aurizon Network – Turnout ballast undercutting – Turnout distances across the CQCN

Turnout Angle	% of Total	ToS to LLB (m)	Run-in (m)	Run-out (m)	Total Distance (m)
1 in 7	0%	20.4	9.28	10.44	40.12
1 in 8	7%	23.6	9.28	10.44	43.32
1 in 8.25	7%	26.1	9.28	10.44	45.82
1 in 9	0%	25.5	9.28	10.44	45.22
1 in 10	5%	28.0	9.28	10.44	47.72
1 in 12	40%	33.9	9.28	10.44	53.62
1 in 16	34%	48.3	9.28	10.44	68.02
1 in 25	6%	73.0	9.28	10.44	92.72

The table highlights that over 90% of turnouts installed throughout the CQCN exceed 25m based on the ToS to LLB measurement alone. When also considering the run-in and run-out distances, 100% of turnouts throughout the CQCN will exceed GHD's assumed distance.

From the information provided above, which is based on the actual characteristics of CQCN infrastructure, it is clear that, GHD's assumption is inappropriate, and will materially understate the scope of work and the associated costs that would be required to maintain each turnout.

From the information contained within the GHD report and the QCA Draft Decision, it is unclear whether this error has also inappropriately influenced impacted GHD's assessment of Aurizon Network's Turnout Resurfacing operation.

Resurfacing – mainline and turnouts

GHD has concluded that, if Aurizon Network adopted efficient operating practices, then the average productive use of shift time for the resurfacing operation could be increased from 32% to 44.6%[175] and the costs of delivering mechanised resurfacing scope could reduce by 37%.[176] In forming these conclusions, GHD has been particularly critical of Aurizon Network in relation to:

- its investment in new resurfacing consists, particularly the number of units purchased;
- its assumed practical productivity of new resurfacing fleet; and
- its operating practices, including the scheduling of resurfacing operations to allow flexibility in the operation of train services, and the resulting implications for the productivity of the resurfacing fleet.

These issues are addressed below.

[175] QCA (2017) Draft Decision, p.275.
[176] QCA (2017) Draft Decision, p.275.

Investment in new resurfacing consist and the number required to complete UT5 Scope

GHD's analysis appears to assume that Aurizon Network's recent investment in five new resurfacing consists[177] was predicated only on the requirement to deliver cyclical mainline and turnout resurfacing (cost items C19 and C23 respectively). Based on the proposed scope of cyclical mainline and turnout resurfacing, GHD has questioned the efficiency of this investment, highlighting that it considered only four new consists are required.[178]

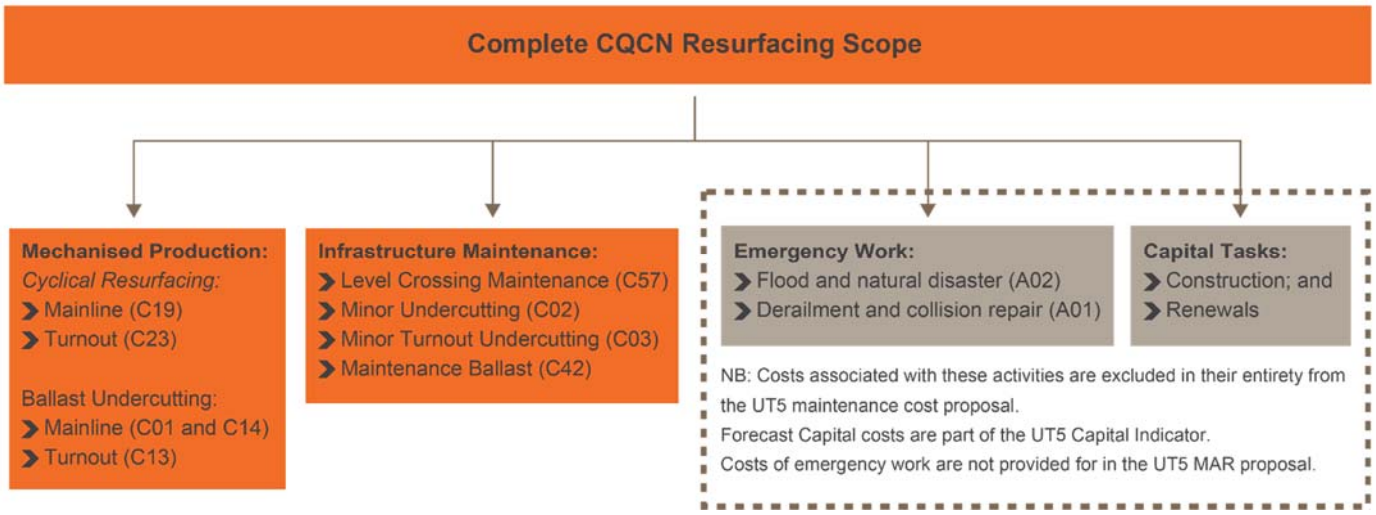
GHD appears to misunderstand the full scope of the CQCN resurfacing operation, and the basis for the investment in the new resurfacing machines, which replaced life-expired machinery. Resurfacing is required after all track disturbing works and these machines were purchased to perform all required resurfacing tasks across the CQCN, which includes:

> cyclical mainline and turnout resurfacing (C19 and C23 respectively);
> a dedicated resurfacing consist for the RM900/902 operation;
> resurfacing support for other Network Maintenance Plan (NMP) activities; and
> resurfacing support for capital and emergency works.

Consequently, GHD's assumption understates the complete scope of works that these machines were purchased to deliver.

Figure 40 provides an overview of the activities where resurfacing support is required.

Figure 40 Aurizon Network – Full scope of CQCN resurfacing activities, requiring investment in 5 consists



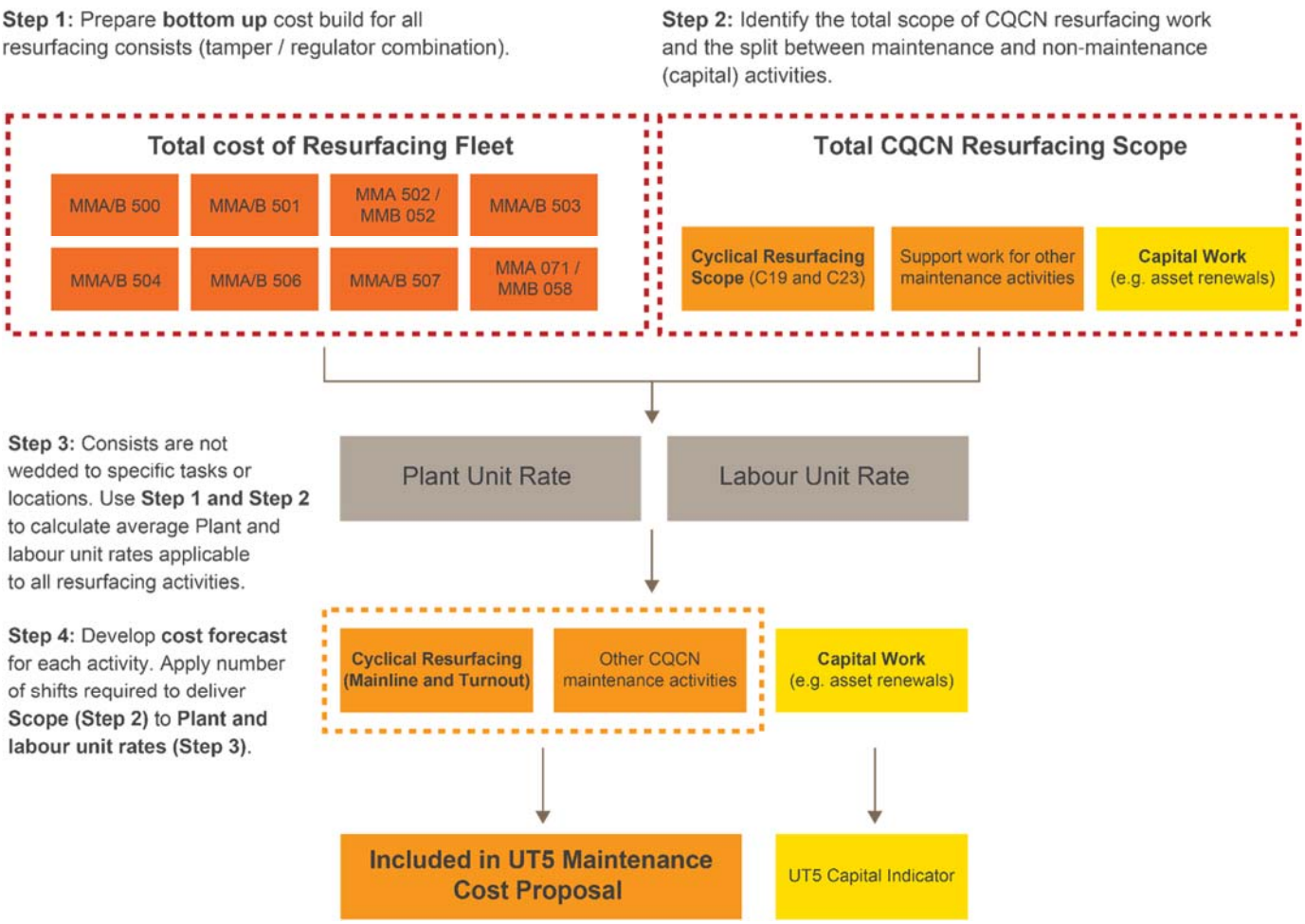
For the avoidance of doubt, Aurizon Network has set the cost proposal for cyclical mainline and turnout resurfacing (C19 and C23 respectively) on the basis of a detailed bottom up cost build, which is then expressed as plant and labour rates. These rates are applied to the shifts that are specifically required to deliver C19 and C23 scope only.

The resurfacing costs associated with other maintenance activities (e.g. ballast undercutting support), capital tasks and emergency work that require resurfacing support are charged to those respective activities on the same basis, i.e. their costs are not part of the cost proposal for cyclical resurfacing (C19 and C23) activities. This process is illustrated graphically in Figure 41 below.

[177] NB: One resurfacing consist is comprised of two machines; a tamper and a regulator.

[178] GHD (2017), Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix C, p.29.

Figure 41 Resurfacing Costing methodology



It should be noted that Aurizon Network's maintenance cost proposal for the UT5 undertaking period excludes all costs attributable to capital works that are forecast to be delivered during UT5. Similarly, historical costs attributable to emergency work do not form part of Aurizon Network's MAR proposal.

GHD fails to recognise that the resurfacing track machines also support these other activities, and assesses the number of consists required by Aurizon Network with reference to the proposed scope of cyclical mainline resurfacing (C19) only. As a consequence, GHD's conclusion that Aurizon Network did not require the fifth resurfacing consist is inaccurate, because it hasn't appropriately accounted for the complete scope of CQCN resurfacing activities that these machines are required to deliver.

In making its Final Decision, it is critical that the QCA has a complete and accurate understanding of the tasks performed by the resurfacing fleet. This information is highly relevant in the context of assessing the efficiency and effectiveness of Aurizon Network's investment decisions and operational practices.

The QCA notes (pg. 292) that it has not optimised the investment in the new maintenance fleet as part of the Draft Decision. This treatment is appropriate given the limitations of GHD's analysis and associated recommendation.

Possession management practices

GHD has been highly critical of Aurizon Network's possession management practices for its resurfacing activities, citing that "Aurizon Network does not perform resurfacing during system shutdowns".[179] GHD has taken the view that resurfacing activities will be most productively delivered if Aurizon Network were to perform resurfacing substantially during system shutdowns and planned possessions.

System shutdowns are usually scheduled to deliver major periodic maintenance and capital/construction activities that would otherwise have a major impact on network availability. During system shutdowns, Aurizon Network has typically not performed cyclical mainline and turnout resurfacing activities (C19 and C23), because the resurfacing teams and their machines are focused on providing resurfacing support for the other major tasks being performed including, bridge rollouts, turnout undercutting and renewals (including sleeper, track, structures, formation). If C19 and C23 scope is required in the same location of the system shutdown, it can be delivered. However, given the logistical, operational and timing constraints in place during these major shuts, such opportunities can be limited. . For example, in some instances, rail infrastructure (i.e. track) will be physically removed during major shuts, which effectively 'traps' the tampers at this location. Aurizon Network plans its closures to maximise the productive use of its plant, but there are limitations as to where these track machines can travel to when rail is removed.

Aurizon Network's practice is to operate its resurfacing function in a dynamic way, allowing the teams to operate between scheduled revenue trains. This approach provides a substantial benefit in reducing planned possessions which have the effect of consuming network paths that would otherwise be utilised by coal train services. During a shift, the resurfacing machines will traverse the network, targeting multiple worksites that are planned in an appropriate logistical sequence, between stowage locations. In addition, when Aurizon Network does undertake mainline resurfacing during planned possessions, it does allow some flexibility in the timing of that possession in order to maximise the through running of train services.

In contrast, GHD has assumed that resurfacing activities will be performed with limited interruption from train operations, and has made its assessment of achievable productive rates using this assumption. In particular, GHD has examined the averages of actual operational data from mainline resurfacing jobs (both planned and reactive work) performed across the CQCN in FY2017, and has proposed amendments to the distribution of shift time to reflect its view of an 'efficient' operation based on resurfacing occurring during possessions. However, it does not at any stage substantiate its view with evidence based on observed practices operating under similar conditions, but rather GHD states that its recommendations are based on its own "rail experience and knowledge".[180]

Aurizon Network has highlighted some specific concerns with GHD's assessment, in Table 114 below.

Table 114 Aurizon Network – Concerns regarding GHD's interpretation of shift time codes

Shift time allocations	GHD Description[181]	Aurizon Network Definition	Issue
Principal Delay Representing: • 3% of Aurizon Network's actual resurfacing time allocation;	Delays triggered because of response times from Train Control. GHD recommends that only 10 mins is reasonable.	When the team is held up due to delays by other work groups (e.g. Protection officers, signalling).	GHD incorrectly assumes this delay is associated with train controllers. Principle delays include time spent waiting for: • closures; • overheads; • train crew; • ballast train

[179] GHD (2017), Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix C, p.27.

[180] GHD (2017), Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix C, p.7.

[181] GHD (2017), Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, Appendix C, p.7.

Shift time allocations	GHD Description[181]	Aurizon Network Definition	Issue
• 15 mins of GHD's nominal 9.5hr shift.			• Protection Officers; or • Signalling. Time spent waiting for closures represents only one part of the total delay time attributable to this code.
Traffic Delay Representing: • 13% of Aurizon Network's actual resurfacing time allocation; • 74 mins of GHD's nominal 9.5hr shift.	Late running of revenue trains causing possessions to start late. GHD recommends is that only 45 mins is reasonable.	Crossing trains or other On Track Vehicles (OTV's).	As noted above, GHD **incorrectly** assumes that resurfacing teams always work in possessions and at a single worksite per shift. In practice, resurfacing teams currently operate between revenue trains, and will deliver scope at multiple locations per shift. Aurizon Network's maintenance logistics and planning teams are focused on achieving scheduling efficiencies such that distance between worksites is minimised, but sometimes this cannot be avoided. As they traverse between worksites, the resurfacing machines are required to interact with other live traffic. This code records the shift time that resurfacing teams spent (on average) crossing with other rail traffic in as they travel. It should be noted that during this waiting time, the team is not idle, and will typically perform other activities, such as Plant Maintenance, Servicing, Site Management, Project Administration and housekeeping, assisting other Teams / Machines.
Daily Servicing Representing: • 7% of Aurizon Network's actual resurfacing time allocation; • 40 mins of GHD's nominal 9.5hr shift.	Vehicle start-up and pre-work diagnostics. GHD recommends that only 24 mins is reasonable.	General machine servicing as per the "Pre-departure Safety Critical Checklist" and daily services.	GHD has not substantiated the basis upon which it recommends a lower allocation to this time code. Aurizon Network considers that GHD has inappropriately substituted its own views, and has provided no evidence to substantiate its position. As noted above, the team is not idle, and daily servicing can be completed when being delayed for other reasons.
Pre-start Representing: • 8% of Aurizon Network's actual resurfacing time allocation; • 46 mins of GHD's nominal 9.5hr shift.	Safety briefing to resurfacing crews. GHD recommends that only 20 mins is reasonable.	For pre-start **and** debrief (also for safety pauses).	GHD has not substantiated the basis upon which it recommends a lower allocation to this time code. It should be noted that while a broader pre-start briefing is undertaken at the commencement of the shift, each resurfacing team will typically work in multiple locations during each shift. Shorter, location-specific briefings take place to identify site-specific issues as the teams get to each new worksite. Time spent on the location specific briefings conducted throughout the shift are also recorded by this code.

Based on its proposed amendments to the distribution of shift time to reflect its view of an 'efficient' operation, GHD has reached the conclusion that the average production time per 9.5 hour shift should increase from 182 minutes to 254 minutes, an increase of nearly 40%. This is the primary factor that is driving GHD's recommended reduction in mainline resurfacing costs.

Aurizon Network considers that GHD's recommended changes to time allocations are arbitrary, because they have failed to substantiate the basis for these recommendations using evidence based on observed practices operating under similar conditions.

Achieving such an average production rate per shift would require that the operating philosophy of the mainline resurfacing activity change from a dynamic philosophy, aimed at directing resurfacing activities to high priority locations while limiting impact on through trains, to a production maximising philosophy where resurfacing activities would necessarily be focussed on a single site per shift, operating during a planned possession.

Aurizon Network contends that such a change in operating philosophy is inconsistent both with:

> customer preferences in relation to the flexible operation of train services aimed at maximising supply chain throughput; and
> the requirements for effective preventative maintenance of the CQCN, having regard to the infrastructure standard and condition combined with the geographical and climatic conditions.

As a consequence, it is unreasonable for the QCA to rely on GHD's conclusion that Aurizon Network's resurfacing operations are inefficient on the basis that the average resurfacing production time per shift should be able to be increased by 40%.

Production rate of resurfacing consists

Aurizon Network's resurfacing fleet consists of five new high production consists, and two existing consists which are specialised for turnout resurfacing.

GHD assumes that the new high production resurfacing consists are capable of advancing 1,200m/hr, and have assessed the efficiency of Aurizon Network's resurfacing operation by assuming, amongst other things, that all mainline resurfacing jobs are performed at this rate of production.

Similar to the situation for the ballast undercutting operation, discussed in detail above, the rate of production that can be achieved by the resurfacing fleet, depends on a multitude of factors including site-specific, logistical, operational and geographical constraints that are prevalent in each individual work site.

Typically, the high production resurfacing machines will achieve a greater rate of production in locations characterised by:

> longer continuous sections of track;
> track geometry is within the 50mm tolerance for level and line relative to standard, which means only a single-tamp is required;
> relatively clean, unfouled ballast; and
> where works are planned, rather than reactive.

Conversely, a lower rate of production will be achieved in locations characterised by:

> shorter or sporadic scope requirements within the planned route;
> track geometry exceeds the 50mm tolerance for level and line relative to standard, thereby requiring a double-tamp. In such circumstances, the measured unit rates are effectively halved because the machines have to work on the same section twice to restore track level and line;
> fouled ballast;
> where works are reactive; and
> where the access provider assists the overall benefit of the supply chain through responding to customer requirements.

As outlined above, Aurizon Network's resurfacing machines are not wedded to specific tasks, or geographic locations. When resurfacing jobs are scheduled, the 'closest' machine is assigned the job to minimise track travel

time and mobilisation costs. For this reason, there are certain circumstances in which the existing resurfacing machine(s), which are specialised for completing turnout resurfacing works, may perform mainline resurfacing works. This will have the effect of reducing average production rates achieved throughout a given year. However, the impact of lower production rates is offset by the cost and logistical benefit of reduced track travel time.

GHD has assessed the efficiency of the mainline resurfacing (C19) operation on the basis that the new resurfacing machines will complete the entire 'Resurfacing – Mainline' scope for the UT5 regulatory period at a production rate of 1,200m/hr for every job.

Despite the modelled production benefits, Aurizon Network submits that GHD's assessment is unrealistic, as it fails to give adequate consideration to the range of 'real world' operating constraints, such as the logistical changes (and associated impact on cost and network capacity) required to ensure that the new machines (and not the closest machine) will be performing all mainline resurfacing work. The impact of these constraints cannot realistically be given appropriate consideration through a desktop review.

General Track Maintenance

GHD recommended that Aurizon Network is able to achieve a 12% reduction in its general track maintenance works, driven primarily by a 30% reduction in track inspections which are the largest single component of general track maintenance works.

GHD explain this recommendation as reflecting a revision to the proposed scope of works in order to reflect the Office of the National Rail Safety Regulator's revised scheduled inspection rate of 192 hours rather than the previously required 96 hours. As a result, GHD has assumed that scheduled track inspections are now only required every eight days instead of four. This reflects a misunderstanding of the revised inspection requirements.

Aurizon Network's Scheduled Patrol Inspections of the track and its components have historically been carried out at intervals not exceeding 96 hours. Aurizon Network's proposal to the Safety Regulator was to extend the maximum intervals between Scheduled Patrol Inspections from 96 hours to 192 hours with a minimum of one inspection per calendar-week. This proposal only applies to mainline track consisting entirely of concrete sleepers and continuous welded rail, which does not apply across the entire CQCN. On other track, scheduled inspections continue to be required in accordance with the previous requirements.

Unscheduled Patrol Inspections must still be carried out in accordance with Section 1.8 of CETS Module 1 (e.g. after heavy/persistent rainfall, floods, fire, and during temperature extremes of heat and cold).

As a result, the revised scheduled track inspection regime will not result in the extent of productivity gains anticipated by GHD.

8.5.3 Aurizon Network's comments on the B&H Report

As clearly articulated in the supporting documentation accompanying the 2017 DAU,[182] effective asset maintenance balances a number of competing factors and there is no single 'right' way of performing these activities. Nevertheless, Aurizon Network considered its 2017 DAU maintenance cost proposal to be appropriate for the characteristics of our narrow-gauge, heavy haul railway and having regard to the needs of our customers who demand network availability, reliability and resilience.

It should be noted that B&H Strategic Services did not engage directly with Aurizon Network at any stage during the QCA's investigation to discuss and understand Aurizon Network's processes. Nor did they visit

[182] QCA (2017) Draft Decision, p.151.

any of Aurizon Network's operational sites, to view its production and cost control processes to understand how these have evolved and changed over time.

As a consequence, B&H Strategic Services has based their recommendations on desktop analysis, generic experience and little in the way of site specific empirical data. Furthermore, they appear to have relied on the report prepared by GHD, which Aurizon Network has demonstrated to contain a number of errors.

Aurizon Network is a well-run railway

Despite the unsubstantiated rhetoric, which is prevalent throughout the B&H Report, Aurizon Network is a well-run railway whose asset management strategy considers broader supply chain objectives and seeks to strike an appropriate balance between cost, asset availability and asset reliability.

Aurizon Network:

- has invested in technology to improve the granularity and quality of information captured in the performance of maintenance activities (e.g. NAMS);
- assesses and prioritises maintenance needs, and plans mobilisation and budgets through evidence-based decisions that are informed by:
  - historical and contemporary data captured from track-recording vehicles;
  - use of technologies such as GPR and high-speed ultrasonic testing;
  - visual inspection through walking the track and via hi-rail vehicle; and
  - knowledge, expertise and experience of local field engineers;
- has restructured its business model to drive greater cost accountability for each maintenance discipline; and
- ensures that its strategic planning processes consider the operational and maintenance requirements of all other supply chain participants, including mine loadouts, operators and coal export terminals, to ensure that its Daily Train Plans represent optimised outcomes for all supply chain participants.

Independent assessment of maintenance practices

Aurizon Network's operational practices have been subjected to a number of in-depth assessments and reviews over time. As part of the UT3 regulatory process, WorleyParsons conducted an extensive survey of:

- the maintenance plans proposed by Aurizon Network (then QR Network);
- the condition of the infrastructure;
- the methods of work; and
- a benchmarking of railways from around the world.

In the context of Aurizon Network's maintenance practices, WorleyParsons main findings[183] were:

[183] WorleyParsons (2008), UT3 Parallel Comparison Exercise, August, p. ii – iv.

- *The Consultant observed that within the field engineering practices, such as rail management (monitoring of rail wear for example) the systems currently adopted by QR can be considered world leading. QR can also be considered a world leader in the use of regular measurements of percentage void contamination to plan ballast cleaning and in its innovative trialling of the use of stone-blowers for heavy haul operations;*
- *The Consultant was impressed with the current plans for the implementation of a new GIS based asset register which will be integrated with planning management decision support tools;*
- *The Consultant conducted an international benchmark on engineering processes and methodologies and concluded that in comparison to other heavy haul railway operations, QR performs better in some aspects of infrastructure maintenance, and in others performs on average;*
- *Overall the Consultant concludes that:*
  - *The achievability and realism of existing KPI's is reasonable although some work is required to refine the data obtained in order to enhance the decision making process and provide greater incentives for quality improvement at a holistic supply chain operation level. This work is currently under progress for the UT3 undertaking;*
  - *In general asset condition was found to be good, and existing strategies, standards and processes in line with international trends. Engineering judgment and reasoning was found to be sound, and the scope and volume of work appropriate for the existing site conditions. Some strategies and processes were judged as being innovative and to be commended;*
  - *In general costs were calculated as being comparative in international benchmarking, with allowances in some items for specific North Queensland conditions. A critical requirement was identified for specific studies which address the reality of the Central Queensland geography.*

GHD was engaged by the QCA to assist in its determination of the UT3 proposal, and as part of that engagement, reviewed the WorleyParsons report. GHD states[184]:

> *"WorleyParsons found that QR is operating very proficiently and plans for the future will improve that performance. While not at the lowest level of maintenance cost compared to other railways it was difficult to make direct comparisons.*
>
> *WorleyParsons used amongst others, a former Chief Civil Engineer of QR and research experts from the Transportation Test Centre Inc in the US. In addition their desktop analysis provided the theoretical base to incorporate field audit and the application of practices used elsewhere in the world.*
>
> *The report is regarded highly by this consultant."*

Aurizon Network's commitment to operational transformation initiatives was publicly acknowledged by Advisian, who conducted Aurizon Network's Condition Based Assessment. Advisian states:[185]

> *"In the period between this Condition Based Assessment (CBA) and the initial CBA for FY 2012, the considerable efforts Aurizon Network has made in enhancing asset management practice should be acknowledged and commended. These include:*
>
> - *Increasing organisational emphasis on asset management*
> - *Improving and rationalising asset management systems*
> - *Standardising components (where possible)*
> - *Exploring and trialling innovative and state of the art technology."*

[184] GHD (2009) Assessment of Operating and Maintenance Costs for UT3, September, p.40.

[185] Advisian (2017), CQCN Condition Based Assessment FY2016, May, (pg. ii – iii).

> *The conclusions of these independent consultants, who have taken the time to better understand our maintenance practices and the relevant operational constraints, indicate that Aurizon Network does not display characteristics of a Rail Operator who in B&H's view has demonstrated "…no improvement in efficiency over nearly 20 years".*[186]

Many of Aurizon Network's maintenance practices are considered to be world-leading[187] and appropriate for the site-specific condition, and geographical factors a rail network that is:

- comprised of systems where the construction of some assets dates back as early as the 1920s; and
- a conglomerate of different asset elements with different capacities, made by different suppliers and installed at different ages under a wide range of planned and actual traffic conditions.

That is not to say that Aurizon Network's infrastructure is maintained to a standard in excess of what is reasonably required or that its maintenance practices cannot be further refined. To that end, Aurizon Network maintains CQCN Rail Infrastructure in accordance with practices and standards that are regularly assessed and measured against global best practice. For example, the Rail Industry Safety and Standards Board (RISSB) and Transportation Technology Center, Inc (TTCI).

Aurizon Network's Mechanised Production team holds certification to ISO 9001:2015, a globally recognised quality certification. This certification demonstrates our ability to consistently provide ballast undercutting and resurfacing services in a way that meets the needs of its customers, while also satisfying statutory and regulatory requirements. It achieves this through the effective application of a quality management system, which provides a framework for process improvement, efficient use of time and resources, and the assurance of conformity to customer and applicable statutory and regulatory requirements.

Furthermore, Aurizon Network has recently been approached by another Australian railway operator, to provide advice and to share knowledge and experience in relation to:

- safety systems;
- operational practices; and
- whole of life plant maintenance cycles.

It is unlikely that Aurizon Network would receive such requests if B&H's opinion was shared by others with credible railway operations experience.

The B&H Report is not evidence-based

Page 290 of the Draft Decision states that:

> *"GHD and B&H Strategic Services' analyses provide compelling evidence based on a bottom-up and top down assessment that efficiency gains of 3 per cent per annum are achievable by Aurizon Network in UT5."*

To fully examine the Draft Decision, Aurizon Network submitted a written request to the QCA on 25 January 2018 seeking a copy of the top-down and bottom-up financial models prepared by B&H Strategic Services. At the time of finalising this Response, the QCA did not provide this information. Our assessment of the Draft Decision is therefore based on access to limited information which we have been unable to investigate thoroughly.

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[186] B&H (2017), Assessment of Aurizon Network's UT5 Submission, December, p.iv.

[187] WorleyParsons (2008), UT3 Parallel Comparison Exercise, August, p. ii – iv.

Aurizon Network can find no such compelling evidence from its review of the B&H report, which:

- contains little in the way of evidence substantiated against other observed operating practices in similar circumstances;
- contains a number of arbitrary and subjective statements;
- demonstrates an inadequate understanding of the site-specific, logistical, operational and geographical constraints which impact the delivery of maintenance activities across the CQCN;
- assesses historical maintenance costs without considering the impact of critical factors such as:
  - increased traffic density; and the
- associated reduction in system closure hours from approximately 1,300 hours in FY2014 to 750 in FY2017; and
- applies a unit rate cost assessment of maintenance activities on the basis of gross tonnes, which makes no provision for the size of the network (distance km); a key determinant of maintenance activity and scope.

Aurizon Network contends that the basis upon which B&H Strategic Services reached its conclusion is not supported by objective evidence, and was not informed by any correspondence, discussion, interaction or visits to Aurizon Network. The B&H report therefore should not be relied upon by the QCA.

8.5.4 QCA's reliance on Maintenance Consultants' reports

As noted above, the GHD report suggested that a reduction in Aurizon Network's 2017 DAU cost proposal of just over $100m should be achievable through the introduction of efficient work practices, with GHD's suggested 'efficiency gains' for these two cost categories accounting for $86.3m - 85% of GHD's total suggested 'efficiency gain'. While the QCA acknowledged that it would be inappropriate to rely on the GHD report to derive a bottom up assessment of efficient maintenance costs, the Draft Decision maintenance allowance reflected a reduction to the 2017 DAU proposed costs of $103m. While the QCA has described its methodology for calculating this allowance is to adopt FY2017 costs for most maintenance categories and then apply a 3% cumulative annual productivity gain,[188] the outcome is almost identical to GHD's recommendation. It appears clear that the QCA has relied heavily on the GHD analysis in developing its Draft Decision on the efficiency gain.

Aurizon Network contends that the QCA has placed too great an emphasis on the modelling prepared by GHD. Given the gravity of GHD's recommendations, upon which material aspects of the Draft Decision relies, it is not unreasonable for Aurizon Network to expect that the QCA would seek further validation of GHD's conclusions, potentially applying some form of quantitative bottom-up analysis of its own; particularly for Ballast Undercutting and Resurfacing.

From the information contained within the Draft Decision itself, and from the financial models provided by the QCA, it seems apparent that the QCA has not validated for itself, the accuracy of the GHD's analysis and the reasonableness of their conclusions.

As discussed earlier in this section, Aurizon Network has considered the information and analysis contained within the consultants reports and where possible, has replicated many of the consultant's calculations. Aurizon Network has discussed the consultant's analysis with its engineers, asset managers and asset maintainers; all of whom have the experience, expertise and detailed knowledge of local conditions and operational practices, which allows them to make informed and educated assessments about the needs of the Rail Infrastructure.

[188] QCA (2017) Draft Decision, p.290.

Aurizon Network contends that the basis upon which GHD reached its conclusions is flawed and:

> in a number of cases are erroneous or otherwise based on unsubstantiated and arbitrary assumptions;
> are based on an inadequate understanding of the site-specific, logistical, operational and geographical constraints which impact the delivery of maintenance activities across the CQCN; and
> would require the introduction of operating practices that will lead to inefficient rigidities in the coal supply chain, which will ultimately undermine total system throughput.

Consequentially, these errors undermine the very basis upon which the QCA seeks to impose a broad $26m efficiency deduction for the UT5 undertaking period.

Aurizon Network submits that in making the Draft Decision the QCA has not appropriately interrogated the work of its consultants and their conclusions, which has resulted in a Draft Decision that does not reflect the operating environment in which Aurizon Network provides services to its customers and the quality of those services.

Page 290 of the Draft Decision states that:

> *GHD and B&H Strategic Services' analyses provide compelling evidence based on a bottom-up and top down assessment that efficiency gains of 3 per cent per annum are achievable by Aurizon Network in UT5.*

Aurizon Network can find no such compelling evidence from its review of the GHD and B&H reports. Aurizon Network formally requested that the QCA provide copies of the top-down and bottom-up financial models prepared by both GHD and B&H Strategic Services. At the time of writing this response, only GHD's model has been provided.

Upon review of the consultants reports and GHD's model, Aurizon Network submits that their conclusions are based on erroneous analysis using arbitrary assumptions and justified by unsubstantiated evidence. QCA cannot reasonably rely on the consultant's findings to justify the 3% cumulative efficiency factor proposed in the Draft Decision.

In addition, Aurizon Network has concerns in relation to the following matters:

> at no stage does the QCA's Terms of Reference, outlined in Table 1 of the GHD Report,[189] require an assessment of whether the maintenance costs are appropriate in the context of broader supply chain requirements, including the objectives and services levels required by its customers, and the way in which Aurizon Network's operation has been structured and executed to support these needs. Aurizon Network concludes that the QCA and the consults have focused solely on maintenance cost minimisation, regardless of any consequential impact on the operational performance and throughput of the broader coal supply chain;
> the efficiency factor has been applied broadly to total maintenance costs, which also includes all of Aurizon Network's maintenance plant and fixed costs, which cannot reasonably be removed from its cost base in the short term without appropriate consideration of the operational consequences for the CQCN;
> while the QCA has described its mechanism as reflecting incentive regulation, best practice incentive regulation is designed to establish a reasonably efficient base year cost and then provide a genuine opportunity and incentive for the service provider to outperform that cost over the regulatory term. By adopting an efficiency target based on an erroneous view of efficient cost outcomes, the QCA's mechanism provides no such incentive.

[189] GHD (2017) Review of the Prudency and Efficiency of Aurizon Network's Proposed UT5 Maintenance Expenditure, November, p.1.

8.6 Adjustment for non-coal train services

The QCA states that it is:

> *…pre-disposed to making an allowance for non-coal services, but have not done so at this stage.*[190]

While the nature of any such "allowance" is unclear, Aurizon Network presumes the QCA is considering the merits of imposing a further deduction to its UT5 maintenance cost allowance to reflect the maintenance costs imposed on the network by non-coal services.

Aurizon Network strongly opposes any form of maintenance cost deduction for non-coal services on the basis that the scope of maintenance work underpinning the 2017 DAU maintenance cost proposal was developed with reference to forecast coal volume only, i.e. the UT5 maintenance cost proposal already excludes all maintenance costs attributable to non-coal volume. Notwithstanding this, Aurizon Network considers that the incremental maintenance costs that is imposed on the network by non-coal services is only incidental for the following reasons:

- the dynamic wheel force exerted by non-coal train services on track infrastructure is materially lower relative to coal train services, meaning that the rate of asset degradation attributable to non-coal train services is materially lower than that of coal train services;
- non-coal train services predominantly run on only 120km of network track kilometres; being the North Coast Line (NCL) between Parana (near Gladstone) and Rocklands (near Rockhampton); and
- the calculations applied by the QCA to determine the proportion of non-coal train services are incorrect and have the effect of overstating the perceived number of non-coal train movements relative to coal train movements. The QCA's assessment of non-coal train services is overstated because it includes:
  - kilometres attributable to maintenance train movements for which Aurizon Network earns no revenue but which are critical to the operation of the CQCN; and
  - kilometres for repositioning or transit services.

Aurizon Network has provided a more fulsome response to the QCA's non-coal calculation in response to the operating cost allowance Draft Decision (see section 7.2).

Further supporting information regarding the limited impact of non-coal services on expected maintenance costs is set out below.

Dynamic wheel force impact

A number of factors contribute to the way rail infrastructure assets deteriorate and how quickly this occurs. One significant factor is the dynamic wheel force which rail vehicles exert on the track structure. The size of the force is determined by the mass of the vehicle and the dynamic characteristics of both the vehicle and track structure.

Much research[191] has been undertaken to attempt to quantify track damage mechanisms and to develop models which allow rail infrastructure managers to investigate the potential effects on asset degradation of changes in rail operations and asset configuration.

Research by the Office of Research and Experiments (ORE) of the International Union of Railways in the 1960s and 1970s (e.g. D71/D141/D161) established that degradation in various track elements could be expressed as a power function of axle load and tonnage.

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[190] QCA (2017) Draft Decision, p.260.

[191] Eisenmann, J., (1969), Stress on the Permanent Way due to High Axle Loads, Stahl Eisen, Vol. 89, No. 7, p.373.

Eisenmann, J., (1970), Stress Distribution in the Permanent Way due to Heavy Axle Loads and High Speeds, AREA Proceedings, Vol. 71, p.24.

Jenkins, H.H., Stephenson,J.E, et al. (1974), The Effect of Track and Vehicle Parameters on Wheel/Rail Vertical Dynamic Forces, The Railway Engineering Journal, p. 2.

Larsson D. & Gunnarsson, J., (2001), A Model to Predict Track Degradation Costs, 7th International Heavy Haul Conference (Proceedings).

More recent work by Larsson & Gunnarsson (2001) established that these relationships could be effectively simplified in many cases using a third power function.

Larsson & Gunnarsson's work has been used to model the relative contribution to track degradation of the various types of traffic operating in the CQCN. The model uses traffic tonnage statistics and rollingstock data for typical train configurations to investigate the relative effects of coal and non-coal traffic on:

> quasi-static vertical wheel force using theory developed by Eisenmann (1969, 1970); and
> dynamic wheel force at discrete rail irregularities using 'P2' theory developed by Jenkins et al (1974).

While Eisenmann's and Jenkin's theoretical work is now some 50 years old, it remains as a foundation of much of modern railway track engineering and is routinely referenced in contemporary rail infrastructure research. Combining Larsson & Gunnarsson's research with Eisenmann's and Jenkin's work produces a theoretical basis for assessing track damage equivalency for each of the various traffic modes.

The result is that the contribution of non-coal traffic, which includes freight, long-distance passenger traffic makes a materially lower contribution to track degradation as a percentage of the total traffic profile of the CQCN.

The results of the analysis in relation to the train types typically operating between Parana and Rocklands are outlined in Table 115 below.

Table 115 Aurizon Network – Damage comparison per consist type compared to coal

Comparison summary using Xth power rule		Coal	North Cost Freight	Long Distance Passenger	Tilt Train
Locomotive / power unit class		3800 EL	4000 DEL	2170D DEL	Tilt DTD
Number of locomotives / power units	no.	3	1	2	2
Wagon class		VSA	PCZY	LAL	Tilt DTL
Number of wagons	no.	100	60	10	8
Total train mass loaded	tonnes	10,996	4,920	705	456
Total train mass empty	tonnes	2421	1,074	395	456
P2 damage comparison					
Motive power					
Mass	tonnes	132	120	98	60
P2	kN	193	203	170	190
Equivalence factor		0.90	1.05	0.61	0.86
Equivalent wheels	no.	32.4	12.6	14.7	13.8
Wagons					
P2 loaded	kN	186	162	126	168
Equivalence factor loaded		0.80	0.53	0.25	0.60
Equivalent wheels loaded	no.	641.4	253.5	20.1	38.2
P2 empty	kN	81	83	88	168
Equivalence factor empty		0.07	0.07	0.09	0.60
Equivalent wheels empty	no.	52.5	34.4	6.8	38.2
Total consist					
Total equivalent wheels	no.	726.3	300.4	41.6	90.2

Comparison summary using Xth power rule		Coal	North Cost Freight	Long Distance Passenger	Tilt Train
P2 damage per consist compared to Coal		**0.0%**	**-58.6%**	**-94.3%**	**-87.6%**
Eisenmann damage comparison					
Motive power					
Eisenmann	kN	193	199	162	225
Equivalence factor		0.90	0.98	0.53	1.42
Equivalent wheels	no.	32.4	11.8	12.7	22.7
Wagons					
Eisenmann loaded	kN	233	199	127	157
Equivalence factor loaded		1.58	0.98	0.25	0.49
Equivalent wheels loaded	no.	1,260.1	472.1	20.4	31.2
Eisenmann empty	kN	44	40	50	157
Equivalence factor empty		0.01	0.01	0.02	0.49
Equivalent wheels empty	no.	8.8	3.7	1.2	31.2
Total consist					
Total equivalent wheels	no.	1301.3	487.6	34.3	85.1
Eisenmann damage per consist compared to Coal		**0.0%**	**-62.5%**	**-97.4%**	**-93.5%**

The table above illustrates that the rate of rail infrastructure deterioration attributable to coal traffic is materially higher than non-coal train services, which includes freight and long-distance passenger traffic.

Aurizon Network has also assessed the P2 and Eisenmann damage attributable to non-coal train services. The results of this analysis indication that assets degradation attributable to non-coal train services is equivalent to:

> approximately 7.5% on the North Coast Line (NCL) between Parana and Rocklands, and
> well less than 1% in all other areas of the CQCN.

Year on year, this result is not expected to be materially different given the relatively small tonnages of non-coal traffic on the CQCN.

Aurizon Network notes that the QCA has only attributed limited adjustments to base year maintenance cost estimates to deal with the impact of expected increases in coal volumes in UT5. The Draft Decision only provides for adjustment to the General Track Maintenance expenditure category, although Aurizon Network has submitted that some volume adjustments should also be made to the resurfacing expenditure category. Given:

> the limited asset degradation that can reasonably be attributed to non-coal traffics; together with
> the limited extent to which the maintenance cost varies with changes in coal volumes that contribute to increased asset degradation;

Aurizon Network considers the actual maintenance cost impact associated with these non-coal traffics will be only immaterial.

As noted above, the maintenance scope and associated costs for the 2017 DAU maintenance cost proposal were based on coal volume forecasts only, i.e. the volume impact and associated maintenance costs attributable to non-coal traffic were not included in Aurizon Network's submission.

Aurizon Network submits that its forecasting methodology appropriately excludes the limited maintenance costs attributable to non-coal train services for the UT5 regulatory period. We therefore propose that the Final Decision should not impose any non-coal deduction to the UT5 maintenance cost allowance.

8.7 Response to stakeholder comments

The Draft Decision refers to concerns raised in stakeholder submissions on the 2017 DAU. Aurizon Network would like to take this opportunity to comment on these concerns, and to clarify aspects of its UT5 maintenance cost proposal. Stakeholder comments have been taken from tables 82 and 83 of the Draft Decision.[192]

Table 116 Aurizon Network – Response to stakeholder comments

Stakeholder	Comment	Aurizon Network Response
QRC	Given increasing coal volumes, a general efficiency dividend of 1–3% should be achievable; yet, unit cost reductions in real terms are not apparent in the UT5 maintenance cost proposal.	The QRC has not provided any evidence to substantiate their statement that a general 1-3% efficiency dividend should be achievable. Increasing coal volumes will typically require a greater maintenance scope as the Rail Infrastructure is being worked harder. Furthermore, as additional network capacity is consumed by coal trains, the window of opportunity for performing maintenance is constrained. In certain circumstances, Aurizon Network may use a variety of measures (e.g. double-shifting, overtime, temporary 'make-safe' fixes) in order to perform the maintenance activities that are required to minimise supply chain impact. However, this can result in significant work-load peaks that will ultimately stretch, and at times, exhaust the finite resources of both Aurizon Network and its suppliers. So while greater coal volume will reduce **fixed** maintenance costs (on a unit rate basis), the impact on **variable** costs is highly dependent on the operational paradigm in effect at the time the costs are incurred. It should be noted that maintenance cost minimisation may not always in the best interests of the supply chain; particularly in the context of maximising throughput.
QRC	Aurizon Network has an incentive to 'gold-plate' or 'over-engineer' maintenance costs as it gets to recover these costs as well as reduce risks for Aurizon Operations.	All coal producers and **ALL** operators (not just Aurizon Operations) will benefit from a reliable and well performing rail network. Aurizon Operations is the sole operator on approximately 12% of total CQCN track kms, predominantly located in parts of the Blackwater and Moura systems. The QRC has provided no evidence to suggest that these systems are maintained to a higher standard than the others. Aurizon Network strongly rejects the implication that it behaves in a manner which favours a related party. Such comments are misleading, unsubstantiated and unconstructive. The economic regulation of the CQCN by the QCA provides no incentive for Aurizon Network to incur inefficient costs nor to perform maintenance tasks in a manner which is in excess of the minimum standards required to provide the declared service.
QRC	Maintenance tasks should not be linked to the capital value of the RAB. Newer assets such as GAPE and WIRP should	Aurizon Network confirms that its maintenance scope and the associated costs are not in any way linked to the capital value of the RAB.

[192] QCA, Draft Decision, Aurizon Network's 2017 draft access undertaking, December 2017, p.267-268.

Stakeholder	Comment	Aurizon Network Response
	involve lower maintenance costs, given their recent development and under-utilisation.	The scope of maintenance activities is set having regard to: • the quantum of infrastructure constructed in each system; • the condition of the infrastructure in each system having regard to its age, usage and history of maintenance / renewal activities; and • tonnes railed, and expected to rail over each line section, in each system.
Anglo American	It is still not clear whether scope is prudent and therefore whether the amounts claimed are representative of efficient maintenance costs. Anglo American submitted that it is excessive in circumstances where Aurizon Network 'maintains built capacity' compared to volumes.	Aurizon Network maintains Rail Infrastructure that is required for the provision of the declared service. While it is [responsible] for maintaining the infrastructure that was built to provide a certain level of capacity, the scope of those maintenance activities is set with reference to a number of factors, including tonnes railed, and expected to rail over each line section, in each system. For example, if Rail Infrastructure was built to deliver a contract of 10 million tonnes per annum, but it was under-utilised, such that only 5 million tonnes per annum was railed, the scope (and cost) of volume-dependent maintenance activities is set with reference to 5 million tonnes.
BMA	It is not clear whether Aurizon Network has taken into account past performance in delivering its maintenance program. Aurizon Network's performance of actual to planned scope was a key issue highlighted in UT4.	Aurizon Network's maintenance performance against the approved scope for the UT4 undertaking period was clearly outlined in Aurizon Network's FY2017 Maintenance Cost Report.[193] This information is replicated in the table below. With the exception of mainline rail grinding, which was (0.5%) below the total UT4 scope, Aurizon Network exceeded all scope requirements for Ballast Undercutting, Resurfacing and turnout grinding.
QCoal	The approach to developing a maintenance budget for new systems such as GAPE should require great scrutiny, as these systems will not have the same maintenance requirements as older systems.	As noted above, the scope of maintenance activities is set having regard to: • the quantum of infrastructure constructed in each system; • age of infrastructure in each system; and • tonnes railed, and expected to rail over each line section, in each system. Accordingly, the scope of maintenance work attributable to infrastructure that was constructed as part of the GAPE project is appropriate for the age and condition of that specific infrastructure. Nevertheless, as GAPE users typically rail across most of the Newlands system, they are also required to make a contribution towards the maintenance requirements of existing Rail Infrastructure within the Newlands system.

Table 117 Aurizon Network – Maintenance performance for activities with QCA approved scope

Aurizon Network's maintenance scope performance - Total UT4 Period (FY2014 - FY2017)			
Ballast Undercutting	**Forecast**	**Actual**	**Variance**
- Mainline (km)	520	538	3.5%
- Turnout (No.)	162	167	3.1%

[193] Available at: https://www.aurizon.com.au/~/media/aurizon/files/what%20we%20do/network/network%20downloads/maintenance%20costs/annual%20maintenance%20cost%20report%202016-2017.pdf

Aurizon Network's maintenance scope performance - Total UT4 Period (FY2014 - FY2017)			
Resurfacing	**Forecast**	**Actual**	**Variance**
- Mainline (km)	8,577	8,788	2.5%
- Turnout (No.)	1,520	1,666	9.6%
Rail Grinding	**Forecast**	**Actual**	**Variance**
- Mainline (km)	13,827	13,758	(0.5%)
- Turnout (No.)	2,678	2,686	0.3%

Some stakeholders have also questioned why substantial cost savings were not apparent within Aurizon Network's 2017 DAU proposal. The QRC states that:

> *…its members have been able to significantly reduce their cost base (both in terms of direct operating costs and overhead), and consider Aurizon Network needs to justify why it has not been able to make comparable savings and productivity improvements.*[194]

The reality is that Aurizon Network's cost base did not increase at the same rate as coal producers, and it operates with materially lower margins. This means that Aurizon Network has considerably less scope to significantly reduce costs further without adversely affecting the levels of service This is clearly illustrated in Figure 42 below, which plots the weighted average cash costs of CQCN producers since 2008[195], against both Aurizon Network's Total MAR and Maintenance costs, expressed in terms of $ per net tonne.

[194] QRC, Submission on 2017 DAU, Volume 2 Pricing Submission, p.46.

[195] Wood Mackenzie Coal Supply Data 2017 Q4.

Figure 42 Aurizon Network – Producer cash costs vs Aurizon Network's MAR and Maintenance costs ($ per net tonne)

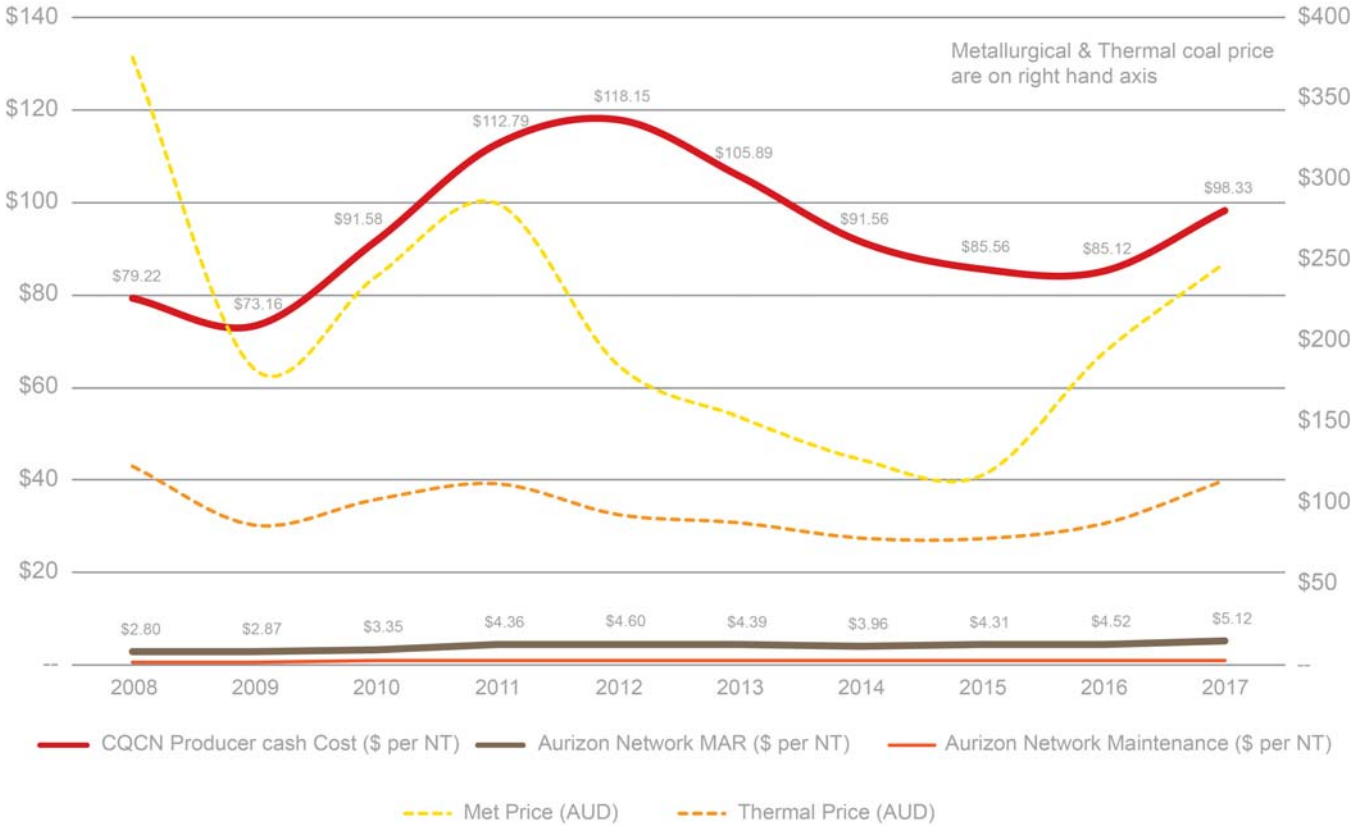

Figure 42 shows that despite the fluctuations in the price for both metallurgical and thermal coal and the considerable upward pressures on input costs for both skilled labour and resources, Aurizon Network's real unit costs have remained relatively stable over an extended period. This is contrary to the experience of CQCN coal producers, whose cash costs increased materially as they expanded operations to take advantage of high coal prices.

Aurizon Network is not in a position where it can take advantage of material surges in the coal price. So, its focus is directed towards improving its core competencies, i.e. providing access to a robust and reliable coal rail network, which is fit for purpose.

8.8 The Maintenance Cost Index (MCI)

8.8.1 QCA Draft Decision

Summary of Draft Decision 8.2

- The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise its proposed allowable revenues and reference tariffs to reflect Aurizon Network's proposed MCI forecasts (updated for actual FY2017 sub-indices), but not Aurizon Network's methodology used to reach its proposed MCI.
- The QCA's Draft Decision is to apply the following annual MCI forecasts
  - (a) FY2018 - 1.81 per cent
  - (b) FY2019 - 1.91 per cent
  - (c) FY2020 - 1.92 per cent
  - (d) FY2021 - 1.92 per cent
- For ex post reconciliation of forecast MCI to actual MCI, the QCA requires Aurizon Network to amend the weightings so that: (a) weightings are consistent with efficient maintenance costs (b) weightings reflect an accurate allocation of costs among cost categories (c) depreciation costs are removed from calculation of the MCI weightings.
- The QCA considers that the ex post reconciliation of forecast to actual inflation (Schedule F, cls. 4.3(c)(i) and 4.4(a)(ii)), insulates Aurizon Network from cost escalation within its maintenance cost forecasts.

The Draft Decision is to accept annual MCI growth forecasts (updated for actual FY2017 sub-indices), but does not accept the way in which Aurizon Network constructed the MCI for the UT5 undertaking period.

Aurizon Network accepts the Draft Decision regarding to the construction of the MCI. Aurizon Network cannot support the Draft Decision as it relates to the annual MCI growth forecast, because it was derived from the MCI proposed in the 2017 DAU, which the QCA has refused to approve.

In response to the Draft Decision, Aurizon Network considers that the forecast rate of MCI growth should remain internally consistent with the basis upon which the MCI is constructed.

8.8.2 Construction of the MCI

The Draft Decision expresses maintenance expenditure in real terms ($FY2015) and costs are escalated to determine the MAR and Reference Tariffs for each year of the UT5 regulatory period (in nominal terms).

The inflationary impact on real prices is forecast through the application of a Maintenance Cost Index (MCI); a composite index weighted in proportion to the composition of the total UT5 maintenance spend (in real terms). The MCI is a benchmark approach, which represents an approximation of the maintenance cost base.

As outlined in the 2017 DAU[196] each index is publicly available from the Australian Bureau of Statistics (ABS), except for the fuel index, which is sourced from the Australian Institute of Petroleum.

Aurizon Network supports the Draft Decision, and has updated the MCI composition and category weightings accordingly.

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[196] Aurizon Network (2016) UT5 submission to the QCA, p.164.

The weightings and indices which correspond to the maintenance costs proposed in Aurizon Network's response to the Draft Decision are outlined in Table 118 below.

Table 118 Costing methodology: Sub-indices and weightings for MCI

Cost Category	Sub-Index Component	ABS Reference	Weighting
Accommodation	ABS Producer Price Index: > Accommodation (100%)	A4406608F	1.1%
Consumables	ABS Producer Price Indices:		50.9%
	> Fabricated Metal (34.8%)	A2305805K	
	> Transport Equipment and Parts (19.6%)	A2305907X	
	> Mining/Construction Machinery Manufacturing (45.6%)	A2307785X	
CPI	ABS Consumer Price Index: > All groups; Brisbane (100%)	A2325816R	0%
Fuel	Australian Institute of Petroleum: > Diesel Terminal Gate Price; Brisbane (100%)	www.aip.com.au/pricing/tgp.htm	1.7%
Labour	ABS Wage Price Indices:		46.3%
	> National Construction (33.3%)	A2705076L	
	> National Mining (33.3%)	A2705060V	
	> Queensland, all industries (33.3%)	A2704548F	

8.8.3 Proposed annual MCI indexation rate

Aurizon Network has recalculated the MCI forecasts using the revised weightings above.

Aurizon Network cannot support the Draft Decision to apply an annual growth rate in line with Aurizon Network's 2017 DAU inflation forecast of 1.22%.

Aurizon Network submits that the forecast growth rates for MCI should be internally consistent with the forecasts for Wage Price Index (WPI) and Consumer Price Index (CPI), applied in this response to the Draft Decision.

Accordingly, Aurizon Network has applied the following annual growth forecasts to the MCI sub-indices:

> for labour costs, Aurizon Network has accepted the Draft Decision to align the annual growth rate for WPI with the Queensland Government's economic forecasts;[197]
> for all other sub-indices, the 4-year forecast rate of inflation for the UT5 regulatory period, i.e. 1.84%.

[197] Queensland Budget 2017-18; Queensland Economic Forecasts, Table 2.3, p.37; Accessed 16/02/18 at: https://s3.budget.qld.gov.au/budget/papers/2/bp2-2017-18.pdf

For clarity, the annual growth rates are expessed in the table below.

Table 119 MCI annual growth rates

Growth Rates	FY2018	FY2019	FY2020	FY2021
WPI	2.25%	2.50%	3.00%	3.00%
CPI	1.84%	1.84%	1.84%	1.84%

Table 120 Costing methodology: Proposed annual MCI forecasts

Annual MCI Forecast	FY2018	FY2019	FY2020	FY2021
QCA Draft Decision	1.81%	1.91%	1.92%	1.92%
Aurizon Network Response	2.03%	2.15%	2.38%	2.38%

It should be noted that the MCI above is a forecast and an ex-post reconciliation takes place as part of the annual revenue cap process to account for actual rates of change in the relevant sub-indices.

8.9 Concluding remarks

Aurizon Network contends that an efficient and effective maintenance regime is essential for promoting the efficient operation and use of CQCN Rail Infrastructure.

To facilitate this Aurizon Network's asset management strategy is structured with the aim of delivering critical network maintenance activities whilst minimising the consumption of network capacity. In other words, Aurizon Network seeks to strike an appropriate balance between cost, asset availability and asset reliability. In doing so, Aurizon Network considers the diverse operating modes, maintenance requirements and logistical challenges of the broader coal supply chain as part of its planning, scheduling and operational practices.

For the total supply chain to operate optimally it must provide flexibility where reasonably required in a manner that is consistent with safety requirements, contractual rights and obligations and the service provider's risk framework. In this context, we continue to believe that our existing processes are the most appropriate way to maintain the CQCN because these practices consider the broader needs of the Queensland coal supply chain.

In response to the Draft Decision, Aurizon Network has accepted the QCA's recommended changes for the majority of CQCN maintenance activities. The exceptions to this are:

> Ballast Undercutting and Resurfacing activities, where Aurizon Network has prepared detailed bottom-up costing models that incorporate appropriate production efficiency targets;
> General Track Maintenance, where Aurizon Network proposes to normalise the FY2017 cost base to account for the diversion of resources during the flood rectification post-Tropical Cyclone Debbie; and
> Structures, where Aurizon Network proposes to apply FY2017 as the forecasting base year, as it incorporates costs that are essential to the CQCN's flood-readiness and resilience programme.

For the reasons outlined in the body of this response, Aurizon Network considers that its revised maintenance cost proposal will most efficiently support the needs of both its customers, and the Central Queensland coal supply chain more broadly. Aurizon Network achieves this by delivering a resilient network, with consistently high levels of availability, and which is operated in a manner that promotes the delivery of tonnage in a safe and reliable way.

9

Schedule F — Reference tariffs and take-or-pay

9. Schedule F – Reference Tariffs and Take-or-pay

This chapter presents Aurizon Network's response to the Draft Decision on Schedule F provisions that relate to the determination of reference tariffs.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 121 QCA Draft Decision and Aurizon Network's Response – Schedule F – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU Schedule F provisions that relate to the determination of reference tariffs	9.1	Agree
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise: (a) the process for the annual approval of the EC component of reference tariffs in clause 2.2 and require that the process for QCA approval is clarified (b) The calculation of adjusted allowable revenue is clause 4.3(c)(ii). In addition to adjustments to reflect differences between actual and forecast CPI, the QCA's Draft Decision is to require that clause 4.3(c)(ii) include adjustments to reflect differences between actual and forecast WPI (c) clause 4.4(a)(ii) to include the WPI.	9.2	Disagree
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise clause 3.3(e) to: (a) Clarify that the calculation of nt and ntk in that clause is for the purpose of cl. 3.3(d)(iii)(B)(1) and (2) (b) Provide that the nt and ntk will be calculated using a 'train payload as reasonably determined by Aurizon Network'.	9.3	Disagree
The QCA's Draft Decision is to approve the form of regulation and pricing process of the AT5 component	9.4	Agree
The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise Schedule F to include the QCA's system forecasts for gtks	9.5	Agree with amendment

9.1 Overview - Aurizon Network's Position

Aurizon Network submitted Schedule F with minimal changes outside of the required changes to tariffs as a result of Aurizon Network's revenue proposal.

Aurizon Network supports the Draft Decision which accepts our position in relation to Schedule F of the 2017 DAU. As part of this response submission, Aurizon Network has requested that there be some minor changes to some elements, that are covered off in more detail within this chapter.

An amended copy of Schedule F is presented at Appendix B to this response submission.

The largest change is that of the true-up mechanism in relation to the overall inflation indices.

Aurizon Network is still committed to completing a pricing review at the appropriate time. Consultation with industry in late 2017 indicated that it could be considered once the responses to the Draft Decision have been completed. At this time, Aurizon Network will again engage with its stakeholders to determine scope of the review.

Although no scope has been developed for this pricing review so far, industry stakeholders have through various regulatory submission outlined certain changes. Aurizon Network will develop this scope and establish timing in consultation with stakeholders.

We therefore propose that the Final Decision should be to accept the 2017 Draft Access Undertaking drafting, with those minor amendments outlined within this chapter. For convenience, that drafting is included in Appendix J to this submission, which provides a complete version of UT5 tracking against the form of UT5 that is consistent with the Draft Decision.

For clarity, we note that the ringfencing provisions in the 2017 DAU are the same as those in our current Access Undertaking.

9.2 Determination of reference tariffs

9.2.1 QCA Draft Decision

Summary of Draft Decision 9.1

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU Schedule F provisions that relate to the determination of reference tariffs

Aurizon Network supports the Draft Decision to approve our approach as set out in Schedule F for determining reference tariffs for coal-carrying train services.

9.3 Process for the review and variation of reference tariffs

9.3.1 QCA Draft Decision

Summary of Draft Decision 9.2

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise:
  - (a) the process for the annual approval of the EC component of reference tariffs in clause 2.2 and require that the process for QCA approval is clarified
  - (b) The calculation of adjusted allowable revenue is clause 4.3(c)(ii). In addition to adjustments to reflect differences between actual and forecast CPI, the QCA's Draft Decision is to require that clause 4.3(c)(ii) include adjustments to reflect differences between actual and forecast WPI
  - (c) clause 4.4(a)(ii) to include the WPI.

9.3.2 Electric energy charge (EC component)

We note the Draft Decision is to not accept Aurizon Network's existing drafting for Schedule F in relation to the process for seeking QCA approval of changes to the EC component outlined in cl. 2.2. Progressive purchasing will require pricing adjustments as electricity is procured progressively.

The Draft Decision proposes that cl. 2.2 of Schedule F makes reference to approval by the QCA as if cl. 4.1(d) applied to the proposed adjustment. This would have the effect that the QCA may approve the revised EC component if it considers it reasonable and any consequential adjustments to allowable revenue are calculated properly.

Following our assessment of the Draft Decision, we do not accept the proposed changes in the Draft Decision. As part of the UT3 DAU, the QCA removed an approval mechanism for EC from the undertaking. Instead, amendments to EC occurred under an endorsed variation event. In June of 2017, the QCA approved a DAAU to amend UT4 to update EC tariffs. In approving that DAAU the QCA applied the criteria under s.138(2) of the QCA Act. This legislation does not include a reasonableness test. We consider that s.138(2) provides the QCA with appropriate oversight of the EC component and Aurizon Network is willing to submit a DAAU to amend the EC tariff going forward. The criteria in the Draft Decision is unlikely to provide additional benefits to users or Aurizon Network particularly in circumstances where an effective regulatory process already exists and is utilised.

9.3.3 Adjustments to reflect differences in CPI to also include Wage Price Index

We note the Draft Decision is to not accept Aurizon Network's existing drafting for Schedule F in relation to the elements considered as part of the Revenue Cap adjustment, outlined in cl. 4.4. The QCA has outlined that the Annual Revenue Adjustment, for the Operational Cost building block, should also include a true of both the Consumer Price Index (CPI) and Wage Price Index (WPI).

Aurizon Network has no concerns in relation to the inclusion of the true-up to WPI. However, clarity in relation to which index is required to true-up is required. Aurizon Network proposes that the following indices are used with the following splits:

Table 122 WPI indices

Index		Weight
National Mining	A2705060V	80%
Queensland, all industries	A2704548F	20%

Aurizon Network considered having the same sub-indices as the Labour component of the MCI, however due to the the nature of the labour costs within the operational costs allowance being predominately office based and engineering staff, we considered that the exclusion of the national construction index was appropriate.

The weight applied to each of the National Mining and Queensland, all industry, indices is based upon current geographical location of Aurizon Network staff labour costs within the operational costs allowance, being 20% Brisbane (FTE of 235) and 80% other (FTE of 951).

9.3.4 Forward looking adjustments to include Wage Price Index

Aurizon Network has no concerns with including this in the forward looking adjustments.

9.4 Take-or-Pay arrangements

9.4.1 QCA Draft Decision

Summary of Draft Decision 9.3

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise clause 3.3(e) to:
  - (a) clarify that the calculation of nt and ntk in that clause is for the purpose of cl. 3.3(d)(iii)(B)(1) and (2)
  - (b) provide that the nt and ntk will be calculated using a 'train payload as reasonably determined by Aurizon Network'.

Aurizon Network supports the Draft Decision and proposes that the 2016 Access Undertaking methodology is retained. The reference tariffs (and also the MAR and SAR) are set by reference to Nominal Train Payloads, therefore take or pay should also be based on those same Nominal Train Payloads. This would also provide

certainty, transparency and simplicity and removes discretion on the part of the Aurizon Network in the calculation of take or pay.

9.5 Form of regulation and pricing of overhead power

9.5.1 QCA Draft Decision

Summary of Draft Decision 9.4

- The QCA's Draft Decision is to approve the form of regulation and pricing process of the AT5 component.

On 1 December 2017, Aurizon Network submitted the Electric Traction Draft Amending Access Undertaking to seek to address the AT5 issues currently within the CQCN.

Aurizon Network continues to support the QCA position to review these matters separately to allow 'all parties to concentrate on that issue properly'.[198]

9.6 Revised System Forecast

9.6.1 QCA Draft Decision

Summary of Draft Decision 9.5

- The QCA considers the appropriate way for Aurizon Network to amend its draft access undertaking is to revise Schedule F to include the QCA's system forecasts for gtks.

Aurizon Network's November 2016 submission proposed a volume forecast, with the premise that the QCA should engage an independent volume forecast for the purpose of setting Access Tariffs.

Aurizon Network's position on those volume forecasts are outlined within Chapter 6 of this Response.

As Aurizon Network has proposed an amended volume forecast, Schedule F, within the appendices (2017 DAAU) has been amended to reflect this updated forecast.

9.7 Minor Schedule F Amendments

Within Schedule F, Aurizon Network has proposed within the supplied amended 2017 Draft Access Undertaking, some minor administration amendments to reflect updated information. These amendments are as follows:

9.7.1 Blackwater system

- Adjustment to maximum comparative length to reflect recent track survey data. This reflects current approvals for rollingstock in operation.
- Update to nominated loading facilities to contain only load outs connecting to the Blackwater system

9.7.2 GAPE system

- Update to nominated loading facilities include additional contracted load out facilities

[198] QCA (2017) Draft Decision, p.317.

9.7.3 Moura system

> Adjustment to maximum comparative length to reflect recent track survey data, and also to correct for operating Blackwater length trains. This reflects current approvals for rollingstock in operation.

10

PART B: Draft access undertaking provisions — overview

10. Draft Access Undertaking Provisions – Overview

Aurizon Network recognises the importance of its Access Undertaking to all stakeholders in the CQCN. It is a critical document for Aurizon Network as it guides interactions with customers. It sets out how services are to be provided, and seeks to ensure Aurizon Network is appropriately incentivised to efficiently operate, maintain and invest in the infrastructure to enable the supply chain participants to remain globally competitive.

An overview of the main provisions of the DAU are set out below. All proposed amendments to the DAU, in line with Aurizon Network's responsive position on the Draft Decision, are contained in Appendix J to this submission.

Table 123 Aurizon Network 2017 DAU – main provisions

Part	Title	Description of Part
Part 1	Preamble	• identifies at a high level Aurizon Network's responsibilities for providing and managing access, the approval framework and access to information and process for negotiating access
Part 2	Intent and Scope	• covers duration, objectives and scope of the undertaking, behavioural obligations and obligations relating to electricity supply and sale
Part 3	Ringfencing	• sets out Aurizon Network's proposed ringfencing arrangements to ensure access is managed and supplied independently from other members of the Aurizon Group • covers Aurizon Network's functional responsibilities, obligations for supplying below rail services as well as management independence • outlines provisions for dealing with confidential information that Aurizon Network obtains through negotiations with access seekers as well as complaint handling processes
Part 4	Negotiation framework	• identifies the framework for negotiation of access rights to the CQCN, including procedural aspects of the negotiation process and information requirements of parties involved in the negotiations
Part 5	Access Arrangements	• sets out the provisions that underpin the development of access agreements, including the need for access holders to procure a train operations deed as part of the negotiation process
Part 6	Pricing principles	• identifies the pricing principles the Aurizon Network will apply in developing access charges and reference tariffs. These include limitations on price differentiation between users, pricing limits, rail infrastructure utilisation and revenue adequacy • also identifies the principles to apply in setting access charges that require an expansion of the network • specifies that Aurizon Network will maintain the RAB in accordance with Schedule E.
Part 7	Available Capacity allocation and management	• outlines the process for allocating and managing capacity, including in circumstances where there is insufficient available capacity on the network • also addresses capacity management matters relating to renewals and transfers of existing access rights as well as relinquishments • Part 7A – sets out higher level network management principles for dealing with broader supply chain coordination and capacity assessments
Part 8	Network development and Examples	• sets out provisions relating to the creation and funding of new rail infrastructure, including the process from concept studies to construction • also deals with user funded expansions and expansions by Aurizon Network
Part 9	Connecting Private Infrastructure	• outlines the process for connecting private infrastructure to the CQCN, including requirements for a standard rail access connection agreement (SRCA) to be established between the private infrastructure owner and Aurizon Network
Part 10	Reporting, compliance and audits	• sets out reporting requirements for Aurizon Network in relation to the information provision and compliance with the terms of the undertaking
Part 11	Dispute Resolution and Decision Making	• identifies the framework for resolving disputes that arise between Aurizon Network and access seekers and/or access holders • sets out the rules governing QCA decision making on matters that arise under the undertaking

11 Preamble and intent and scope

11. Preamble and Intent & Scope

This chapter presents Aurizon Network's response to the Draft Decisions on Part 1 (Preamble) and Part 2 (Intent and Scope) of the 2017 DAU. Part 1 outlines the basic premise of the Access Undertaking and Part 2 prescribes the duration, objective, Aurizon Network's behavioural obligations and scope of the Access Undertaking.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 124 QCA Draft Decision and Aurizon Network's Response – Ring-fencing – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to revise the Preamble to reflect the statutory circumstances in which the UT5 undertaking was submitted and approved.	11.1	Agree
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to: (a) revise the proposed definition of the 'Terminating Date' so that it is clear that the UT5 undertaking will continue to apply if the Minister makes a new declaration in relation to all, or part, of the relevant service. (b) Include a new cl. 12.5 to address the potential situation whereby references in Aurizon Network's 2017 DAU to the phrase 'service taken to be declared under s. 250(1)(a) of the Act' may not be accurate if a new declaration in respect of the service is made by the Minister under Part 5 of the QCA Act. (c) Revised the proposed definition of 'Adjustment Date' to reflect the commencement of the UT5 pricing term (that is, 1 July 2017). See Appendix H for the QCA's proposed amendments to Part 2 of Aurizon Network's 2017 DAU	11.2	Agree
The QCA's Draft Decision is to approve Aurizon Network's proposals in respect of the objective of the UT5 undertaking and Aurizon Network's behavioural obligation (cls. 2.2 and 2.3).	11.3	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of the scope of the 2017 DAU (cl. 2.4), subject to the QCA's Draft Decision with respect of the term of the undertaking.	11.4	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in relation to obtaining, maintaining and complying with the proposed the Ultimate Holding Company Support Deed (support deed) and the proposed terms of the support deed (cl. 2.5 and Schedule D).	11.5	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposed obligations regarding the sale and supply of electricity (cl. 2.6).	11.6	Agree

11.1 Overview - Aurizon Network's Position

We acknowledge and accept the QCA's drafting amendments to Part 1 and Part 2 of the 2017 DAU, which in our view, are technical, minor amendments designed to align the terminology of the Access Undertaking with the legal provisions of the QCA Act. In this respect:

- we note Draft Decision (11.1) is to amend clause 1.4 of the proposed Access Undertaking to reflect the statutory circumstances in which the 2017 DAU was submitted (i.e. as it was submitted in response to a compulsory notice issued by the QCA, it was submitted pursuant section 133 rather than section 136 of the QCA Act); and
- we further note Draft Decision (11.2) to amend the definitions for 'Terminating Date and 'Adjustment Date' and insert a new clause 12.5 to address the circumstances where a new declaration is made under a different part of the QCA Act.

Aurizon Network supports the remaining Draft Decisions (11.3, 11.4, 11.5 and 11.6) which collectively accept our drafting proposals in relation to:

- specifying the objective of the Access Undertaking as well as the inclusion of behavioural obligations to apply to Aurizon Network when negotiating and providing access;
- requiring Aurizon Holdings to provide support to execute the Ultimate Holding Company Support Deed; and
- specifying Aurizon Network's obligations regarding the sale and supply of electricity.

We therefore submit that the Final Decision should be to amend the 2017 DAU in accordance with the Draft Decisions. For convenience, that drafting is included in Appendix J to this response submission, which provides a complete version of UT5 compared against the form of UT5 that is consistent with the Draft Decision.

12

Ring-fencing

12. Ring-fencing

This chapter presents Aurizon Network's response to the Draft Decision on Part 3 of the 2017 DAU relating to ring-fencing arrangements. The purpose of the existing ring-fencing regime is to ensure that Aurizon Network, which is vertically integrated, does not use its position or confidential information to favour itself or a related business, to the detriment of competition in upstream or downstream markets.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 125 – QCA Draft Decision and Aurizon Network's Response – Ring-fencing – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Part 3 of Aurizon Network's 2017 DAU.	12.1	Agree

12.1 Overview - Aurizon Network's Position

Aurizon Network supports the Draft Decision which accepts our position in relation to ring-fencing arrangements that Aurizon Network, being a related access provider, proposed in its 2017 DAU (see section 12.6 Draft Decision).

We therefore submit that the Final Decision should be to accept the Access Undertaking drafting set out in Part 3 of the 2017 DAU.

For clarity, we note that the ringfencing provisions in the 2017 DAU are the same as those in our current Access Undertaking.

12.1.1 QCA Draft Decision

We note that the Draft Decision is to accept our ring-fencing proposal as set out in Part 3 of the 2017 DAU. In its assessment, the QCA noted that it will continue to monitor Aurizon Network's compliance with its obligations through annual compliance reporting, breach reporting and annual ring-fencing audits.[199]

[199] QCA (2017) Draft Decision, p.333.

13

Negotiation framework

13. Negotiation Framework

This chapter presents Aurizon Network's response to the Draft Decision on Part 4 of the 2017 DAU relating to the framework for the negotiation of access rights that Aurizon Network is proposing. The framework outlines the process for access seekers to gain access to the Aurizon Network rail infrastructure.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 126 QCA Draft Decision and Aurizon Network's Response – Negotiation Framework – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of the process and requirements for applying for access.	13.1	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of the arrangements for variations to access applications.	13.2	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of its treatment of access applications for access rights that require expansions.	13.3	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals for the negotiation process.	13.4	Agree

13.1 Overview - Aurizon Network's Position

Aurizon Network supports the Draft Decisions listed above which accept our position on the Negotiation framework as outlined in Part 4 of the 2017 DAU.

We therefore submit that the Final Decision should be to accept the Access Undertaking drafting set out in the 2017 DAU.

13.1.1 Aurizon Network's submission (2017 DAU)

Briefly, Aurizon Network's negotiation consists of the following principles and procedures:

- the making of an access application by an access seekers, and Aurizon Network's rights and obligations in respect of such applications, including the development of an Indicative Access Proposal (**IAP**) (clause 4.3-4.6);
- dealing with access applications that involve expansions (clause 4.8);
- dealing with multiple access applications for the same access rights (clause 4.9); and
- the negotiations process, including the time period for negotiations, matters that must be addressed during negotiations and the circumstances in which negotiations will cease (clause 4.10-4.13).

The negotiation framework proposed in the 2017 DAU is largely unchanged from Aurizon Network's existing arrangements. Changes from the 2016 Access Undertaking are intended to:

- provide clarity around the process for suspension of the negotiation process where an expansion is required;
- provide a customer access seeker the ability to nominate a railway operator to take over their access application and replace them as the access seeker; and
- to correct cross referencing.

13.1.2 QCA Draft Decisions

We note that the Draft Decisions are to accept our negotiation framework proposal as set out in Part 4 of the 2017 DAU.

In its assessment, and after taking into account stakeholder submissions, the QCA noted the following:

- Applying for access—the 2017 DAU provides an appropriate balance between the legitimate business interests of Aurizon Network and the interests of access seekers by:
  - setting out reasonably clear information requirements for access applications for IAPs;
  - providing reasonable flexibility for the provision of information by access seekers, including scope for access seekers to be excused from providing required information where information cannot reasonably be obtained; and
  - providing certainty about the timeframes in which Aurizon Network will assess an access application and prepare an IAP for an access seeker.[200]
- Access variations—it is appropriate for access seekers to have the ability to vary access applications and allows access seekers to respond to changed circumstances.[201]
- Access applications that require expansions—the 2017 DAU contains appropriate arrangements for how applications for access rights that require an expansion (either in whole or in part) will be progressed. In particular, the QCA was satisfied with our clarification that the process in clause 4.8(d) also applies to access applications in respect of access rights that can only be provided by an expansion, rather than only those access applications that are separated under clause 4.8.[202]
- Negotiation process—the 2017 DAU provides sufficient clarity for access seekers in relation to the issues that are to be negotiated and the actions Aurizon Network will perform during the negotiation period. The QCA also noted that it was satisfied by the circumstances in which access negotiations may end, thus providing access seekers with certainty over the circumstances in which Aurizon Network may end access negotiations.[203]

[200] QCA (2017) Draft Decision, p.337.
[201] QCA (2017) Draft Decision, p.338.
[202] QCA (2017) Draft Decision, p.340.
[203] QCA (2017) Draft Decision, p.344.

14

Access agreements

14. Access Agreements

This chapter discusses Aurizon Network's proposed arrangements for development of access agreements (Part 5 of 2017 DAU) and the template Standard Agreements which form the contractual basis for an access holder to gain access to Aurizon Network's infrastructure.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 127 QCA Draft Decision and Aurizon Network's Response – Access Agreements – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's proposed framework for the development and execution of an Access Agreement and Train Operations Deed.	14.1	Agree
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU (including the Standard Agreements) to reflect the drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions, so that: (a) The 'Access holder-initiated reduction' provisions and 'reduction due to exceeding maximum payload' provisions as submitted by Aurizon Network in its collaborative submission are included. Also, a clarifying note be included noting that train tests approved by Aurizon Network are exempt from the Reduction Notice trigger process (b) For any surplus access rights that are relinquished under the provisions referred to above, a 'SAR Relinquishment Fee' should be payable based on the difference between the AT2 charges that would have been paid but for the relinquishment on the terms as agreed by participating stakeholders and Aurizon Network (c) The mandatory 'Reduction to create additional capacity' provisions are deleted. See consensus drafting cl. 7.4.8 and related Standard Agreements (cls. 10, 11, 12 and 13 of the Standard Access Agreement and cls. 11 and 12 of the Standard Train Operations Deed).	14.2	Agree

14.1 Overview - Aurizon Network's Position

Aurizon Network supports the Draft Decision which accepts our provisions in Part 5 of the 2017 DAU for development of access agreements between Aurizon Network and access seekers (see section 14.2 of the Draft Decision). Aurizon Network also supports the Draft Decision which accepts the terms of the Standard Access Agreement and Standard Train Operations Deed as provided in Aurizon Network's and the QRC's respective collaborative submissions.

We therefore submit that the Final Decision accept the Access Undertaking (and Standard Agreements) drafting set out in our March 2017 submission following collaboration with stakeholders under the 2017 DAU, subject to some minor drafting changes. These are:

(a) to update references to rail safety legislation given that the Transport (Rail Safety) Act 2010 (Qld) has been repealed and replaced with the Rail Safety National Law (Queensland) Act 2017 (Qld); and

(b) to include, in the Standard Access Agreement and Standard Train Operations Deed, the drafting note requested by the QCA as set out in paragraph (a) above.

14.1.1 Aurizon Network's submission (2017 DAU)

Aurizon Network's 2017 DAU contains a framework for establishing an Access Agreement with an access seeker (Part 5) which is unchanged from the 2016 Access Undertaking. Aurizon Network contends that these provisions provide a clear process for both Aurizon Network and the access seeker in finalising and entering into an access agreement for the requested access rights.

Aurizon Network proposed changes to the Standard Access Agreement and Standard Train Operations Deed to include additional relinquishment provisions such that:

- Aurizon Network could trigger a reduction in contracted train service entitlements if the rail operator consistently operated a consist configuration with an average annual payload higher payload than the maximum payload nominated in the access agreement ('Reduction due to exceeding maximum payload');
- the access holder could request an increase in the maximum payload of a train consist, with a consequent reduction in the contracted train service entitlements ('Access holder-initiated reduction'); and
- Aurizon Network could trigger an increase in the payload and reduce contracted train service entitlements accordingly in order to create additional capacity in the relevant coal system to support new customers.

Aurizon Network considered the inclusion of these proposed relinquishment provisions provide for more effective management of capacity as it addresses matters that existing relinquishment and resumption provisions do not in that they allow for Aurizon Network and coal customers to create capacity in the most cost effective way possible and to promote competition by ensuring Access Holders are compensated for, and incentivised to participate in, the creation of capacity through productivity improvements.

Through the collaborative consultation period, Aurizon Network worked with customers to refine the provisions relating to additional relinquishment provisions. The outcome of the agreed provisions is to enable low cost access holder initiated relinquishment of paths, where excess paths result from access holder/operator initiatives to increase train payloads. Given industry and operator concerns in relation to Aurizon Network's proposal that Aurizon Network should be able, in appropriate circumstances, to initiate payload increases and associated relinquishments, Aurizon Network has agreed to drop this aspect of its proposal. In summary, the proposal resulting from the collaborative consultation period includes relinquishment provisions such that:

- the access holder could request an increase in maximum payload, with a consequent reduction in the contracted train service entitlements ('Access holder-initiated reduction'); and
- Aurizon Network notifies the access holder if the average annual payload is higher than the maximum payload, giving the access holder the option to either elect to comply with the maximum payload, or to request to increase the maximum payload through the access holder-initiated reduction process.

The collaborative submission also proposed that the relinquishment fee for an access holder-initiated reduction would be calculated as the present value of the AT2 component of TOP Charges (the train path charge) that for the relinquished access rights would have been payable for the reminder of the term of those access rights.

15

Pricing principles

15. Pricing Principles

This chapter presents Aurizon Network's response to the Draft Decision on Part 6 of the 2017 DAU which sets out the pricing principles that Aurizon Network proposes to apply to develop access charges and reference tariffs.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 128 QCA Draft Decision and Aurizon Network's Response – Pricing principles – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU in respect of the general pricing principles.	15.1	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in relation to expansion pricing framework.	15.2	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of the indexation of the RAB for roll-forward purposes. However, the QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to reflect the clarifying drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions.	15.3	Agree Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in regard to adjusting the value of the RAB.	15.4	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of reporting capital expenditure, RAB roll-forward processes and inclusion of equity raising costs.	15.5	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of capital expenditure.	15.6	Agree
The QCAs Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of the application of the customer voting process.	15.7	Agree
The QCA considers the appropriate way for Aurizon Network to amend its 2017 DAU is to reflect the consensus drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions. The amendments clarify that the following: (a) The access conditions clauses only applies to coal-carrying train service. (b) Access conditions may include other monetary considerations (not only access charges), whether levied under an access agreement or otherwise. (c) Aurizon Network will issue an access conditions report to access seekers, customers and the QCA detailing the access conditions, quantification of additional costs and risks, and reasons why Aurizon Network's risks are not otherwise mitigated. (d) Access conditions are defined in Part 12 being additional to those in the standard access agreement and which are not immaterial. Minor variations to payment terms or amendment to insurance requirements are considered inmaterial.	15.8	Agree

15.1 Overview - Aurizon Network's Position

Aurizon Network supports the Draft Decisions listed above which collectively accept our positions in relation to the pricing principles that we will apply when developing access charges and reference tariffs.

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU and drafting amendments in relation to the RAB roll forward process relating to asset disposals and access conditions as set out in our March 2017 collaborative submission following consultation with stakeholders under the 2017 DAU.

15.1.1 Aurizon Network's submission (2017 DAU)

The 2017 DAU sets out the pricing principles that Aurizon Network proposes to apply:

- price differentiation—defines principles to limit price differentiation between users (clauses 6.2-6.5);
- pricing limits—establishes upper and lower limits for access charges (clause 6.6);
- rail infrastructure utilisation—provides for Aurizon Network to vary access charges when available capacity I is limited. This principle applies only to non-coal services (clause 6.7);
- revenue adequacy—provides for Aurizon Network to earn sufficient revenue to at least recover the efficient costs of providing access and an appropriate return on its assets (clause 6.8).

Part 6 also sets out the processes to identify or develop access charges for coal train services (clause 6.3), including those that involve an expansion (clause 6.4) and/or new mine-specific spur lines (clause 6.4.10).

The pricing principles proposed in Aurizon Network's 2017 DAU are largely unchanged from Aurizon Network's existing arrangements. The key changes from the 2016 Access Undertaking include:

- modifying the scope of what is considered an access condition, and therefore requires the QCA's approval;
- removing the process for the negotiation of access conditions, including the requirement to prepare an access conditions report and changes to the QCA's approval process; and
- modifying prohibited access conditions.

Aurizon Network's collaborative submission

Aurizon Network's 2017 DAU position for asset disposal arrangements required clarification to make it clear that the RAB would need to be adjusted for the net sale proceeds from asset disposals resulting from an expansion or maintenance work. The QRC accepted Aurizon Network's proposed amendments but also provided further minor amendments to clarify that the disposal 'necessarily' results from an expansion or maintenance work, and that any sale would be on an arm's length basis.[204] In collaborative submissions, Aurizon Network and Pacific National accepted the QRC's clarifying amendments.

Following the March 2017 collaborative submission process, Aurizon Network and the QRC submitted that the 2017 DAU should also be amended with respect to access conditions.

- The first agreed minor amendment is that non-coal carrying train service access agreements be expressly excluded from the access conditions regime. The rationale for this exclusion is that the terms of the Standard Access Agreement relate specifically to coal-carrying services, such that access agreements for non-coal carrying train services will always vary from the Standard Access Agreement. This accords with our understanding of the original intent of the QCA's UT4 drafting and was supported by both non-coal carrying train service access holders (Aurizon Operations and Pacific National).
- The second agreed minor amendment relates to the definition of Access Charge, so that an Access Charge only relates to an Access Agreement and not any other agreement or arrangement. This represents a reversion to the UT4 definition of Access Charge and to Aurizon Network's original UT5 proposal.

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[204] QRC, submission, 20, Annexure 1: 26.

15.1.2 QCA Draft Decision

As part of this assessment, the QCA noted that Part 6 appropriately balances the section.168A principles, including providing price discrimination where it aids efficiency, but also prohibiting discrimination that favours the related party operations of Aurizon Network. Aurizon Network acknowledges and accepts this position.

16

Available capacity allocation and management

16. Available Capacity Allocation & Management

This chapter presents Aurizon Network's response to the Draft Decision on Part 7 of the 2017 DAU which outlines the general principles and procedures to access seekers and the management of capacity once it has been contracted.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

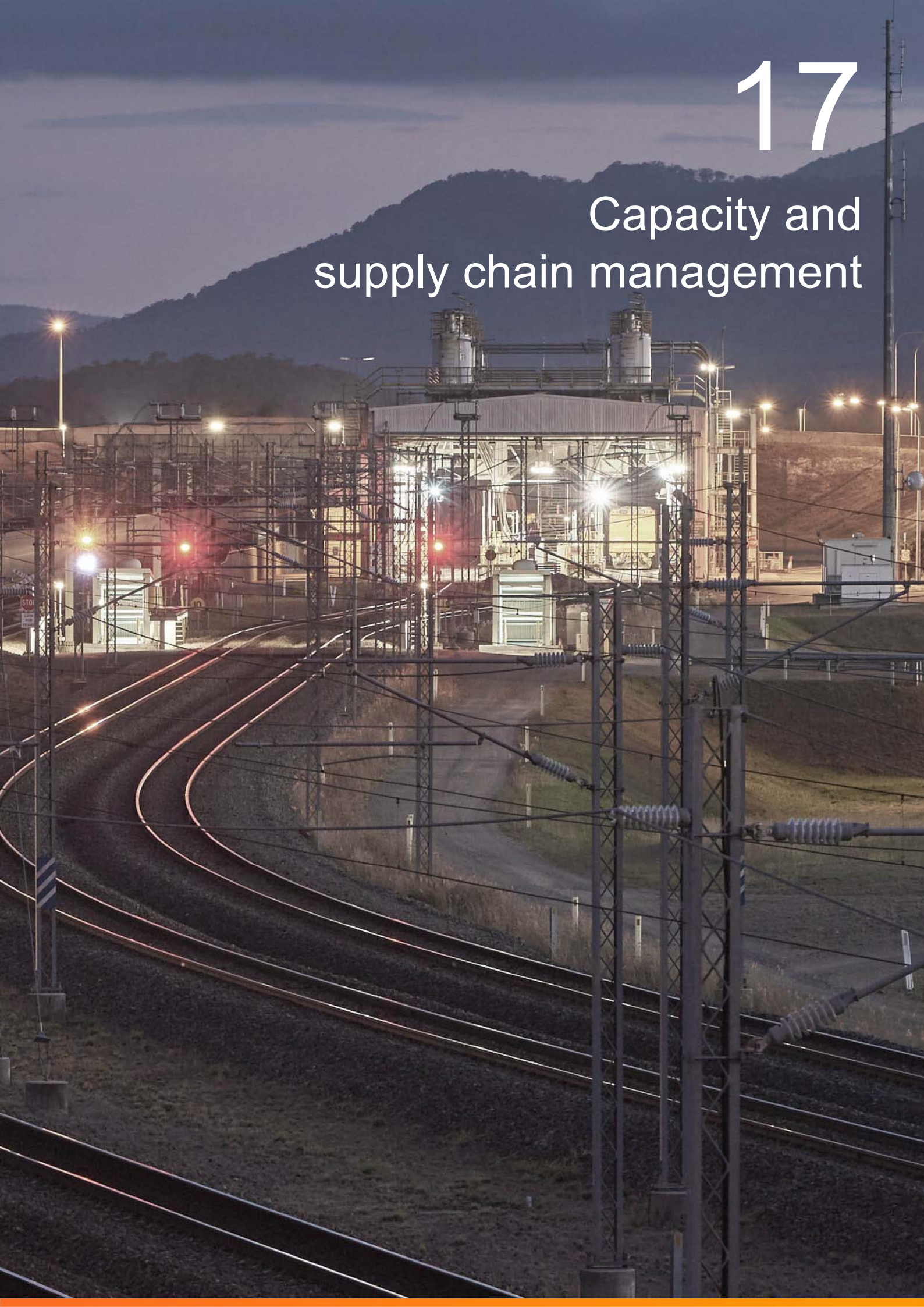
Table 129 QCA Draft Decision and Aurizon Network's Response – Available Capacity Allocation and Management – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU framework for allocating available capacity.	16.1	Agree
The QCA Draft Decision is to approve Aurizon Network's proposed 2017 DAU requirements for renewing access applications	16.2	Agree
The QCA's Draft Decision is to approve Aurizon Network's proposed 2017 DAU capacity resumption provisions	16.3	Agree
The QCA's Draft Decision is that the capacity relinquishment processes due to increased maximum payloads in Part 7 of Aurizon Network's DAU be amended to reflect the consensus drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions, so that: (a) The 'Access holder-initiated reduction' provision and reduction due to exceeding maximum payload' provisions as submitted by Aurizon Network in its collaborative submission are included. Also, a clarifying note be included noting that train tests approved by Aurizon Network are exempt from the Reduction Notice trigger process (b) For any surplus access rights that are relinquished under the provisions referred to above, a 'SAR relinquishment Fee' should be payable based on the difference between the AT2 charges that would have been paid but for the relinquishment on the terms as agreed by participating stakeholders and Aurizon Network (c) The mandatory 'Reduction to create additional capacity' provisions are deleted.	16.4	Agree
The QCA's Draft Decision is that the transfers of access rights provisions tin Aurizon Network's 2017 DAU be amended to reflect the consensus drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions.	16.5	Agree
The QCA's Draft Decision is that the short-term transfer provisions in Aurizon Network's 2017 DAU be amended to reflect the consensus drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submission.	16.6	Agree

16.1 Overview – Aurizon Network's Position

Aurizon Network supports the Draft Decisions listed above which collectively accept our position in relation to the general principles and procedures for the allocation of existing capacity.

We therefore submit that the Final Decision should be to accept the Access Undertaking drafting set out in the 2017 DAU and drafting amendments in relation to capacity relinquishment processes, transfer of access rights provisions and short-term transfer provisions as set out in our March 2017 collaborative submission following consultation with stakeholders under the 2017 DAU.



17

Capacity and supply chain management

17. Capacity and Supply Chain Management

This chapter presents Aurizon Network's response to the Draft Decision on Part 7A of the 2017 DAU which provides a framework for network management principles, supply chain coordination and capacity assessments.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 130 QCA Draft Decision and Aurizon Network's Response – Capacity and Supply Chain Management – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in relation to participation in supply chain groups.	17.1	Agree
The QCA accepts that Aurizon Network's 2017 DAU should not include provisions for a baseline capacity review on the basis that, this process will be completed under the 2016 Undertaking arrangements. The QCA's Draft Decision is that the 2017 DAU should be amended to include a new transitional provision, and consequential amendments, which account for the situation where the baseline capacity review has not been completed prior to the approval of the UT5 undertaking. See cl. 12.4(g) in Appendix K for the QCA's amendments to the 2017 DAU.	17.2	Agree
The QCA's Draft Decision is that the 2017 DAU be amended to reflect the drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions, so that the following apply: (a) Aurizon Network will undertake annual system capacity assessments for information purposes. (b) System capacity assessments must have regard to outcomes of consultation with access holders, access seekers, supply chain groups, and port operators. (c) System capacity assessments will take account of reasonable requirements in respect of maintenance and repair of each element of the supply chain (including loading facilities, load out facilities and coal export terminal facilities); reasonably foreseeable delays or failures occurring in the relevant supply chain (including mine, port and rollingstock-associated losses); and the supply chain operating mode, among other factors. See consensus drafting to cl. 7A.4.3 for the QCA's proposed amendments to the 2017 DAU.	17.3	Agree
The QCA's Draft Decision is that the 2017 DAU be amended so that: (a) access seekers are involved in decisions regarding capacity deficits where relevant (b) Aurizon Network must negotiate 'in good faith' with access holders and access seekers (c) any disputes are to be resolved in accordance with Part 11. See cl. 7A.4.3 in Appendix K for the QCA's amendments to the 2017 DAU.	17.4	(a) Agree (b) Agree (c) Disagree

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is that the 2017 DAU be amended so that: (a) subsequent capacity assessments are subject to 'review' rather than 'audit' (b) for annual capacity assessments, the review should identify changes since the previous capacity assessment, whether changes to assumptions are required, and the appropriate application of assumptions. (c) notice is provided to access holders if there is insufficient capacity to meet the requirements of a new access agreement. See cl. 7A.4.5 and cl. 7A.4.2(g) in Appendix K for the QCA's proposed amendments to the 2017 DAU.	17.5	(a) Agree (b) Disagree (c) Disagree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals relating to confidentiality provisions for capacity assessments.	17.6	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of system operating parameters (cl. 7A.5).	17.7	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of Network Development Plans.	17.8	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of provisions for train plans.	17.9	Agree
The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of train control principles and contested train paths provisions.	17.10	Agree

17.1 Overview – Aurizon Network's position

17.1.1 Aurizon Network's submission (2017 DAU)

In respect of the third party expert capacity verification process, Aurizon Network contends that the primary objective of this process in UT5 should be to achieve a high level of certainty as to the accuracy of the applicable Capacity Assessment.

Aurizon Network considers that UT5 should be very specific about what the capacity expert should do in respect of each year's Capacity Assessment. Clarity over the expert's scope of work should greatly reduce the likelihood of differences of views with stakeholders over the expert's role. Aurizon Network contends that it is good regulatory practice to establish clearly what is required to do under its Access Undertaking, rather than to assume an imprecise obligation that may mean very different things to different parties. In this light, Aurizon Network contends that in UT5 the third-party expert verification process should follow an expert audit model.

In the event of a capacity deficit, Aurizon Network contends that, should the affected parties consider that an expansion is the best option to address the deficit, Aurizon Network should act reasonably and negotiate with the affected access holders the terms of a funding arrangement for an expansion to address that capacity deficit.

17.1.2 QCA Draft Decision

In respect of the third party expert capacity verification process, the QCA considered that the process should be a review rather than an audit. Further the QCA has not accepted the proposed specification in the 2017 DAU of the expert's role.

In respect of the negotiations over a funding arrangement for an expansion to address a capacity deficit, the QCA considered that any dispute should be determined in accordance with Part 11 of UT5.

17.1.3 Summary of Aurizon Network's Response

In respect of the third party expert capacity verification process, Aurizon Network is not opposed to the change from "audit" to "review" regarding the role of the independent expert but it considers that the drafting proposed by the QCA about the expert's role is not sufficient. Aurizon Network submits alternative drafting on the expert's role.

In respect of the negotiations over a funding arrangement for an expansion to address a capacity deficit, Aurizon Network submits that any dispute may be determined in accordance with Part 11 of UT5, provided the dispute does not relate to whether Aurizon Network should be the funder of the applicable Expansion.

17.2 Coal supply chain coordination

17.2.1 QCA Draft Decision

Summary of Draft Decision 17.1

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in relation to participation in supply chain groups.

17.2.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position in relation to participation in supply chain groups.

17.2.3 Summary of Aurizon Network's Response

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

17.3 Capacity assessment

17.3.1 QCA Draft Decision

Summary of Draft Decision 17.2

- The QCA accepts that Aurizon Network's 2017 DAU should not include provisions for a baseline capacity review on the basis that, this process will be completed under the 2016 Undertaking arrangements.
- The QCA's Draft Decision is that the 2017 DAU should be amended to include a new transitional provision, and consequential amendments, which account for the situation where the baseline capacity review has not been completed prior to the approval of the UT5 undertaking. See cl. 12.4(g) in Appendix K for the QCA's amendments to the 2017 DAU.

17.3.2 Aurizon Network's assessment of QCA Draft Decision

To fully examine the Draft Decision, Aurizon Network submitted a written request to the QCA on 17 January 2018 seeking further information regarding the proposed drafting of the transitional provision to be included in clause 12.4(g) of UT5 as the form of that clause in Annexure K of the Draft Decision was incomplete. On 19 January 2018 the QCA provided Aurizon Network with a complete version of the QCA's proposed clause 12.4(g). We have considered this additional information as part of this Response and our views are presented below.

The QCA's complete recommended drafting for clause 12.4(g) is as follows:

(g) → Despite·any·other·provision·of·this·clause·12.4,·if·the·Baseline·Capacity·Assessment·process·under·clause·7A.4.1·of·the·2016·Undertaking·is··not·complete·as·at·the·Terminating·Date·of·the·2016·Undertaking,·such·that·there·is·no·Baseline·Capacity·Report·or·Alternative·Baseline·Capacity·Report·published·by·the·QCA·at·that·time,·then·Aurizon·Network·and·the·QCA·will·complete·the·2016·Undertaking·Baseline·Capacity·Assessment·process·in·accordance·with·clause·7A.4.1·of·the·2016·Undertaking·as·if·the·relevant·provisions·of·the·2016·Undertaking·were·incorporated·into·this·Undertaking.·¶

Aurizon Network has no concerns about the inclusion in UT5 of this transitional provision.

17.3.3 Aurizon Network Response to Draft Decision

We submit that the Final Decision should therefore be to accept the QCA's intended approach as outlined in the Draft Decision, with the complete drafting of clause 12.4 (g) of UT5 as provided by the QCA on 19 January 2018.

17.4 Annual capacity assessments

17.4.1 QCA Draft Decision

Summary of Draft Decision 17.3

- The QCA's Draft Decision is that the 2017 DAU be amended to reflect the drafting agreed between Aurizon Network and QRC, as submitted in their respective collaborative submissions, so that the following apply:
  - (a) Aurizon Network will undertake annual system capacity assessments for information purposes.
  - (b) System capacity assessments must have regard to outcomes of consultation with access holders, access seekers, supply chain groups, and port operators.
  - (c) System capacity assessments will take account of reasonable requirements in respect of maintenance and repair of each element of the supply chain (including loading facilities, load out facilities and coal export terminal facilities); reasonably foreseeable delays or failures occurring in the relevant supply chain (including mine, port and rollingstock-associated losses); and the supply chain operating mode, among other factors.

See consensus drafting to cl. 7A.4.3 for the QCA's proposed amendments to the 2017 DAU.

17.4.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position to carry out system capacity assessments for information purposes.

17.4.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in our March 2017 submission following collaboration with stakeholders under the 2017 DAU.

17.5 Capacity deficits

17.5.1 QCA Draft Decision

Summary of Draft Decision 17.4

- The QCA's Draft Decision is that the 2017 DAU be amended so that:
  (a) access seekers are involved in decisions regarding capacity deficits where relevant
  (b) Aurizon Network must negotiate 'in good faith' with access holders and access seekers
  (c) any disputes are to be resolved in accordance with Part 11.

  See cl. 7A.4.3 in Appendix K for the QCA's amendments to the 2017 DAU.

17.5.2 Aurizon Network's assessment of QCA Draft Decision

The Draft Decision is to amend Aurizon Network's proposal to include Access Seekers in the process of consultation regarding the analysis of solutions to address a Capacity Deficit (see section 7A.4.4(e) in Appendix K of the Draft Decision).

The QCA has further proposed to amend 7A.4.4(e)(ii) of UT5 so that Aurizon Network must "negotiate in good faith", rather than "act reasonably and negotiate", with access customers.

Following our assessment of the Draft Decision, we have no substantive issues in relation to the QCA's intended approach with respect to the above changes.

The Draft Decision is to amend Aurizon Network's proposal to include a requirement that any dispute in relation to the funding arrangements for an Expansion will be determined in accordance with Part 11 (Dispute Resolution and Decision Making). Aurizon Network has concerns about this proposal as discussed below.

17.5.3 Aurizon Network Response to Draft Decision

In respect of items (a) and (b) of Draft Decision 17.4, we submit that the Final Decision accept the Access Undertaking drafting set out in clause 7A.4.4(e) of Appendix K to the Draft Decision.

However, we are unable to agree to item (c) of Draft Decision 17.4. Aurizon Network takes this position because it does not volunteer to grant the QCA the power under UT5 to require Aurizon Network to fund an Expansion to which a dispute over funding arrangements relates. It is not within the powers of the QCA under the QCA Act to require Aurizon Network to fund an expansion unless Aurizon Network has volunteered a funding obligation in its access undertaking.

The QCA as part of its UT4 final decision stated "[…] *while we consider it appropriate for a DAU to require Aurizon Network to fund a capacity deficit it is responsible for*, ***we must also have regard to the QCA Act, which provides that access determinations cannot require Aurizon Network to fund an expansion at its own cost*** (s.119(2)(c)). ***This highlights the boundaries of our remit under the QCA Act.*** Our consolidated Draft Decision therefore focussed on promoting finding solutions to address a capacity deficit, rather than specifying the funding arrangements for doing so."[205] (emphasis added)

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[205] The QCA's UT4 Final Decision, Volume II, p. 57. A copy is available at http://www.qca.org.au/getattachment/99d2e081-74a8-4a97-a0c4-13dd1f1eeafb/QCA-UT4-Final-Decision-Volume-II-Capacity-an.aspx [accessed 20 February 2018]

In respect of item (c) of Draft Decision 17.4, we therefore submit that the Final Decision should adopt the Access Undertaking drafting set out in clause 7A.4.4(e)(ii) of Appendix K of the Draft Decision, as modified to prohibit any dispute as to whether Aurizon Network should be the funder of the applicable Expansion.

17.6 Expert review of capacity assessments

17.6.1 QCA Draft Decision

Summary of Draft Decision 17.5

- The QCA's Draft Decision is that the 2017 DAU be amended so that:
  - (a) subsequent capacity assessments are subject to 'review' rather than 'audit'
  - (b) for annual capacity assessments, the review should identify changes since the previous capacity assessment, whether changes to assumptions are required, and the appropriate application of assumptions.
  - (c) notice is provided to access holders if there is insufficient capacity to meet the requirements of a new access agreement.

  See cl. 7A.4.5 and cl. 7A.4.2(g) in Appendix K for the QCA's proposed amendments to the 2017 DAU.

17.6.2 Aurizon Network's assessment of QCA Draft Decision

In respect of item (a) of Draft Decision 17.5, the Draft Decision is to not accept Aurizon Network's proposal regarding the independent expert engagement for purposes of audit (see sections 7A.4.2 and 7A.4.5). The QCA has proposed, in response to the views of stakeholders, that the independent expert's task will be to review instead of audit and that the expert should provide confidence and certainty to access holders and access seekers that the capacity assessment is based on rigorous analysis.

In respect of item (b) of Draft Decision 17.5, the Draft Decision is to not accept Aurizon Network's proposed review scope because it is too constrained. The QCA has contemplated that the review process may include reviews of the validity of assumptions, the correct application of assumptions and the identification of significant changes since the previous capacity assessment.

Following our assessment of the Draft Decision, we are concerned that the proposed changes, which would replace the entire scope of work proposed in section 7A.4.5(b) of the 2017 DAU, would result in an expert review process that has no defined scope of work. The provisions proposed in section 7A.4.5(b) of Appendix K to the Draft Decision specify solely what the expert may request from Aurizon Network and is otherwise silent as to the expert's scope of work. For this reason, Aurizon Network retains its position that the scope of work proposed in section 7A.4.5(b) of the 2017 DAU should be adopted in UT5, but with that scope being characterised as a review rather than an audit.

Nonetheless Aurizon Network has no in-principle objection to assuming in UT5 an obligation to run scenarios and provide information in order to assist the expert, as is proposed in section 7A.4.5(b) of Appendix K to the Draft Decision. To that end Aurizon Network submits that UT5 should include a modified version of that proposed provision. The only substantive modification that Aurizon Network proposes is that the expert's review should not extend to making changes in assumptions, though it may extend to reviewing the validity of assumptions, used in capacity assessments. Aurizon Network notes that any change in assumptions by the expert may not be consistent with Aurizon Network's contractual obligations under its access agreements, which would result in the review being inaccurate and not reflecting the true position.

In respect of item (c) of Draft Decision 17.5, the QCA's proposal would require Aurizon Network to notify all Access Holders in a system of its intention to contract any capacity if the assessment of an independent expert indicates a capacity deficit. This obligation applies even if the "contracting of capacity" relates to a change to an existing access agreement that entails no addition in capacity utilisation.

17.6.3 Aurizon Network Response to Draft Decision

In respect of item (a) of Draft Decision 17.5, we submit that the Final Decision accept the Access Undertaking drafting set out in

- section 7A.4.2 (apart from the notification provision within clause 7A.4.2(g), which is discussed below), and
- 7A.4.5 of Appendix K of the Draft Decision.

In respect of item (b) of Draft Decision 17.5, we submit that the Final Decision should include both the requirements set out in section 7A.4.5(b) of the 2017 DAU and a modified version of the requirements set out in section 7A.4.5(b) of Appendix K to the Draft Decision.

In respect of item (c) of Draft Decision 17.5, we support in principle this notification requirement but consider that it should apply only when Aurizon Network intends to contract additional capacity, as is consistent with the QCA's policy intent in the Draft Decision.[206] We submit that the Final Decision should include a modified version of section 7A.4.2(g) of Appendix K to the Draft Decision.

17.7 Confidentiality

17.7.1 QCA Draft Decision

Summary of Draft Decision 17.6

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals relating to confidentiality provisions for capacity assessments.

17.7.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position to relating to confidentiality provisions for capacity assessments.

17.7.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

17.8 System operating parameters amendment processes

17.8.1 QCA Draft Decision

Summary of Draft Decision 17.7

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of system operating parameters (cl. 7A.5).

17.8.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position regarding the development, review, consultation and reporting of the system operating parameters.

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[206] QCA (2017) Draft Decision, p.401.

17.8.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

17.9 Network Development Plan

17.9.1 QCA Draft Decision

Summary of Draft Decision 17.8

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of Network Development Plans.

17.9.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position regarding Network Development Plans.

17.9.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

17.10 Network Management Principles

17.10.1 QCA Draft Decision

Summary of Draft Decision 17.9

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of provisions for train plans.

17.10.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position in respect of provisions for train plans.

17.10.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

17.11 Train control principles and contested train paths

17.11.1 QCA Draft Decision

Summary of Draft Decision 17.10

- The QCA's Draft Decision is to approve Aurizon Network's 2017 DAU proposals in respect of train control principles and contested train paths provisions.

17.11.2 Aurizon Network's assessment of QCA Draft Decision

Aurizon Network supports the Draft Decision which accepts our position in respect of train control principles and contested train paths provisions.

17.11.3 Aurizon Network Response to Draft Decision

We therefore submit that the Final Decision accept the Access Undertaking drafting set out in the 2017 DAU.

18

Network development and expansions

18. Network Development and Expansions

This chapter addresses various issues related to proposed and actual expansions of the CQCN.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 131 QCA Draft Decision and Aurizon Network's Response – Network Development & Expansions – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision seeks stakeholders' views as to whether the 2017 DAU adequately accounts for the extent to which non-price terms and conditions may be valued by access seekers. The QCA is currently minded to permit feasibility funders to adopt user funding for an expansion, even where Aurizon Network provides notice of its willingness to fund that expansion without access conditions. The QCA's suggested drafting amendments to cl. 8.7.1 is provided at Appendix L.	18.1	Noted Disagree
The QCA's Draft Decision is that the 2017 DAU be amended to incorporate a process to establish accountability for capacity shortfalls resulting from an Aurizon Network default or negligent act. The QCA's suggested drafting amendments to cl. 8.9.3 are provided in Appendix L.	18.2	Disagree
The QCA's Draft Decision is that the 2017 DAU be amended to: (a) include a clear process for the development of SUFA, including a means by which the QCA ensures that the process is ultimately implemented. (b) include a clear process for the QCA to request Aurizon Network to conduct a review of an approved SUFA. The QCA's suggested drafting amendments to cl. 8.8.3 is provided in Appendix L.	18.3	Disagree
The QCA's Draft Decision is to approve Aurizon Network's proposed 2017 DAU standard study funding agreement.	18.4	Agree

18.1 Overview - Aurizon Network's Position

Aurizon Network submitted the 2017 DAU in response to a compulsory notice issued by the QCA purportedly in accordance with the QCA Act. This is relevant to the consideration of the network development and expansion provisions that the QCA can impose on Aurizon Network in UT5.

There is a material difference between the network development and expansion provisions under a voluntary access undertaking, where the access provider volunteers to accept those provisions, and the network development and expansion provisions in an access undertaking that the QCA ultimately prepares and approves under a compulsory process.

Various aspects of the Draft Decisions relating to network development and expansion issues are beyond the power of the QCA to impose on Aurizon Network under the QCA Act.

The QCA has also incorrectly interpreted the QCA Act and not properly taken into account information provided by Aurizon Network as part of its previous submissions.

In the light of the SUFA development process set out in Draft Decision 18.3 and Aurizon Network's withdrawal of the UT4 SUFA DAAU[207], Aurizon Network has reassessed its position on SUFA. Aurizon Network has decided that it will no longer volunteer to assume any obligation to submit a SUFA DAAU and accordingly submits that UT5 cannot include a SUFA development process.

Aurizon Network is therefore unable to agree to most of the Draft Decisions that relate to network development and expansion issues. Our detailed submissions are set out below in respect of each Draft Decision and those submissions are in addition to Aurizon Network's previous submissions to the QCA relating to the 2017 DAU.

18.1.1 Aurizon's Network's submission (2017 DAU)

In its UT5 Submission for the 2017 DAU Aurizon Network proposed commercial, practical and balanced arrangements in respect of Aurizon Network's right to invest and a capacity shortfall arising from an expansion.

Aurizon Network proposed that it would have the right to fund an expansion on regulatory terms if it stated its willingness to do so on a timely basis. Aurizon Network considers that this is a commercially reasonable position that would permit access seekers to arrange user funding for an expansion should Aurizon Network not be willing to fund it on regulatory terms. Aurizon Network has no objections to access seekers pursuing user funding should it fail to state its willingness to fund an expansion on approved regulatory terms and on a timely basis.

Aurizon Network proposed that capacity shortfalls should be addressed in a manner that allows the access seeker the flexibility to exercise its business judgement in determining the optimal scope of an expansion without Aurizon Network having a commercial interest in advocating any particular scope. Aurizon Network considers that the access seeker should be the party that chooses the scope option that offers the 'best for access seeker's business' outcomes. Aurizon Network expects that, when choosing its preferred scope option, the access seeker would consider, among other things, Aurizon Network's advice about expansion scope options and their expected consequences in respect of scope certainty and capital cost.

In its UT5 Submission for the 2017 DAU Aurizon Network also proposed a SUFA development process based on Aurizon Network's submission of a voluntary DAAU and its subsequent consideration by the QCA in accordance with the QCA Act.

18.1.2 QCA Draft Decision

In the Draft Decision the QCA has:

> rejected Aurizon Network's proposal that it would have the right to fund an expansion on regulatory terms if it stated its willingness to do so on a timely basis;
> rejected Aurizon Network's proposed capacity shortfall treatment, though it has accepted that treatment in respect of an expansion that is funded by Aurizon Network; and
> rejected Aurizon Network's proposed SUFA development process.

18.1.3 Aurizon Network's assessment of QCA Draft Decision

Each of the QCA's rejections of Aurizon Network's proposals set out in section 18.1.2 is beyond the power vested in the QCA under the QCA Act and inappropriate.

18.1.4 Summary of Aurizon's Network's response

In summary, following an assessment of the Draft Decision and a reassessment of SUFA, Aurizon Network submits that UT5:

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[207] Aurizon Network, letter to the QCA chairman about the UT4 SUFA DAAU, 13 February 2018.

- must reflect Aurizon Network's right to fund an expansion on regulatory terms if it states its willingness to do so on a timely basis;
- must not create a liability for Aurizon Network in respect of any capacity shortfall arising from an expansion regardless of the identity of the funder; and
- cannot include a requirement for a SUFA or a process that requires amendments to UT5 following its approval.

Aurizon Network does not volunteer to accept the QCA's proposals in respect of such matters and the imposition of those proposals would be beyond the QCA's statutory power in respect of the 2017 DAU.

Aurizon Network's detailed responses to the Draft Decisions that relate to network development and expansion issues are provided in more detail below.

18.2 Investing in network expansions

Summary of Draft Decision 18.1

- The QCA's Draft Decision seeks stakeholders' views as to whether the 2017 DAU adequately accounts for the extent to which non-price terms and conditions may be valued by access seekers.
- The QCA is currently minded to permit feasibility funders to adopt user funding for an expansion, even where Aurizon Network provides notice of its willingness to fund that expansion without access conditions.
- The QCA's suggested drafting amendments to cl. 8.7.1 is provided at Appendix L.

Draft Decision 18.1 seeks stakeholders' views as to whether the 2017 DAU adequately accounts for the extent to which non-price terms and conditions may be valued by access seekers. It appears that the QCA's intent to permit feasibility funders to adopt user funding for an expansion even where Aurizon Network is willing to fund it is based on a view that:

- non-price terms and conditions are of value to access seekers; and
- those non-price terms and conditions would not be available to access seekers if Aurizon Network could insist on funding expansions on approved regulatory terms.

The QCA states that "*Aurizon Network's proposal does not necessarily account for those circumstances in which an access seeker prefers an alternative expansion funding option (i.e. with access conditions or user funding) that provides superior non-pricing terms and conditions in comparison to that offered by Aurizon Network on standard regulatory terms.*"[208]

Aurizon Network submits that the 2017 DAU does adequately provide for access seekers to negotiate non-price terms and conditions, for example under an access conditions funding option, and that in any case, a user funding option should not be available if Aurizon Network:

- is willing to fund an expansion on approved regulatory terms, and
- states its willingness to do so on a timely basis.

Whether there is greater value for access seekers in user funding for an expansion rather than Aurizon Network funding it without access conditions is not a relevant consideration for the QCA in respect of this decision. If Aurizon Network is willing to fund an expansion on approved regulatory terms there is no basis for the QCA to intervene.

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[208] QCA (2017) Draft Decision, p.413.

Access seekers are free to request Aurizon Network at any time (even if Aurizon Network is willing to fund an expansion on approved regulatory terms) to consider non-price terms and conditions that are of value to them, and seek to negotiate a suitable commercial arrangement in respect of those non-price terms and conditions.

If the QCA is concerned to ensure that access seekers are able to negotiate non-price terms and conditions that they perceive to have value where Aurizon Network is already willing to fund an expansion on approved regulatory terms, Aurizon Network would be prepared to include in UT5 an obligation to consider and negotiate in good faith any such proposals from the relevant access seekers.

We therefore propose that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

18.2.1 Contrary to the fundamental purpose of the regulatory regime

The regulatory access regime under the QCA Act operates to prevent any potential abuse of monopoly power on the part of the access provider in providing access to a declared service. Ultimately this encourages certainty for third party access seekers, competition in upstream and downstream markets and efficient investment in the declared service.

It is not the purpose of the regulatory access regime under the QCA Act to divest or remove control over Aurizon Network's business or assets (including future potential business or assets). Where Aurizon Network is willing to fund an expansion on approved regulatory terms, it cannot be said that Aurizon Network is abusing its monopoly power – it is acting in accordance with the terms and conditions approved by the QCA as being appropriate and efficient.

The QCA's proposal has the effect of removing Aurizon Network's rights as the owner of the CQCN infrastructure to fund and control expansions of its rail network. The QCA's proposal would remove Aurizon Network's right to invest in its business by granting access seekers a priority right to fund any expansion and receive the business benefit from it.

There is nothing in the QCA Act that contemplates such a fundamental interference with an access provider's business. The QCA's proposal has material and far-reaching implications for any service that the QCA regulates.

For the avoidance of doubt, Aurizon Network

- does not volunteer to allow user funding to be adopted when Aurizon Network is prepared to invest on approved regulatory terms; and
- has no objections to user funding being adopted when Aurizon Network is not prepared to invest on that basis.

18.2.2 Inconsistency with relevant regulatory precedent(s)

There is no regulatory precedent in Australia to support the QCA's proposed approach that would give priority rights to users wishing to fund an expansion.

In the Hunter Valley Coal Network Access Undertaking[209] the user funding option is available to an access seeker for a capacity addition project if and only if ARTC advises at any project development stage that it will not, or will no longer, fund that project or will only fund it to a certain level which is less than that expected to complete the

[209] Australian Rail Track Corporation, Hunter Valley Coal Network Access Undertaking, June 2017, clause 10.1(a), p.85. A copy is available at https://www.accc.gov.au/system/files/Revised%20Variation%20application%20-%2032935635%281%29_ARTC%20-%20Extension%20application%203%20-%20Annex%202%20-%20HVAU%20clean%20-%204%205.pdf

project.[210] In other words, should ARTC be willing to invest in a capacity addition project, ARTC always has a paramount right to invest in it.

18.2.3 Promotion of efficient investment

The QCA asserts in its Draft Decision that the availability of user funding, even when Aurizon Network is willing to fund, "*promotes the efficient investment in the CQCN including by increasing competition in relation to funding of expansions*".[211]

Aurizon Network notes that the QCA has not identified how its proposal would lead to more efficient investment or increase competition in relation to the funding of expansions given that Aurizon Network and user funders would both be funding expansions at regulated rates of return and otherwise subject to the same regulatory access regime.

Whether an external funder or Aurizon Network is the funder of an expansion, the prudent cost of that expansion will be included in Aurizon Network's RAB and the customers for the access capacity created by that expansion will pay access charges that are developed in accordance with Part 6 of UT5. The identity of the funder of an expansion is irrelevant for the purpose of determining the access charges.

The QCA's proposal merely determines the identity of the party that receives the regulated returns. Where there is demand for an expansion and Aurizon Network is willing to make that investment on approved regulatory terms, it is unclear how divesting Aurizon Network of its ability to make that investment in its business promotes efficient investment as required by the object of Part 5 of the QCA Act.

18.2.4 Flawed argument about Aurizon Network's use of monopoly power arising from its control of construction

The QCA has argued that the availability of user funding when Aurizon Network is prepared to fund on regulatory terms "*assists to provide a possible constraint on Aurizon Network given concerns as to the potential for it to exert monopoly power, flowing from its control over the construction process under standard regulatory arrangements*."[212]

The QCA's position is unsound because it fails to recognise that control over the construction process does not arise from control over the funding of the expansion. Even under the QCA's proposed SUFA model, funding and construction roles are separate. There is therefore no basis to the claim that Aurizon Network has the potential to exert monopoly power simply because it might be both the entity providing funding for and constructing the expansion. In any event, the QCA has not identified any example of how Aurizon Network might exercise monopoly power if it is both the funder and the constructor.

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[210] Under the Hunter Valley Coal Network Access Undertaking the user funding option is also available if ARTC ceases a project during its project delivery phase because ARTC lacks support from either customers or an independent expert for ARTC-proposed variations to the project's budget or schedule. This option is not relevant to the question of the availability of user funding for its project prior to its commitment.

[211] QCA (2017) Draft Decision, p.413.

[212] QCA (2017) Draft Decision, p.413.

18.3 Capacity shortfall regime

Summary of Draft Decision 18.2

- The QCA's Draft Decision is that the 2017 DAU be amended to incorporate a process to establish accountability for capacity shortfalls resulting from an Aurizon Network default or negligent act.
- The QCA's suggested drafting amendments to cl. 8.9.3 are provided in Appendix L.

The Draft Decision proposes that under UT5 Aurizon Network would be subject to a capacity shortfall liability regime in respect of a capacity shortfall for a user funded expansion (that proposed regime being the 'CSLR'). The CSLR would be documented as part of UT5, rather than under the user funding agreement between Aurizon Network and the other parties to that expansion. Under the CSLR, Aurizon Network's liability to the applicable access customers would be triggered if and to the extent that the capacity shortfall is attributable to either:

> Aurizon Network's default under the relevant user funding agreement or the relevant access agreement(s), or
> any negligence by Aurizon Network.

Where the expansion is funded by Aurizon Network, there is no CSLR.

Should the liability be triggered, Aurizon Network is liable to each affected access customer for any loss or damage (including consequential loss) that it has incurred as a result of the capacity shortfall. There is effectively no limit on the magnitude, and there is no limit on the duration, of this liability. The QCA's proposed drafting that the quantum of the loss or damage cannot exceed what was within the reasonable contemplation of the parties at the time of entry into the user funding agreement[213] is of little practical effect because it does not incorporate the exclusions and limitations on liability that commercial parties customarily include in a contract governing a major construction project.

Indeed, the QCA's proposal to include the compensation regime in the undertaking exposes Aurizon Network to effectively unlimited liability, including liability for lost profits and revenues, suffered by any access customer that might be adversely affected by the Capacity Shortfall. The proposal is extreme and unreasonable.

The QCA's approach is also flawed and beyond powers.

Aurizon Network does not volunteer to adopt in UT5 the CSLR. We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

18.3.1 An obligation under UT5

The QCA's proposal establishes an obligation on Aurizon Network to pay compensation to Conditional Access Holders for loss or damage suffered or incurred from a "Capacity Shortfall" following a default by Aurizon Network under a relevant user funding agreement or access agreement or negligence by Aurizon Network. This proposed obligation is beyond the power vested in the QCA under the QCA Act for several reasons.

The QCA is:

> creating a statutory remedy for breach of contract or negligence – the QCA is acting beyond its powers in doing so;
> addressing a matter that should be addressed in an agreement negotiated between the relevant parties as contemplated by the regulatory access regime - the QCA has no role to play in the performance of access agreements or other agreements unless the parties to those agreements agree to invest the QCA with that power (and Aurizon Network does not agree to do so);

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[213] This description of the CSLR is derived from the proposed UT5 drafting set out in the QCA (2017) Draft Decision, p. 524.

- acting contrary to its stated position on this issue. The QCA itself has, in a separate decision (the UT4 SUFA Final Decision) issued in the same month as the Draft Decision, stated that it: *"… does not believe, however, that the access undertaking is the appropriate mechanism to enforce this liability regime* [i.e. the capacity shortfall regime – Aurizon Network insertion] *for a SUFA project…."*;[214] *and*
- seeking, by including the CSLR in combination with its dispute resolution Draft Decisions, to give itself:
  - jurisdiction to determine compensation for breach of contract and negligence; or
  - jurisdiction to hear disputes under access agreements or other agreements where the parties have not agreed to allow the QCA to perform that role.

In addition to the above matters, the QCA has indicated that UT5 "*should include a provision addressing damages recoverable where a capacity shortfall following an expansion arises due to default or negligence of Aurizon Network,* ***as this provides a reasonable starting point for negotiations***."[215] (emphasis added)

Despite this statement, it is clear that the CSLR is intended to take effect as an obligation under UT5. As such, that obligation cannot be overridden or supplanted by Aurizon Network and another party under an agreement. Aurizon Network will be obliged to comply with UT5 despite anything that might be included in that agreement. The proposal is not merely a starting point for negotiations – it seeks to codify the final position.

Even if the QCA's proposal was a "starting point for negotiations", Aurizon Network considers that it is anything but "reasonable" as claimed by the QCA. An access seeker would be very unlikely to negotiate away from the position enshrined by the QCA's proposal in UT5, without further substantial (and likely uncommercial) concessions by Aurizon Network. The purported "starting point" would constitute a radical tilting of the negotiation table in favour of the access seekers.

18.3.2 The QCA cannot require Aurizon Network to bear any cost of an expansion

The QCA has publicly accepted on several occasions that it does not have the power to require an access provider to pay some or all of the costs of "extending" a facility. That stated position is consistent with the express limits on the QCA's powers under Part 5 of the QCA Act.

However, the QCA's current proposal for UT5 contemplates compensation being payable by Aurizon Network in the event of a capacity shortfall. That right to compensation in respect of an expansion in accordance with the QCA's proposal would be treated, in economic and financial accounting terms, by Aurizon Network as a cost of the expansion. The result is that if the QCA's proposal were implemented, the QCA would be imposing an obligation on Aurizon Network to bear part of the cost of an expansion in contradiction of the express limits of the QCA's powers under the QCA Act.

While parties might agree an appropriate commercial risk balance between them, the QCA does not have the power to impose a requirement on Aurizon Network that would result in it bearing all or any part of the cost of an expansion. The QCA has not explained how it has apparently concluded that it now does have the power to require an access provider to pay some or all of the costs of an expansion.

18.3.3 Uncommercial and unreasonable

Even if the QCA had the power to impose a compensation obligation on Aurizon Network as it proposes, the QCA's proposal is uncommercial, unreasonable and inconsistent with industry norms. This is because the CSLR would:

- expose Aurizon Network to unlimited and ongoing liability for direct and consequential losses (including lost profits and lost revenue) to any party adversely affected by the Capacity Shortfall. This is so because the QCA proposal

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[214] QCA (2017) Final Decision on the UT4 SUFA DAAU, p.31.

[215] QCA (2017) Draft Decision, p.419.

places the CSLR in the access undertaking. A breach of the undertaking, for example, based on a claim that the CSLR has not been fully complied with, enables any adversely affected party to commence court proceedings for compensation and other orders:[216]
  - Such claims are not limited in the way that contractual claims can be. Aurizon Network would, for example, have effectively unlimited liability for coal sale losses and any financial obligations owed by affected access customers to third parties.
  - This position is extreme and unreasonable and fails to reflect the usual limitations and exclusions of liability that would exist under an agreement for a significant construction project – for example, it is usual for such contracts to include one or more of (i) limitations on liability, (ii) caps on liability, (iii) exclusions of consequential loss, (iv) requirements for mitigation of loss or damage and (v) restrictions on claims for compensation where remediation has not been sought first;
- arise independently of any agreements – for example, Aurizon Network would be liable under the QCA's proposal even if it would not be liable contractually or would have a different liability contractually;
- require Aurizon Network to pay effectively unlimited compensation, for an indefinite period, but at the same time the undertaking provisions constrain, and potentially prevent, Aurizon Network from taking unilateral steps to generate more capacity to remove the Capacity Shortfall thereby reducing its compensation exposure; and
- create a material risk exposure for Aurizon Network without any compensation for bearing that exposure.

18.3.4 The QCA's proposal is inefficient and counter-productive

The QCA's proposal is also likely to result in one or more of the following circumstances:

- in order to manage its substantial financial exposure to uncapped liability, Aurizon Network would be incentivised to propose an ample scope, or even a more than ample scope, for an expansion in order to minimise the risk of Aurizon Network being exposed to the proposed compensation obligation. In making the claim that it *"…does not consider that holding Aurizon Network accountable for capacity shortfalls resulting from an Aurizon Network default or negligent act will have implications for overscoping of an expansion"*[217], the QCA fails to recognise the materiality of the financial risk that the QCA's proposal carries for Aurizon Network; and
- access seekers may be incentivised to be less concerned, when entering into a user funding agreement, about that agreement's inadequate scope of an expansion (i.e. they opt for a lean scope that may or may not deliver the required capacity), knowing that Aurizon Network will carry the risk of any capacity shortfall. Aurizon Network would be incentivised not to offer a lean scope or to provide advice which is black-or-white as to whether the expansion scope contracted in the user funding agreement will or will not achieve the required capacity.

18.4 Process for development and review of SUFA

Summary of Draft Decision 18.3

- The QCA's Draft Decision is that the 2017 DAU be amended to:
- include a clear process for the development of SUFA, including a means by which the QCA ensures that the process is ultimately implemented
- include a clear process for the QCA to request Aurizon Network to conduct a review of an approved SUFA.
- The QCA's suggested drafting amendments to cl. 8.8.3 is provided in Appendix L.

Aurizon Network does not accept this Draft Decision because:

- the QCA does not have the power to impose either its proposed SUFA development process or the contemplated form of SUFA on Aurizon Network; and

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[216] QCA Act, section 158A.

[217] QCA (2017) Draft Decision, p.418.

> it is inconsistent with relevant regulatory precedent(s).

In the light of the SUFA development process set out in Draft Decision 18.3 and Aurizon Network's withdrawal of the UT4 SUFA DAAU, Aurizon Network has reassessed its position on SUFA. Aurizon Network has decided that it will no longer volunteer to assume any obligation to submit a SUFA DAAU and accordingly submits that UT5 cannot include a SUFA development process.

Aurizon Network submits for UT5 that:

> there is no "Standard Agreement" in respect of a user funding transaction;
> there is no development process to create such a "Standard Agreement";
> Aurizon Network will negotiate in good faith a "User Funding Agreement" for an expansion if access seekers intend to fund it; and
> should any dispute arise in respect of the terms of that "User Funding Agreement", the QCA's power to determine that dispute will only be to the extent provided under Division 5 of Part 5 of the QCA Act.

We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in Appendix J to this response submission, which provides a complete version of UT5 compared against the form of UT5 that is consistent with the Draft Decision.

18.4.1 Beyond power

Power to amend UT5

The SUFA development process proposed in the Draft Decision purports to establish that the QCA has the right to

> require an amendment of, and
> ultimately, to amend

UT5 after it has been approved by the QCA.

The QCA cannot invest itself with the power to amend UT5 (or indeed any other access undertaking).

The QCA Act definitively and exclusively prescribes when the QCA may compel an amendment to an access undertaking. To be more specific, Aurizon Network may be compelled to amend an access undertaking if and only if both of the following conditions apply:

(i) the QCA "*considers it is necessary to amend the approved access undertaking to make the access undertaking consistent with a provision of this Act or an access code for the service to which the access undertaking relates*"[218], and

(ii) the QCA has served a notice on Aurizon Network that states that condition (i) applies and requires Aurizon Network to submit a "*draft access undertaking amending the approved access undertakin*g".[219]

The SUFA development process set out in the Draft Decision is therefore outside of power as it seeks to establish a power for the QCA to require amendments of, and ultimately to amend, UT5, which is not permitted by the QCA Act.

Additionally, the limited circumstances in which the QCA Act permits the QCA to require an amendment of an access undertaking are not relevant here. There is nothing that would require UT5 to be amended to make it consistent with:

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[218] QCA Act, section 139(2).

[219] QCA Act, section 139(1).

(a) a provision of the QCA Act; or

(b) an access code for the service to which the access undertaking relates.

In respect of item (a), there is no provision in the QCA Act that requires any treatment of user funding, let alone a fully developed form of SUFA that comprises 12 legal documents that run to collectively more than 600 pages, to be included. Indeed, the QCA has approved all of Aurizon Network's access undertakings up to and including UT4 without the inclusion of a SUFA.

In respect of item (b), there is no applicable access code.

Power to impose the proposed form of SUFA

The first step in the SUFA development process set out in the Draft Decision would be, given Aurizon Network's withdrawal of the UT4 SUFA DAAU[220], Aurizon Network's submission of a proposed SUFA based on *"the most recent standard user funding agreement developed and submitted to the QCA for approval under the 2016 Undertaking, taking into account any decision made by the QCA in respect of that document".*[221]

The QCA does not have the power under the QCA Act to impose the SUFA. This is because several elements of that form of SUFA may only be included in an access undertaking if they are provided on a voluntary basis by Aurizon Network, as they are outside of the QCA's power to require. Examples are obligations relating to Aurizon Network's payment of construction costs and the post-deregulation revenue regime. There is no basis on which the QCA could conceivably have a right to regulate Aurizon Network's revenue in respect of the period that follows the termination of regulation.

18.4.2 Inconsistency with relevant regulatory precedent(s)

In the Draft Decision the QCA has not cited any regulatory precedent in any industry in any jurisdiction at any point of time for the inclusion of a fully-developed externally financed transaction template in the regulatory instrument, such as an access undertaking, of a regulated entity. Furthermore, Aurizon Network is not aware of any regulatory precedent for such an inclusion.

The absence of a SUFA in UT5 does not mean that Aurizon Network is entitled to refuse to negotiate user funding arrangements. On the contrary, Aurizon Network would be required to comply with its existing negotiation and other regulatory obligations in a situation where a user funding agreement was required in order to obtain access to the declared service. All of the usual regulatory processes and protections would apply to those negotiations.

18.4.3 Future effort and expenditure would be imprudent

Upon UT3's approval on 1 October 2010, Aurizon Network was first subject to a regulatory obligation to submit a DAAU that provided a fully-developed form of an externally financed transaction template for a CQCN expansion. Aurizon Network complied with this obligation under UT3 and a similar obligation under UT4. No approved form of SUFA that is acceptable to industry, the QCA and Aurizon Network has resulted from either of these processes.

Aurizon Network has worked on the SUFA initiative for more than seven and a half years, and has incurred external outgoings of more than $5m. Aurizon Network is not aware of the external outgoings of the QCA, the QRC and other stakeholders on the SUFA initiative; however, it estimates their collective external outgoings would be higher than Aurizon Network's own outgoings. On a conservative basis, it is easy to contemplate the total 'all parties' expenditure being in excess, and potentially substantially in excess, of $10m. This level of expenditure to develop an externally financed transaction template for a brownfield railway development was a very significant commitment of financial resources, particularly as it has not even resulted in the objective of an approved form of SUFA.

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[220] Aurizon Network, letter to the QCA chairman about the UT4 SUFA DAAU, 13 February 2018.

[221] QCA (2017) Draft Decision, p.520.

Like any other business activity, the benefits of conducting a third round of a SUFA development process need to outweigh the costs, after taking account of the risks.

Following its reassessment of SUFA, Aurizon Network submits that the position under UT5 should be that:

- Aurizon Network is obliged to negotiate in good faith a user funding agreement for any expansion with access seekers that give a valid notice of their intention to negotiate;
- UT5 does not include an externally financed transaction template, such as SUFA.

This approach would result in user funding documentation being developed on a commercial basis to fit the specific features of each user funding transaction (if any) during the regulatory period. Doing so would be consistent with the standard practice for large, complex and structured finance transactions of significant business enterprises active in the Australian marketplace, including some of Aurizon Network's major access customers.

Aurizon Network takes this opportunity to restate its long-standing commercial position on user funding:

"Aurizon Network stands by its obligation… to negotiate in good faith a user funding agreement in respect of an expansion should the expansion funders for that expansion elect to enter into such negotiations."[222]

18.5 Standard study funding agreement

Summary of Draft Decision 18.4

- The QCA's Draft Decision is to approve Aurizon Network's proposed 2017 DAU standard study funding agreement.

Aurizon Network supports Draft Decision 18.4, which accepts our position on the standard study funding agreement.

[222] Aurizon Network, letter to the QCA chairman about the UT4 SUFA DAAU, 13 February 2018.

19

Connecting private infrastructure

19. Connecting Private Infrastructure

This chapter presents Aurizon Network's response to the Draft Decision on Part 9 of the 2017 DAU which provides a process for the connection of private infrastructure to the CQCN.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 132 QCA Draft Decision and Aurizon Network's Response – Connecting Private Infrastructure – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network – Response
The QCA's Draft Decision is that the 2017 DAU be amended to: (a) Provide for a Rail Connection Agreement to be entered into in the form of the Standard Rail Connection Agreement or, once approved by the QCA, this Revised Standard Rail Connection Agreement (which arises under the QCA's proposed cl. 9.2); and, (b) Clarify that any proposed variation to these agreement that cannot be agreed is resolved by the parties entered into the Standard Connection Agreement or the Revised Standard Connection Agreement (as the case may be).	19.1	Agree
The QCA's Draft Decision that the 2017 DAU be amended to require Aurizon Network to include the development of a new standard rail connection agreement.	19.2	Agree
The QCA's Draft Decision is that the propose SRCA in Aurizon Network's 2017 DAU should be amended to include a correct reference to the 'Site Senior Executive', consistent with the Coal Mining Safety and Health Act 1999.	19.3	Agree
The QCA's Draft Decision is to approve Aurizon Network's proposed 2017 DAU coal loss mitigation principles in Schedule J of the 2017 DAU.	19.4	Agree

19.1 Overview – Aurizon Network's Position

Aurizon Network supports Draft Decisions 19.2, 19.3 and 19.4 listed above which collectively accepts our positions in relation to the development of a standard rail connection agreement, correct referencing and coal loss mitigation principles.

We note that the Draft Decision 19.1 is to not accept Aurizon Network's proposal relating to the assessment and development of connecting infrastructure (see section 19.1 of the Draft Decision). Following our assessment, while we are concerned that the proposed intent of the Draft Decision will be inconsistent with the principles of Part 11, the QCA does in fact propose that disputes relating to variations to the Standard Rail Connection Agreement are addressed in accordance with Part 11. We therefore propose to accept the QCA's changes.

Our more detailed response to Draft Decision 19.1 is presented further below.

We therefore submit that the Final Decision should be to accept the Access Undertaking drafting set out in our March 2017 submission following collaboration with stakeholders under the 2017 DAU, with additions to reflect the changes required to address Aurizon Network's concerns relating to Draft Decision 19.1.

19.2 Assessment and development of proposed connecting infrastructure

Summary of Draft Decision 19.1

- The QCA's Draft Decision is that the 2017 DAU be amended to:
  (a) Provide for a Rail Connection Agreement to be entered into in the form of the Standard Rail Connection Agreement or, once approved by the QCA, this Revised Standard Rail Connection Agreement (which arises under the QCA's proposed cl. 9.2); and,
  (b) Clarify that any proposed variation to these agreement that cannot be agreed is resolved by the parties entering into the Standard Connection Agreement or the Revised Standard Connection Agreement (as the case may be).

The QCA's suggested drafting amendments to cls. 9.1(h)(i) and 9.2 are provided in Appendix M.

We note the Draft Decision is to propose amendments to the 2017 DAU, and therefore not accept Aurizon Network's proposal relating to the assessment and development of connecting infrastructure.

Aurizon Network accepts the proposed amendments detailed in Draft Decision 19.1(a).

Aurizon Network's primary concern relates to Draft Decision 19.1(b) regarding the QCA's proposal to include amendments that 'clarify' that any proposed variation to the standard rail connection agreement that cannot be agreed is resolved by the parties entering into the Standard Rail Connection Agreement or the Revised Standard Rail Connection Agreement (as the case may be). Aurizon Network disagrees with this amendment.

The QCA provides in its Draft Decision that it considers that all parties' interests are served by the inclusion of a new clause (new cl. 9.3) making clear that if negotiations to vary the Standard Rail Connection Agreement or new Revised Standard Rail Connection Agreement falter, then any dispute in relation to varying the terms will be resolved by the parties entering into the relevant standard agreement. The QCA proposes a new clause to address this, however such a clause has not been included in the Access Undertaking drafting provided by the QCA. Rather, this drafting appears to be included in cl. 9.1 (h)(i), referencing the dispute provisions in Part 11 more broadly. This does not appear to be reflective of the QCA's intentions in Draft Decision 19.1(b). Aurizon Network has assessed Draft Decision 19.1(b) on the basis of the described intent. Following our assessment of the Draft Decision, we are concerned that the proposed intent of the Draft Decision will be inconsistent with the principles of Part 11, which already provides a process for managing variations to standard agreements, and provides the mechanisms for resolving disputes for Standard Agreements, depending on the variation itself. As an example, where there is a dispute regarding variations to schedules, this should be dealt with in accordance with Part 11, and not resolved by the parties entered into the Standard Rail Connection Agreement.

Having said that, Aurizon Network notes that the drafting suggested by the QCA does in fact propose that disputes relating to variations to the Standard Rail Connection Agreement are addressed in accordance with Part 11. We therefore submit that the Final Decision should be to accept the drafting proposed by the QCA in its Draft Decision.

Aurizon Network does however note that by limiting the ability to dispute variations to the standard terms of the Standard Rail Connection Agreement, there is the potential for flexibility in terms of design, operation and management of the connection to be reduced. In the current market, Aurizon Network is being approached by a number of customers seeking to connect to the CQCN at the lowest cost possible. The nature of each private infrastructure design, and connecting location, means that there is no such thing as a standard connection. Aurizon Network has been working with these customers to provide flexible options for connections. As an example, a varied engineering or operational solution may be accommodated to reduce upfront costs for our customers, where suitable commercial terms can be agreed.

In most cases, these operational/commercial trade offs are mutually agreed between the parties and do not lead to disputes. However, without the ability to dispute a proposed provision through Part 11, Aurizon Network may be more inclined to revert to standardised connection designs. Aurizon Network intends to continue to work collaboratively with our customers to provide a fit for purpose connection design, and will seek to address the issue of flexibility within the development of the Revised Standard Rail Connection Agreement.

Aurizon Network submits that the form of Standard Rail Connection Agreement submitted as part of the 2017 DAU be approved in the Final Decision, subject to some minor drafting changes to update references to rail safety legislation given that the *Transport (Rail Safety) Act 2010 (Qld)* has been repealed and replaced with the *Rail Safety National Law (Queensland) Act 2017 (Qld)*. A revised draft of the Standard Rail Connection Agreement is attached and forms part of this response submission.

20

Reporting, compliance and audits

20. Reporting, Compliance and Audits

This chapter presents Aurizon Network's response to the Draft Decision on Part 10 of the 2017 DAU relating to the framework for information reporting and demonstrating compliance with the undertaking including auditing requirements.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 133 QCA Draft Decision and Aurizon Network's Response – Negotiation Framework – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA considers it appropriate to approve Aurizon Network's 2017 DAU proposals in respect of Part 10.	20.1	Agree

20.1 Overview - Aurizon Network's Position

Aurizon Network supports the Draft Decision which accepts our position on the reporting, compliance and audit framework as outlined in Part 10 of the 2017 DAU.

We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

For clarity, we note that the provisions in Part 10 of the 2017 DAU are the same as those in current Access Undertaking.

20.1.1 QCA Draft Decision

In making its assessment, the QCA considered that Aurizon Network's Part 10 provides sufficient information about its operations to allow stakeholders to make informed decisions and have confidence in the regulatory regime. The QCA also noted that this Part provides sufficient transparency and oversight of network performance and Aurizon Network's compliance with the undertaking, along with Aurizon Network's commitment to non-discriminatory behaviour.

21

Dispute resolution and decision making

21. Dispute Resolution and Decision Making

This chapter responds to the QCA's proposal for a dispute resolution mechanism and related procedures for the resolution and determination of disputes.

A summary of the QCA's assessment and Aurizon Network's response is presented in the table below.

Table 134 QCA Draft Decision and Aurizon Network's Response – Dispute Resolution and Decision Making – summary

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision is that the 2017 DAU be amended to: (a) allow parties to commence disputes in relation to not only the negotiation of access but also any of Aurizon Network's obligations under the undertaking; and to filter out disputes that are vexatious or an abuse of process (b) include a broader scope of disputes which are subject to the dispute resolution provisions (c) require disputes arising in relation to particular matters that are expressly referred to in Part 11, to be resolved in accordance with Part 11. The QCA's suggested drafting amendments are provided in Appendix N.	21.1 (a) 21.1 (b) 21.1 (c)	Disagree Disagree Disagree
The QCA's Draft Decision is that the 2017 DAU be amended so that: (a) access disputes that arise under the UT5 undertaking provisions should be determined by the QCA as if the dispute arose under Division 5, Part 5 of the QCA Act (b) disputes that are not about access are to be determined by the QCA through any process it considers appropriate, subject to some limitations (discussed further below) (c) when the QCA is appointed as the arbiter of a dispute under the 2017 DAU the QCA may hear disputes in relation to matters and between parties that may not be within the scope of the dispute resolution provisions of Division 5, Part 5 of the QCA Act (d) before a determination by the QCA can commence, the parties must agree, in a legally binding way, to be bound by the outcome of the Dispute, including agreeing to pay any costs ordered by the QCA (e) it is made clear that the QCA may make a determination as to how and by whom the costs of an arbitration should be paid, consistent with s. 208 of the QCA Act (f) the interpretation provision in clause 12.2 be broadened to make provision for the possibility that the relevant Queensland legislation is repealed and replaced (g) specific examples are included of when a determination made by the QCA under Part 11 is not inconsistent with the undertaking. The QCA's suggested drafting amendments are provided in Appendix N.	21.2 (a) 21.2 (b) 21.2 (c) 21.2 (d) 21.2 (e) 21.2 (f) 21.2 (g)	Disagree Disagree Disagree Disagree Disagree Agree Disagree

QCA Draft Decision	Draft Decision No.	Aurizon Network - Response
The QCA's Draft Decision that the 2017 DAU be amended to:		
(a) require Aurizon Network or the other initial party to a dispute to provide relevant train operators, access seekers or access holders (as applicable) with a copy of the dispute notice.	21.3 (a)	Disagree
(b) allow the relevant party to make an application to join the dispute, provided the application is not vexatious or an abuse of process.	21.3 (b)	Agree
(c) Require the QCA to give notice in accordance with s. 114 of the QCA Act when a dispute is referred to the QCA in accordance with the undertaking.	21.3 (c)	Agree
The QCA's suggested drafting amendments are provided in Appendix N.		
The QCA's Draft Decision is that the 2017 DAU be amended to:		
(a) include an obligation for CEO-level discussions to have failed before a dispute is referred to an expert	21.4 (a)	Agree
(b) include the Queensland Law Society as a fall-back nominator if the parties fail to agree on the nature of the dispute	21.4 (b)	Agree
(c) the term 'Institute of Chartered Accounts in Australia' be changed to 'Chartered Accountants Australia and New Zealand'	21.4 (c)	Agree
(d) require the parties to agree to be bound by the outcome of the expert determination before it commences and agree how the costs and disbursements will be paid	21.4 (d)	Disagree
(e) remove the requirement for an expert to not make a determination that is inconsistent with the QCA Act	21.4 (e)	Disagree
(f) include that those matters which are specific to a dispute arising under Part 8 prevail over the provisions of Part 11 to the extent of any inconsistency.	21.4 (f)	Agree
The QCA's suggested drafting amendments are provided in Appendix N.		

21.1 Overview - Aurizon Network's Position

Aurizon Network submitted the 2017 DAU in response to a compulsory notice issued by the QCA purportedly in accordance with the QCA Act. This is relevant to the consideration of what the QCA can impose on Aurizon Network in terms of a dispute resolution regime in the access undertaking.

There is a material difference between the dispute resolution role that the QCA can perform under a voluntary access undertaking, where the access provider invites the QCA to perform a dispute resolution role (although there are limits in those circumstances as well), and the role that the QCA can play as a result of the QCA investing itself with dispute resolution powers by means of an access undertaking that the QCA ultimately prepares and approves by reason of a compulsory process.

Following our assessment of the Draft Decisions, we are of the view that the proposals put forward by the QCA for the dispute resolution mechanism are in large part beyond the power of the QCA to impose on Aurizon Network under the QCA Act.

The QCA has:

- incorrectly interpreted the QCA Act and failed in the Draft Decision to reflect the legal limits on the QCA's powers to hear and determine disputes;
- failed to appropriately reflect the public interest and Aurizon Network's legitimate business interests in making sure that any QCA determinations are consistent with Aurizon Network's safety obligations; and
- failed to take into account the full range of relevant matters and the information that was provided to it by Aurizon Network as part of our earlier supporting collaborative submission.

Aurizon Network therefore does not support the vast majority of the Draft Decisions on Part 11. Our reasons and further supporting information for our position are contained within the response to the individual Draft Decisions below.

21.1.1 Aurizon Network's submission (2017 DAU)

Aurizon Network's proposal in its UT5 Submission for the 2017 DAU was to align the dispute resolution mechanism for UT5 with the requirements of the QCA Act and generally at law. This entailed Aurizon Network setting out proposals in a number of key areas including the:

- range of parties that can utilise the dispute resolution mechanism under Part 11;
- scope of matters that can be the subject of the dispute resolution mechanism under Part 11;
- referral of particular disputes expressly mentioned in the undertaking;
- QCA's powers when undertaking a determination;
- consistency of the QCA's determinations with Aurizon Network's Safety Management System and legislative requirements;
- ongoing provision of information to third parties in relation to a dispute under Part 11;
- joinder of parties to disputes; and
- dispute determinations by experts and the procedure for determining the identity of experts.

21.1.2 QCA Draft Decision

The Draft Decisions of the QCA reject **all** of Aurizon Network's substantive positions in relation to the structure and operation of the dispute resolution mechanism under Part 11, and accept only a limited number of Aurizon Network's proposals on procedural matters.

In particular, the QCA's Draft Decisions and associated drafting amendments propose the following positions, which Aurizon Network contends are beyond the QCA's power to require or impose. The QCA's Draft Decisions on Part 11:

- seek to expand the scope of matters that can be the subject of the disputes that the QCA would have jurisdiction to determine by arbitration to cover "*disputes that are not about access…through any process it considers appropriate*"[223]
- expand the range of parties that can utilise the dispute resolution mechanism under Part 11 beyond access seekers, as expressly contemplated by the QCA Act, to cover **any** "parties who may be affected by Aurizon Network's obligations arising under an approved access undertaking";[224]

[223] QCA (2017) Draft Decision 21.1(b).

[224] QCA (2017) Draft Decision, p.446.

- seek to invest the QCA with jurisdiction to determine disputes about Aurizon Network's compliance with the access undertaking, despite an express provision of the QCA Act which enables parties adversely affected by non-compliance with an access undertaking to seek redress for that non-compliance by court action;[225]
- expressly purport to allow the QCA to determine a dispute over the transaction-specific schedules of a Standard Agreement, where the dispute arises between Aurizon Network and the other party during the negotiation of the applicable transaction on the basis of that Standard Agreement, and that dispute does not constitute an access dispute;[226]
- expands the scope of matters that can be the subject of dispute resolution by the QCA to include any matter expressly referred to in the undertaking;
- reject the notion (and corresponding requirement) that any QCA determination must be consistent with Aurizon Network's Safety Management System and legislated safety requirements;
- do not permit Aurizon Network and any other party to a dispute any discretion to determine if third parties should be invited to join the dispute; and
- do not ensure that determinations by experts align with requirements and limits for determinations prescribed in the QCA Act.

21.1.3 Aurizon Network's assessment of QCA Draft Decision

The minor concessions by the QCA in respect of Aurizon Network's proposals in relation to procedural matters are immaterial in the broader context of the QCA's substantive proposals for Part 11 of the undertaking.

The QCA's rationale for rejecting the majority of Aurizon Network's drafting and supporting submissions in relation to Part 11 is based upon a misunderstanding of the limits that apply to the QCA's decision-making powers, and a misunderstanding of the nature of the disputes that can be determined by the QCA under the QCA Act.

21.1.4 Summary of Aurizon Network's response

We have considered each aspect of the QCA's assessment of the key issues raised by Aurizon Network in its UT5 Submission for the 2017 DAU. Following this assessment Aurizon Network considers, in summary, that the fundamental problems with the QCA's Draft Decision are that the QCA:

- cannot invest itself with jurisdiction to determine disputes other than those that the QCA is empowered to hear under the QCA Act – the QCA's powers to determine disputes are set out under, and are limited by, section 10 of the QCA Act and by Division 5, Part 5 of the QCA Act;
- cannot grant a right to any person other than an Access Seeker or Access Provider to commence an "access dispute" (which term is used here and elsewhere in section 21 of this submission to have its meaning in accordance with Division 5, Part 5 of the QCA Act);
- must comply with Division 5, Part 5 of the QCA Act when it hears access disputes;
- can only determine access disputes (it cannot determine contractual or other types of disputes unless, in the case of access agreements, the parties to the dispute agree); and
- cannot make an access determination which would require Aurizon Network to act in a manner that is inconsistent with its safety obligations under law.

Aurizon Network's detailed response to the QCA's preliminary view is provided in more detail below.

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[225] Section 158A of the QCA Act.

[226] QCA (2017) Draft Decision, p.449.

21.2 Range of Parties

Summary of Draft Decision 21.1 (a)

- Allow parties to commence disputes in relation to not only the negotiation of access but also any of Aurizon Network's obligations under the undertaking; and to filter out disputes that are vexatious or an abuse of process

The Draft Decision is to not accept Aurizon Network's proposal to limit the scope of the parties that can commence a dispute in accordance with the requirements of Division 5, Part 5 of the QCA Act. Aurizon Network had proposed that the parties to these disputes would include Aurizon Network (as an Access Provider) and:

- in respect of the negotiation of a Standard Access Agreement or a User Funding Agreement, an Access Seeker that is a proposed party to it;
- in respect of the negotiation of a Standard Train Operations Deed, the proposed Train Operator;
- in respect of the negotiation of any other Standard Agreement, an Access Seeker, a Customer or a Train Operator that is a proposed party to it; and
- in all other respects relating to the negotiation of access, an Access Seeker or a Prospective Access Seeker.[227]

The cases not involving Access Seekers (i.e. those involving Train Operators and Customers) were volunteered by Aurizon Network.

The QCA's Draft Decision rejects Aurizon Network's proposal and has instead proposed that the parties that should be able to commence disputes not be limited to just those parties negotiating access, but should cover any party that seeks to "*rectify a default or resolve a dispute in relation to an obligation under the undertaking*" from which that party could receive a benefit.[228]

The QCA's approach means any coal supply chain participant, and any other party that might conceivably receive a benefit from an obligation in an access undertaking, could enliven a dispute in relation to a matter under the undertaking and have that dispute determined by the QCA.

The QCA is therefore seeking to increase both the class of parties that can commence a dispute against an access provider, and the extent of its arbitral powers.

In support of this position the QCA relies on section 137(2)(bb) of the QCA Act, which the QCA argues expressly empowers the QCA to determine, and obliges Aurizon Network to comply with, decisions of the QCA in respect of any disputes in relation to matters stated in an undertaking.[229]

21.2.1 The QCA's powers to hear and determine disputes are limited by the express provisions of the QCA Act

Before turning to the QCA's basis for claiming it has the broad powers it claims through the Draft Decision, it is important to note what the QCA Act says about the limits of the QCA's decision-making powers.

The QCA is established by an Act of Parliament. That Act is the only source of the QCA's powers and functions. The QCA only has power to perform the dispute resolution (and other) functions expressly permitted by the QCA Act. The only functions that the QCA can perform in relation to dispute resolution matters are found in section 10 of the

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[227] QCA (2017) Draft Decision, p.446. The reference to 'Customer' is provided on a voluntary basis and cannot be compelled by the QCA. Similarly the reference to 'Train Operator' has been included on a voluntary basis in respect of the negotiation of a Standard Train Operations Deed.

[228] QCA (2017) Draft Decision, p.445.

[229] QCA (2017) Draft Decision, p.446.

QCA Act. Its decision-making role in relation to access related matters is further prescribed by Part 5, Division 5 of the QCA Act.

It follows that the QCA **cannot**:

> invest itself with the jurisdiction to arbitrate anything that is not an "access dispute"; or
> absent the agreement of both parties to an access agreement, invest itself with the power to mediate or to arbitrate disputes under access agreements.

Section 10 gives the QCA express and limited powers to hear and determine particular types of disputes. The list of disputes the QCA can arbitrate to resolve **does not** extend to:

> disputes that are not about access to the declared service;
> disputes involving any party who wishes to "rectify a default or resolve a dispute in relation to an obligation under the undertaking"; or
> any dispute over the transaction-specific schedules of a Standard Agreement unless that dispute constitutes an access dispute.

It is also the case that the QCA cannot invest itself with powers that are inconsistent with express provisions and limits of the QCA Act by relying on an implied power which is broader than the express powers and limitations of its governing legislation.

21.2.2 The QCA has incorrectly interpreted and applied section 137(2) (bb) of the QCA Act

The QCA's reliance on section 137(2) (bb) of the QCA Act is flawed and indicative of the QCA's erroneous understanding of the limits of its dispute resolution power under Division 5, Part 5 of the QCA Act.

In particular, section 137(2)(bb) is a permissive provision; it outlines what "may" be included in an undertaking. It does not grant power to the QCA.

The section is not a power giving provision enabling the QCA to unilaterally determine the scope of its remit to hear and determine disputes. This is especially the case in the context of an undertaking submitted in response to an initial undertaking notice (see further discussion below under section 21.4.1).

To the extent the explanatory notes to the QCA Act refer to the section they indicate parliament's intention was for it to operate in respect of day to day operational issues stated in the undertaking. On no reasonable interpretation could the section be said to effectively grant the QCA a right to award itself unrestrained jurisdiction to make decisions in respect of all matters the subject of the access undertaking.

Whilst the QCA cites section 137(2)(bb) as an example of what it says the QCA Act contemplates, it does not mention any other provisions of the QCA Act in support. Section 137(2)(bb) does not expressly authorise the imposition of an access dispute resolution power for the QCA. For the QCA to be correct about the meaning and effect of section 137(2)(bb) it must:

> first make out the case that the section necessarily implies the power the QCA says it has; and
> then go further to establish that the QCA has the right to grant itself the express power to determine a range of disputes, other than access disputes, in an access undertaking the QCA itself writes and then imposes on an access provider (by means of a process that commenced with the issuing of an initial undertaking notice).

In Aurizon Network's view an implied power argument cannot be made out by the QCA because:

> the QCA's express dispute resolution functions are prescribed by section 10 of the QCA Act and nowhere in that section is the QCA given any power to hear access undertaking disputes;
> the power the QCA says it has through section 137(2)(bb) is not consistent with well-established legal principle, namely that a power must be "*necessarily and properly required for carrying into effect the purposes for which the*

body was established, or which may be fairly regarded as incidental to, or consequential upon, those things which the legislature has authorised"[230]; and

- it is not correct to claim as the QCA does that the "broader dispute resolution provisions" are necessary to give parties a practical and cost-effective mechanism to resolve disputes about compliance with an access undertaking[231] – parliament has expressly turned its mind to the issue and provided the mechanism for resolution of such disputes, namely by court action, not arbitration before the QCA (section 158A of the QCA Act).

21.2.3 Gaming of the QCA's proposed dispute resolution framework

Aurizon Network submitted in its UT5 Submission for the 2017 DAU that the QCA's proposed dispute resolution framework could be used by participants (other than access seekers) to the coal supply chain to unfairly favour their own project at the expense of another. The QCA rejected this concern on the basis that Aurizon Network did not provide any examples of actual gaming of the dispute resolution regime.[232]

Aurizon Network is surprised that the QCA would take such a narrow view to the issue but in any event restates its concern that an area for high potential of gaming the dispute resolution process, if the QCA's proposal were to be accepted, would be in the context of proposed expansions. There may be a commercial advantage for a party in slowing down a competitor's new or increased mine production. Giving 'anyone who might benefit from an access undertaking obligation' the right to commence a dispute over a rail expansion needed to accommodate that new or increased mine production will provide an avenue through which an attempt might be made to gain that advantage.

In any event, the QCA attempts to mitigate the risk of gaming by proposing amendments that a dispute must not be vexatious or an abuse of process.[233] Aurizon Network does not support the QCA's proposal (apart from it being beyond its power to permit parties of that scope to initiate a dispute) is sufficient to address the risks of gaming.

Indeed, by including this further requirement in the dispute process the QCA has created an additional threshold issue on which a third party can commence a dispute and therefore cause further delays. However, if the QCA decides to reject Aurizon Network's proposal on the scope of parties subject to the dispute resolution regime, Aurizon Network accepts the QCA's drafting to include a requirement (in so far as it only relates to disputes in relation to access in accordance with Division 5, Part 5 of the QCA Act) that a dispute must not be vexatious or an abuse of process in order to be valid.

Therefore, our assessment of the Draft Decision, with respect to the scope of the parties that can utilise the dispute resolution mechanism in the undertaking, is that the QCA's position is not justified or permitted under the QCA Act and is therefore rejected by Aurizon Network.

We submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU. However if the QCA rejects that position, Aurizon Network will accept the QCA's drafting in requiring a dispute not to be either an abuse of process or vexatious in order for the QCA to determine it under Part 11.

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[230] *Attorney-General & Ephram Hutchings v Great Eastern Railway Co [1880] 5 AC 473* and *Bunbury-Harvey Regional Council v Giacci Bros Pty Ltd* [2000] WASC 223. See too High Court in *Crimmins v Stevedoring Industry Finance Committee* (1999) 200 CLR 1

[231] QCA (2017) Draft Decision, p.448.

[232] QCA (2017) Draft Decision, p.446.

[233] QCA (2017) Draft Decision, p.533.

21.3 Scope of disputes which are subject to the dispute resolution provisions

Summary of Draft Decision 21.1 (b)

- Include a broader scope of disputes which are subject to the dispute resolution provisions

Summary of Draft Decision 21.1 (c)

- Require disputes arising in relation to particular matters that are expressly referred to in Part 11, to be resolved in accordance with Part 11

Draft Decision 21.1(b) is to not accept Aurizon Network's proposal to align the scope of matters that can be determined by the QCA to be consistent with the requirements of Division 5, Part 5 of the QCA Act. The QCA has proposed to extend the scope of matters that can be determined under the dispute resolution process to include any matters in relation to Aurizon Network's obligations under the undertaking, or any matter expressly required by the undertaking to be resolved in accordance with Part 11.

The QCA's position appears to be based on the reasoning that if the QCA could only hear access disputes under the QCA Act then there would be no need for separate dispute resolution provisions in the undertaking.[234]

The QCA Act stipulates that the avenue for redress available to both the QCA and adversely affected third parties in the event of an alleged breach of the undertaking by Aurizon Network. In summary, under section 158A of the QCA Act a party can either make a complaint to the QCA and the QCA can commence court proceedings to enforce the undertaking or the adversely affected party can itself commence court proceedings, including to seek compensation. Aurizon Network therefore reiterates its position from its UT5 Submission for the 2017 DAU that the QCA cannot vest itself with the court's jurisdiction to determine matters and provide remedies in respect of non-compliance with an approved access undertaking.[235] Investing itself with jurisdiction to determine matters that the QCA Act has expressly reserved to courts, is an exercise beyond the QCA's power.

The QCA has agreed to include drafting in the 2017 DAU, which was agreed during the collaborative discussions between Aurizon Network and industry, to clarify that non-coal carrying train service agreements are not exempt from the dispute resolution process in certain circumstances. Aurizon Network supports the Draft Decision in this respect and accepts the drafting contained in clause 11.1.1(b) of Appendix N to the Draft Decision.

However, our assessment of the Draft Decision, with respect to the scope of matters that can be the subject of the dispute resolution process and the referral of particular disputes, is that the QCA's position is not justified or permitted under the QCA Act and is therefore rejected by Aurizon Network. We propose that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU other than in respect of the application of the dispute resolution mechanism to non-coal carrying services.

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[234] QCA (2017) Draft Decision, p.452.

[235] Aurizon Network's 2017 DAU Submission at page 79.

21.4 QCA's powers in undertaking a determination

Summary of Draft Decision 21.2 (a)

- Access disputes that arise under the UT5 undertaking provisions should be determined by the QCA as if the dispute arose under Division 5 Part 5 of the QCA Act

Summary of Draft Decision 21.2 (b)

- Disputes that are not about access are to be determined by the QCA through any process it considers appropriate, subject to some limitations

Summary of Draft Decision 21.2 (c)

- When the QCA is appointed as the arbiter of a dispute under the 2017 DAU the QCA may hear disputes in relation to matters and between parties that may not be within the scope of the dispute resolution provisions of Division 5, Part 5 of the QCA Act

Summary of Draft Decision 21.2 (d)

- Before a determination by the QCA can commence, the parties must agree, in a legally binding way, to be bound by the outcome of the Dispute, including agreeing to pay any costs ordered by the QCA

Summary of Draft Decision 21.2 (e)

- It is made clear that the QCA may make a determination as to how and by whom the costs of an arbitration should be paid, consistent with section 208 of the QCA Act

The Draft Decisions are not to accept Aurizon Network's proposal to align the dispute resolution procedures, in respect of determinations by the QCA, to those contained in Division 5, Part 5 and other relevant sections of the QCA Act.

The QCA proposes to reject Aurizon Network's proposal to amend clause 11.1.5 of the 2017 DAU to include express requirements that determinations by the QCA be in accordance with, and subject to, the express requirements within Division 5, Part 5 of the QCA Act.

The QCA's reasons for rejecting Aurizon Network's proposal are, in summary, that:

> the QCA acknowledges that Division 5, Part 5 of the QCA Act is limited to access disputes;
> however, the dispute resolution mechanism within an undertaking does not need to be consistent with the dispute resolution provisions in Division 5, Part 5 of the QCA Act;
> further, that the QCA does not only have the power to resolve disputes in relation to access as expressly provided in Division 5, Part 5 of the QCA Act;
> therefore, Disputes that are not about access are to be determined by the QCA through any process it considers appropriate, subject to some limitations; and
> that process provides that, as a prerequisite to the hearing of any dispute, the parties must enter into a legally binding agreement to be bound by the determination of the QCA as well as an order as to costs.[236]

[236] QCA (2017) Draft Decision, pp. 451-452.

21.4.1 Application of the QCA Act to the determination of disputes by the QCA

Aurizon Network is of the view that the QCA's application of the QCA Act to its activities as a regulator is misguided and not in accordance with settled law. The QCA only has the power to perform the dispute resolution (and other) functions expressly permitted by the QCA Act. It is a well settled principle of law that:

> *"The general rule is that the powers of a statutory body are circumscribed by the statute governing its activities. Its powers are limited to what is expressly stated in the relevant legislation, or is necessarily and properly required for carrying into effect the purposes for which the body was established, or which may be fairly regarded as incidental to, or consequential upon, those things which the legislature has authorised. What the statute does not expressly or impliedly authorise is taken to be prohibited. If the subject matter of a contract is beyond the scope of the constitution of a statutory body, it is ultra vires".*[237]

Relevantly, section 10 of the QCA Act, which details the functions of the QCA include:

- to mediate to resolve access disputes – section 10(fa);
- if asked by the parties to access agreements, to mediate to resolve disputes under the agreements (emphasis added) – section 10(fb);
- to conduct arbitration hearings for resolving access disputes – section 10(g);
- if asked by the parties to access agreements – to arbitrate to resolve disputes under the agreements.

It follows that the QCA may have the ability to ultimately write its own version of an access undertaking for Aurizon Network that creates a role for the QCA in mediating access disputes. It cannot however:

- invest itself with the power to arbitrate anything that is not an access dispute; or
- absent the agreement of both parties to an access agreement, invest itself with the power to meditate or to arbitrate disputes under access agreements.

Those matters are at complete odds with the express and consequential limits of the QCA Act. For example, if section 10 states, as it does, that the QCA can arbitrate disputes under access agreements "if asked by the parties to such agreements" the QCA cannot ignore that express limitation and give itself a power to arbitrate without the request of the parties.

The powers which the QCA is seeking to invest itself with are therefore beyond power and any attempt by the QCA to include them in an access undertaking drafted and approved by the QCA will be beyond the QCA's power and therefore invalid.

21.4.2 Non access related disputes to be determined by the QCA under "*any process it considers appropriate*"

It would also be beyond power for the QCA to impose a dispute resolution process that would allow the QCA to determine non-access disputes "through any process it considers appropriate". This proposal by the QCA to invest itself with unfettered jurisdiction to hear and determine disputes, free of any constraints over process or the exercise of its proposed powers in relation to matters over which it has no current jurisdiction has very significant and far-reaching implications.

Any attempt by the QCA to invest itself with the jurisdiction referred to above would also be to ignore the material safeguards the Queensland parliament included for the benefit of access providers in the disputes the QCA can hear. For example, section 127A of the QCA Act provides a mechanism by which a party to an access determination may apply to the QCA to seek amendment or revocation of an access determination made under the QCA Act.

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[237] *Attorney-General & Ephram Hutchings v Great Eastern Railway Co [1880] 5 AC 473* and *Bunbury-Harvey Regional Council v Giacci Bros Pty Ltd* [2000] WASC 223. See too High Court in *Crimmins v Stevedoring Industry Finance Committee* (1999) 200 CLR 1.

See too the procedural provisions for the manner in which the QCA must conduct access dispute arbitrations under Part 7 of the QCA Act. Those protections and procedural requirements would not apply if the QCA gives itself the power to hear disputes that are not about access "through any process it considers appropriate".

21.4.3 Legally binding agreement to comply with a determination of the QCA including in relation to the award of costs

It follows that if the QCA does not have power to hear disputes beyond those prescribed by the QCA Act, the QCA cannot award costs in any 'beyond power' disputes. The QCA's power to award costs is set out and limited by section 208 of the QCA Act. That power relates to arbitrations contemplated by the QCA Act. In that regard we note section 208(3) deals with an arbitration where "the dispute notice" is withdrawn.

The "dispute notice" is the notice that must be given to commence a section 112 dispute which relates to 'access disputes' (see for example section 208(5) which makes this clear). These sections therefore reinforce the view that the arbitral power in the QCA Act is relevantly limited to access disputes, and does not give the QCA rights to hear other disputes of its own volition (and therefore to award costs in those disputes).

The fact that the QCA does not have power to hear and determine these disputes is also reinforced by the QCA's Draft Decision to require all parties to sign a legally binding agreement to be bound by the outcome of the dispute, including any costs awarded by the QCA.

Therefore, our assessment of Draft Decision 21.2 (a) to (e) inclusive and associated drafting in Appendix N to the Draft Decision is that the Final Decision should accept the Access Undertaking drafting set out in the 2017 DAU.

Summary of Draft Decision 21.2 (f)

- The interpretation provisions in clause 12.2 be broadened to make provision for the possibility that the relevant Queensland legislation is repealed and replaced

The Draft Decision is to amend clause 12.2(a)(i)(J) of the undertaking to include an express clarification that a reference to legislation includes the relevant legislation as, "*amended consolidated, re-enacted or codified*". Aurizon Network accepts the proposed amendment by the QCA and therefore proposes that the Final Decision accepts the Access Undertaking drafting set out in clause 12.2(a)(i)(J) of Appendix N to the Draft Decision.

Summary of Draft Decision 21.2 (g)

- Specific examples are included of when a determination made by the QCA under Part 11 is not inconsistent with the undertaking

Aurizon Network notes the Draft Decision is to propose express examples of when a determination will not be inconsistent with the undertaking. In particular, the QCA has proposed that determinations in respect of matters '*not expressly stated in the Undertaking*' (see proposed drafting in the Draft Decision at clause 11.1.5(g)(iii) of Appendix N) will not be inconsistent with the undertaking.

Above at sections 21.2 and 21.3 Aurizon Network has made detailed submissions as to why the QCA's proposals to vest itself with powers to determine any matter that may be disputed under the undertaking is beyond its power to do so under the provisions of the QCA Act. Aurizon Network does not propose to repeat those submissions. The QCA's proposed drafting referred to in Draft Decision 21.2 (g) further exacerbates the problems identified with the 'beyond power' nature of the QCA's decision-making proposals.

The QCA's proposed drafting of clause 11.1.5(g) would, for example, expressly give the QCA the right to:

- make a decision that is completely at odds with an existing, express provision of the access undertaking that the QCA had previously approved as appropriate; and
- make a finding that Aurizon Network has failed to comply with the terms of the access undertaking, where there is no basis for that conclusion having regard to the relevant conduct and the drafting and effect of the access undertaking.

These are again, extraordinary powers that the QCA is seeking to invest itself with, and beyond any power that the QCA can claim to exist under its governing legislation.

Therefore, our assessment of the Draft Decision and associated drafting, with respect to the QCA's examples of decisions consistent with the undertaking, is that the QCA's position is not justified or permitted under the QCA Act and is therefore rejected by Aurizon Network. We propose that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

21.4.4 Concerns as to the QCA's process of its response in its Draft Decision

Consistency with Safety Management System and legislative requirements (no specific decision of the QCA to refer to)

- The QCA has deleted the No Inconsistency Proposal by Aurizon Network, namely that any determination of the QCA must not be inconsistent with its Safety Management System

Aurizon Network understands that the QCA has not accepted Aurizon Network's proposal that any determination by the QCA must not be inconsistent with Aurizon Network's safety management system and its obligations under applicable safety or environmental legislation (the "**No Inconsistency Proposal**").

There are grave process deficiencies in the QCA's treatment of the No Inconsistency Proposal, which is of fundamental importance to Aurizon Network given its focus on safety as its highest priority.

Aurizon Network provided a comprehensive justification of its No Inconsistency Proposal in its 2017 DAU Submission at pages 82 – 83. Despite those submissions, the QCA has provided limited analysis of the issues in its Draft Decision.[238]

In its brief discussion of the No Inconsistency Proposal in the Draft Decision, the QCA

- fails to provide any reason for not accepting the No Inconsistency Proposal;
- fails to state the express decision the QCA has adopted in preference to the No Inconsistency Proposal;
- merely sets out its position on the interface between its determination powers and safety (the 'Powers/Safety Interface') without providing any explanation as to why this position is either appropriate or more appropriate than the No Inconsistency Proposal; and
- simply refers readers to Appendix N to the Draft Decision and the drafting contained therein.

In view of the grave process deficiencies identified above, Aurizon Network has material concerns as to whether the QCA has indeed had regard, as it is required to do under section 138(2) of the QCA Act when considering a DAU, to the protection of the legitimate business interests of Aurizon Network in the QCA's consideration of the No Inconsistency Proposal.

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[238] QCA (2017) Draft Decision, p.454.

21.4.5 Importance of Aurizon Network's Safety Management System

Aurizon Network's interpretation of the QCA's drafting at clause 11.1.5(f) of Appendix N to the Draft Decision is that:

> when a dispute is referred to it, the QCA must seek the advice of the rail safety regulator on any aspect of the dispute that any party to the dispute or the QCA considers to be a safety related matter; and
> the QCA must not make a decision that is inconsistent with that advice.

The QCA's position on the Powers/Safety Interface is the same as the approach adopted in UT4 for the Powers/Safety Interface. The UT4 approach was first adopted before the safety implications of the QCA making determinations, such as determinations about the project scope of user funding agreements, were fully contemplated by industry and Aurizon Network.

In addition to Aurizon Network's extensive supporting arguments as to why the adoption in UT5 of the UT4 approach to the Powers/Safety Interface would be fundamentally at odds with Aurizon Network's core approach to business and its statutory safety obligations, Aurizon Network makes the following additional submissions:

> Whatever decisions the QCA makes must seek to work in harmony with other legislative requirements and not against them. The QCA's unwillingness to overtly confirm that it will exercise its decision-making powers in that way is a matter of serious concern.
> If the QCA's drafting at clause 11.1.5(f) of Appendix N to the Draft Decision were to be adopted, the QCA would be free to make a determination that could result in Aurizon Network breaching its contractual obligations to comply with its accreditation and maintenance obligations (for example see clauses 7(a) & 18.2(a) of the UT5 Access Agreement – Coal). The QCA does not have the power to make decisions that would result in Aurizon Network being in breach of its safety obligations or to place Aurizon Network's safety accreditation at risk.
> The No Inconsistency Proposal merely gives effect to a constraint on the QCA that already exists – albeit in more general terms – under section 120(1)(d) of the QCA Act. That section requires the QCA to have regard to the public interest when making an access determination. Aurizon Network considers that it would be manifestly against the public interest for the QCA, which has no expertise in rail safety, to be able to make an access determination that would impose on Aurizon Network, which has significant expertise in rail safety, an outcome that could be inconsistent with Aurizon Network's Safety Management System or its obligations under applicable safety or environmental legislation. Aurizon Network considers that, rather than reliance on this general requirement of the QCA Act, the public interest would be better protected by an explicit prohibition of the QCA making a determination that is inconsistent with Aurizon Network's Safety Management System or its obligations under applicable safety or environmental legislation.
> Where one general requirement, namely Aurizon Network's obligation to comply with UT5, clashes with a second more specific requirement, namely Aurizon Network's obligation to comply with its Safety Management System, Aurizon Network considers that in this context the latter should prevail to the extent of any inconsistency. It is manifestly unreasonable and unacceptable that Aurizon Network's business could be subject to severe adverse consequences and liabilities and for its senior executives to be exposed to criminal prosecutions due to Aurizon Network's compliance with a determination by the QCA that is inconsistent with Aurizon Network's Safety Management System or its obligations under applicable safety or environmental legislation.

For all these reasons, including the process deficiencies identified above in respect of the QCA's treatment of this issue, Aurizon Network is unable to accept the QCA's proposal in relation to:

> the QCA's non-acceptance of the No Inconsistency Proposal; and
> adopting instead the UT4 treatment of the Powers/Safety Interface.

We submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU in respect of the No Inconsistency Proposal.

21.5 Provision of Information and Joinder

Summary of Draft Decision 21.3 (a)

- Require Aurizon Network or the other initial party to a dispute to provide relevant train operators, access seekers or access holders (as applicable) with a copy of the dispute notice

Summary of Draft Decision 21.3 (b)

- Allow the relevant party to make an application to join the dispute, provided the application is not vexatious or an abuse of process

The Draft Decision is to not accept Aurizon Network's proposal to permit parties to a Dispute a discretion as to whether or not to invite a potentially impacted party to participate in the dispute resolution process. The QCA has rejected Aurizon Network's proposed amendments to the 2017 DAU and made it mandatory for Aurizon Network to notify all potentially impacted parties.

The QCA's reasons for rejecting Aurizon Network's proposal are that it considers any potentially impacted party is in a better position to determine whether or not the outcome of, or consequences of, a particular dispute is relevant to them.[239] Aurizon Network is of the view that the QCA's position unnecessarily increases the regulatory burden on parties to a dispute. In addition, the QCA's approach will result in further delays in resolving disputes.

Therefore, our assessment of the Draft Decision, with respect to the QCA's mandatory requirement for Aurizon Network to notify all potentially impacted parties to a dispute, is to not accept the QCA's position. We propose that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

Summary of Draft Decision 21.3 (c)

- Require the QCA to give notice in accordance with s.114 of the QCA Act when a dispute is referred to the QCA in accordance with the undertaking

The Draft Decision is to include a requirement for the QCA, when a dispute is referred to it, to provide notices of that dispute to relevant parties in accordance with section 114 of the QCA Act. Aurizon Network accepts the proposed amendments by the QCA and therefore proposes that the Final Decision accepts the Access Undertaking drafting set out in clause 11.1.5(e) of Appendix N to the Draft Decision.

[239] P 455-456 of the Draft Decision.

21.6 Determinations by experts and procedure

Summary of Draft Decision 21.4 (a)

- Include an obligation for CEO-level discussions to have failed before a dispute is referred to an expert

Summary of Draft Decision 21.4 (b)

- Include the Queensland Law Society as fall back-nominator if the parties fail to agree on the nature of the dispute

Summary of Draft Decision 21.4 (c)

- The term 'Institute of Chartered Accounts in Australia' be changed to 'Chartered Accountants Australia and New Zealand'

Summary of Draft Decision 21.4 (d)

- Require the parties to agree to be bound by the outcome of the expert determination before it commences and agree how the costs and disbursements will be paid

Summary of Draft Decision 21.4 (e)

- Remove the requirement for an expert to not make a determination that is inconsistent with the QCA Act

Summary of Draft Decision 21.4 (f)

- Include that those matters which are specific to a dispute arising under Part 8 prevail over the provisions of Part 11 to the extent of any inconsistencies

21.6.1 CEO Level discussions

Aurizon Network supports the Draft Decision which clarifies that CEO-Level discussions must have failed prior to a dispute being referred to an expert by agreement between the parties. We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in clause 11.1.4(a) of Appendix N to the Draft Decision.

21.6.2 Queensland Law Society as fall back - nominator

Aurizon Network supports the Draft Decision which clarifies that the Queensland Law Society will act as a fall back nominator in the instance where parties cannot agree on the nature of the dispute. We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU in clause 11.1.4(b)(i)(B)(3) of Appendix N to the Draft Decision.

21.6.3 Chartered Accountants Australia

Aurizon Network supports the Draft Decision which provides for the correct reference to the Chartered Accountants Australia and New Zealand. We therefore submit that the Final Decision accepts the Access Undertaking drafting set out in clause 11.1.4(b)(i)(B)(1) of Appendix N to the Draft Decision.

21.6.4 Require parties to be bound by expert determination

We note Draft Decision 21.4 (d) is to replicate (as the QCA has proposed in respect of determinations by the QCA, as discussed at section 21.4.3 above) the requirement for parties to execute a legally binding agreement to be bound by the outcome of the expert determination including in respect of any order as to costs. Aurizon Network repeats and relies on its submissions at section 21.4.3 that the QCA cannot impose such a requirement in respect of any expert determination of a dispute that is not an access dispute, because such a dispute would be a "beyond power" dispute.

Therefore, our assessment of Draft Decision 21.4 (d) and the associated drafting, with respect to the QCA's requirement for parties to enter into a legally binding agreement with respect to the outcome of the expert determination, is that the QCA's position is not justified or permitted under the QCA Act. Aurizon Network therefore

rejects the QCA's proposal except to the extent that Aurizon Network volunteers to engage in a dispute process that does not involve an access seeker. We submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

21.6.5 Expert determination not to be inconsistent with the QCA Act

We note Draft Decision 21.4 (e) is to not accept Aurizon Network's proposal to align the requirements of an expert determination with Division 5 Part 5 of the QCA Act. Aurizon Network repeats and relies on its submissions at section 21.4.1 above as to the scope of disputes that can be the subject of the dispute resolution mechanism under the undertaking.

Therefore, our assessment of the Draft Decision, with respect to the QCA's decision not to align any expert decision with the requirements of Division 5, Part 5 of the QCA Act, is to not accept the QCA's position. We submit that the Final Decision accepts the Access Undertaking drafting set out in the 2017 DAU.

21.6.6 Consistency between Part 8 and Part 11 Disputes

Aurizon Network notes Draft Decision 21.4 (f) provides express drafting as to the mutual operation of Part 11 and Part 8 disputes. In particular, the QCA proposes that the requirements for disputes under Part 8 prevail to the extent of any inconsistency with Part 11. Aurizon Network reiterates its position that the QCA cannot vest itself with dispute resolution powers which extend beyond the requirements of Division 5, Part 5 of the QCA Act, namely that it can only determine 'access disputes'.

Subject to Aurizon Network's position in that regard, Aurizon Network submits that the Final Decision accept the Access Undertaking drafting set out in clause 11.1.7 of Appendix N to the Draft Decision.

Appendices

A Glossary

Term	Definition
2010 Undertaking	Aurizon Network's current Access Undertaking, approved by the QCA on 1 October 2010, together with any subsequent changes approved by the QCA
2013 Undertaking	Aurizon Network's Draft Access Undertaking due to commence on 1 July 2013
2013DAU	2013 Draft Access Undertaking
UT4	2016 Access Undertaking
UT5	2017 Draft Access Undertaking
AA	Access Agreement
ABS	Australian Bureau of Statistics
ACT	Australian Competition Tribunal
ACCC	Australian Competition and Consumer Commission
Access Holder	A person or organisation that holds access rights to the Central Queensland Coal Network
AER	Australian Energy Regulator
AM	Asset Maintenance
AMP	Asset Management Plan
APCT	Abbot Point Coal Terminal
APEX	Integrated Network Planning, Scheduling and Execution tool which is currently in development for Aurizon Network
ARTC	Australian Rail Track Corporation
ASIC	Australian Securities and Investment Commission
ASX	Australian Securities Exchange
ATO	Australian Taxation Office
Aurizon Group	The Group of Companies held by Aurizon Holdings Limited, which includes Aurizon Network Pty Ltd
Aurizon Holdings	Aurizon Holdings Limited
Aurizon Network	Aurizon Network Pty Ltd, the provider of access services in accordance with the 2010 Undertaking
AWOTE	Average Weekly Ordinary Times Earning
AZJ	Aurizon Holdings Limited
Ballast	Ballast is the material that is laid on the rail bed under the sleepers, providing stability and drainage to the track structure
BCR	Baseline Capacity Review
bn	billion
Brattle WACC Report	The Brattle Group report – Aurizon Network 2016 Access Undertaking Aspects of the WACC
BRTT	Below Rail Transit Time
CA	Construction Agreement
CAA	Connection Access Agreement
CAPM	Capital Asset Pricing Model
Capex	Capital Expenditure

Term	Definition
CBA	Condition Based Assessment – an obligation introduced within the 2010 Access Undertaking requiring Aurizon Network to undertake an end of term assessment of the condition of the Rail Infrastructure
CCC	Contribution to Common Costs
CDD	Consolidated Draft Decision
CEG	Competition Economist Group
CEG Inflation Report	Competition Economist Group report – Best estimate of inflation: revaluations and revenue indexation
CEG DRP Report	Competition Economist Group report – Debt risk premium of coal transporters
CEO	Chief Executive Officer
CETS	Civil Engineering Track and Structures Standards
CFO	Chief Financial Officer
CIRA	Competition and Infrastructure Reform Agreement
CGS	Commonwealth Government Securities
COAG	Council of Australian Governments
CPA	Competition Principles Agreement
CPI	Consumer Price Index
CQCN	Central Queensland Coal Network
CQCR	Central Queensland Coal Region
CQCSM	Central Queensland Supply Chain Model
CRIMP	Coal Rail Infrastructure Master Plan
CSR Obligation	Capacity Shortfall Rectification Obligation
CTP	Contested Train Path
DAU	Draft Access Undertaking
DAAU	Draft Amending Access Undertaking
DBCC	Dalrymple Bay Coal Chain
DBCT	Dalrymple Bay Coal Terminal
DBCTM	DBCT Management
DGM	Dividend Growth Model
DORC	Depreciated Optimised Replacement Cost
DRP	Debt Risk Premium
DTP	Daily Train Path
DTS	Dynamic Track Stabilisers
EY	Ernst & Young
EY Cost of Equity Report	Ernst & Young report – Market evidence on the cost of equity
egtk	Electric gross tonne kilometres
EPA	Expansion Project Agreement
EPM	Expansion Project Management

Term	Definition
ESA	Electrical Safety Act
EUAA	End User Access Agreement
EVP	Executive Vice President
FD	Final Decision
FOB	Free on Board
Frontier	Frontier Economics
Frontier Beta Report	Frontier Economics report – Equity beta
Frontier MRP Report	Frontier Economics report – The market risk premium
Frontier Gamma Report	Frontier Economics report – Estimating gamma for regulatory purposes
FTE	Full Time Equivalents
FY	Financial year
GAPE	Goonyella to Abbot Point Expansion
GCEE	Gladstone Coal Exporters Executive
GPR	Ground Penetrating Radar – A non-destructive subsurface inspection technology that is used to measure the condition of Aurizon's Assets, in particular ballast
GSE	Goonyella System Enhancements
gtk	Gross tonne kilometres
HCC	Hard coking coal
HPCT	Hay Point Services Coal Terminal
HVCN	Hunter Valley Coal Network
IAP	Indicative Access Proposal
IDC	Interest During Construction
IEA	International Energy Agency
ILC	Integrated Logistics Centre
IRMP	Interface Risk Management Plan
ITP	Intermediate Train Path
IUN	Initial Undertaking Notice – notice issued under section 133 of the QCA Act on 11 May 2016 requiring Aurizon Network to submit a DAU to the QCA for the period commencing 1 July 2017
LTIFR	Lost Time Injury Frequency Rate
MAR	Maximum Allowable Revenue
MAW	Maintenance Access Window
MCI	Maintenance Cost Index
Mt	Million tonnes
MNT	Million net tonnes
MRC	Minimum Revenue Contribution
MRP	Market Risk Premium
MSI	Mine Specific Infrastructure

Term	Definition
MTP	Master Train Path
Mtpa	Million tonnes per annum
NAMS	Network Asset Management System
NAPE	Newlands Abbot Point Expansion
NCL	North Coast Line
NDP	Network Development Plan
NEM	National Electricity Market
NER	National Electricity Rules
NGL	National Gas Rules
NML	Northern Missing Link – the section of track connecting the Goonyella coal system with the Newlands coal system between North Goonyella Junction to Newlands junction
NMP	Network Management Principles
NOPP	Network Operations Pathing Planner
NPV	Net Present Value
NSAP	Network Strategic Asset Plan
nt	Net tonnes
ntk	Net tonne kilometres
OAV	Opening Asset Value
Opex	Operational Expenditure
ORC	Optimised Replacement Cost
OTCI	Overall Track Condition Index – a measure of quality of the geometry of the track calculated from track geometry recording vehicle outputs
PACE	Possession Alignment and Capacity Evaluation
PC	Productivity Commission
PCF	Process Classification Framework
PTRM	Post-tax revenue model
PV	Present value
PVC	Percent Void Contamination – calculated by dividing the volume of contaminates by the volume of voids within the ballast profile. PVC is determined in a compacted state to simulate actual track conditions
QCA	Queensland Competition Authority
QCA Act	Queensland Competition Authority Act (Qld) 1997
QR	Queensland Rail Limited
QRC	Queensland Resources Council
QR Network	The subsidiary of QR which was established in 2008 to own and manage the Queensland Rail network, now Aurizon Network
QTC	Queensland Treasury Corporation
RAB	Regulated Asset Base
RBA	Reserve Bank of Australia

Term	Definition
RIM	Rail Infrastructure Manager
RM74	Mainline Ballast Undercutter Machine
RM900	Mainline Ballast Undercutter Machine
RM902	High Production Mainline Ballast Undercutter Machine
RPEQ	Registered Professional Engineer of Queensland
RT	Reference Tariffs
S&P	Standard and Poor's
SAA	Standard Access Agreement
SAC	Stand Alone Cost
SAR	System Allowable Revenue
SCMP	Supply Chain Master Plan
SMS	Safety Management System
SPAD	Signal Passed at Danger
SUFA	Standard User Funding Agreement
TAR	Total Access Revenue
TNSP	Transmission Network Service Provider
TPA	Trade Practices Act 1974
TRIFR	Total Recordable Injury Frequency Rate
TRSA	Transport (Rail Safety) Act 2010
Turnout	A section of railway track-work that allows trains to pass from one track on to a diverging path
TNSP	Transmission Network Services Provider
UAV	Unmanned Aerial Vehicles
USA	United States of America
USD	US dollar
UT1	The period from 2001 to 2006, being the term of QR's first access undertaking
UT2	The period from 2006 to 2010, being the term of QR's second access undertaking covering the CQCR
UT3	The period from 2010 to 2013, being the term of the 2010 Undertaking, being the third access undertaking covering the CQCR
UT4	The four year period commencing 1 July 2013, being the proposed term of the 2013 Undertaking, which will be the fourth access undertaking covering the CQCR
UT5	The four year period commencing 1 July 2018, being the proposed term of UT5, the fifth access undertaking covering the CQCR
WACC	Weighted Average Cost of Capital
WHS Act	Work health and Safety Act 2011 (Qld)
WICET	Wiggins Island Coal Export Terminal
WIRP	Wiggins Island Rail Project
WPI	Wage Price Index

B Reference Tariffs and Allowable Revenues

System by System Reference Tariffs

Blackwater System

Table 135 Aurizon Network – Response to Draft Decision – Reference Tariff Inputs – Blackwater System

Reference tariff input	FY2018^	FY2019^	FY2020	FY2021
AT1	0.93	0.95	0.97	0.99
AT2	2,210.93	2,261.78	2,313.80	2,367.02
AT3	8.04	7.92	7.57	7.82
AT4	2.79	2.75	2.62	2.71
AT5	3.57	3.72	3.38	3.43
EC	0.98#	0.83	0.84	0.86

^ FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments. The difference between FY2018 transitional and approved SAR has not been accounted for.

FY2018 EC includes FY2017 true up between revenue and expenses.

Table 136 Aurizon Network – Response to Draft Decision – UT5 System Discounts for Train Servicing Using Nominated Unloading Facilities – Blackwater System

	System Discount[1] ($'000ntk)			
Nominated Unloading Facilities	FY2018	FY2019	FY2020	FY2021
Stanwell Power Station	2.75	2.61	2.65	2.74

(1) the discount is on the AT3 component: FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments.

Table 137 Aurizon Network – Response to Draft Decision – Reference Tariff inputs for Train Servicing Using Nominated Unloading Facilities – Blackwater System

	System Premium[1] ($'000ntk)			
Nominated Unloading Facilities	FY2018	FY2019	FY2020	FY2021
Rolleston[2]	1.52	2.01	1.89	0.68
Minerva	2.21	3.12	3.27	3.22

(1) the premium is on the AT3 component. FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustment.

(2) includes non-WIRP and WIRP Rolleston.

Table 138 Aurizon Network – Response to Draft Decision – Gtk Forecasts and Allowable Revenues – Blackwater System

	Gtk Forecast ('000 gtk)	Allowable Revenue – AT2-4 ($'000)	Allowable Revenue – AT5($'000)
FY2018^	36,235,418	404,964	96,310
FY2019^	37,077,265	414,280	101,696
FY2020	37,813,770	403,791	93,996
FY2021	38,527,836	414,974	95,578

^ Allowable Revenue include QCA approved FY2016 and FY2017 revenue cap.

Goonyella System

Table 139 Aurizon Network – Response to Draft Decision – Reference Tariff Inputs – Goonyella System

Reference tariff input	FY2018^	FY2019^	FY2020	FY2021
AT1	0.65	0.66	0.67	0.69
AT2	1,400.75	1,432.97	1,465.93	1,499.65
AT3	4.78*	5.45	5.30	5.19
AT4	0.99*	1.13	1.10	1.07
AT5	1.72	1.86	1.79	1.83
EC	0.98#	0.83	0.84	0.86

^ FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments. The difference between FY2018 transitional and approved SAR has not been accounted for.

FY2018 EC includes FY2017 true up between revenue and expenses.

* FY2018 tariffs include the approved FY2016 flood review event claim.

Table 140 Aurizon Network – Response to Draft Decision – Reference Tariff inputs for Train Servicing Using Nominated Unloading Facilities – Goonyella System

		System Discount ($'000ntk)			
Nominated Unloading Facilities	Reference Tariff Input	FY2018	FY2019	FY2020	FY2021
Middlemount	AT3	2.94	3.73	3.52	3.52
	AT4	0.82	0.98	0.94	0.94
	AT5	0.82	0.95	0.86	0.86
Caval Ridge	AT3	3.58	3.67	3.52	3.41
	AT4	0.74	0.76	0.73	0.71
	AT5	1.45	1.50	1.43	1.46

These tariff components replace the tariff components in Table 139. FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments.

Table 141 Aurizon Network – Response to Draft Decision – Gtk Forecasts and Allowable Revenues – Goonyella System

	Gtk Forecast ('000 gtk)	Allowable Revenue – AT2-4 ($'000)	Allowable Revenue – AT5 ($'000)
FY2018^	41,620,058	284,758	70,012
FY2019^	42,770,883	329,942	78,161
FY2020	42,823,869	323,415	75,218
FY2021	42,790,436	318,598	76,742

^ Allowable Revenue include QCA approved FY2016 and FY2017 revenue cap.

Moura System

Table 142 Aurizon Network – Response to Draft Decision – Reference Tariff Inputs – Moura System

Reference tariff input	FY2018^	FY2019^	FY2020	FY2021
AT1	1.73	1.77	1.81	1.84
AT2	662.25	677.49	693.07	709.01
AT3	9.57	8.71	8.59	8.81
AT4	1.58	1.42	1.40	1.43

^ Tariffs include the impact of FY2016 and FY2017 revenue cap adjustments. The difference between FY2018 transitional and approved SAR has not been accounted for.

Table 143 Aurizon Network – Response to Draft Decision – Gtk Forecasts and Allowable Revenues – Moura System

	Gtk Forecast ('000 gtk)	Allowable Revenue – AT2-4 ($'000)
FY2018^	3,044,687	38,683
FY2019^	3,928,807	45,871
FY2020	4,294,067	49,637
FY2021	4,294,067	50,889

^ Allowable Revenue include QCA approved FY2016 and FY2017 revenue cap.

Newlands System

Table 144 Aurizon Network – Response to Draft Decision – Reference Tariff Inputs – Newlands System

Reference tariff input	FY2018^	FY2019^	FY2020	FY2021
AT1	1.80	1.84	1.88	1.92
AT2	296.10	302.91	309.88	317.01
AT3	7.38	6.41	7.96	8.18
AT4	0.96	0.82	1.01	1.04

^ FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments. The difference between FY2018 transitional and approved SAR has not been accounted for.

Table 145 Aurizon Network – Response to Draft Decision – Gtk Forecasts and Allowable Revenues – Newlands System

	Gtk Forecast ('000 gtk)	Allowable Revenue – AT2-4 ($'000)
FY2018^	2,439,079	23,431
FY2019^	2,684,004	22,584
FY2020	2,684,004	27,803
FY2021	2,684,004	28,562

^ Allowable Revenue include QCA approved FY2016 and FY2017 revenue cap.

Goonyella to Abbot Point System

Table 146 Aurizon Network – Response to Draft Decision – Reference Tariff Inputs – Goonyella to Abbot Point System

Reference tariff input	FY2018^	FY2019^	FY2020	FY2021
AT1	1.45	1.48	1.51	1.55
AT2	13,745.81	14,061.96	14,385.38	14,716.25
AT3	1.73	1.71	1.79	1.82
AT4	3.80	2.77	2.71	2.62

^ FY2018 and FY2019 tariffs include the impact of FY2016 and FY2017 revenue cap adjustments. The difference between FY2018 transitional and approved SAR has not been accounted for.

Table 147 Aurizon Network – Response to Draft Decision – Gtk Forecasts and Allowable Revenues – Goonyella to Abbot Point System

	Gtk Forecast ('000 gtk)	Allowable Revenue – AT2-4 ($'000)
FY2018^	8,686,485	132,458
FY2019^	9,579,993	138,144
FY2020	9,579,993	139,095
FY2021	9,579,993	139,494

^ Allowable Revenue include QCA approved FY2016 and FY2017 revenue cap.

System by System Maximum Allowable Revenues

Blackwater System

Table 148 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – non-electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	2,277,203	2,282,632	2,273,454	2,254,714
Capital Expenditure	92,194	75,167	70,288	74,743
Return on capital (WACC)	161,105	160,316	159,361	158,389
Return on capital (depreciation)	103,131	99,764	103,192	112,021
Less inflationary gain	(37,683)	(37,848)	(37,987)	(38,149)
Maintenance expenditure allowance	87,652	91,964	97,541	100,071
Operating expenditure allowance	53,228	53,909	56,515	57,940
Working Capital	1,167	1,173	1,208	1,247
Tax Allowance (gamma adjusted)	27,951	26,458	28,568	31,416
Total annual (unsmoothed) MAR	396,550	395,736	408,398	422,936
2016 Access Undertaking capital carryover account	8,516	8,712	8,912	9,117
Total (adjusted) MAR	405,066	404,448	417,310	432,053

Table 149 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	440,774	428,490	417,459	404,595
Capital Expenditure	2,513	4,817	4,055	6,022
Return on capital (WACC)	30,141	29,462	28,660	27,920
Return on capital (depreciation)	57,567	59,130	60,690	62,384
Less inflationary gain	(24,847)	(24,202)	(23,488)	(22,767)
Maintenance expenditure allowance	7,675	7,900	8,068	8,215
Operating expenditure allowance	36,461	37,092	38,184	38,945
Working Capital	257	260	264	268
Tax Allowance (gamma adjusted)	4,018	4,372	4,672	5,000
Total annual (unsmoothed) MAR	111,272	114,014	117,051	119,964
2016 Access Undertaking capital carryover account	992	1,015	1,038	1,062
Total (adjusted) MAR	112,264	115,029	118,089	121,026

Goonyella System

Table 150 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – non-electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	1,546,659	1,571,127	1,581,789	1,585,591
Capital Expenditure	86,562	72,094	67,801	64,830
Return on capital (WACC)	111,049	111,729	112,162	112,219
Return on capital (depreciation)	96,330	95,911	98,536	92,539
Less inflationary gain	(36,309)	(36,532)	(36,673)	(36,692)
Maintenance expenditure allowance	87,330	91,203	93,239	95,771
Operating expenditure allowance	60,902	61,892	63,745	64,132
Working Capital	958	973	993	984
Tax Allowance (gamma adjusted)	18,690	17,855	19,634	18,428
Total annual (unsmoothed) MAR	338,950	343,031	351,637	347,382
2016 Access Undertaking capital carryover account	541	554	566	579
Total (adjusted) MAR	339,491	343,584	352,203	347,961

Table 151 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	241,768	236,296	234,358	230,736
Capital Expenditure	3,119	6,546	5,537	5,898
Return on capital (WACC)	16,651	16,512	16,311	16,090
Return on capital (depreciation)	13,747	13,597	14,184	14,802
Less inflationary gain	(5,443)	(5,398)	(5,332)	(5,260)
Maintenance expenditure allowance	5,669	5,758	5,866	5,981
Operating expenditure allowance	36,103	37,113	38,156	38,849
Working Capital	200	203	208	211
Tax Allowance (gamma adjusted)	2,440	2,547	2,701	2,873
Total annual (unsmoothed) MAR	69,367	70,332	72,093	73,546
2016 Access Undertaking capital carryover account	2,984	3,053	3,123	3,195
Total (adjusted) MAR	72,351	73,385	75,216	76,740

Goonyella to Abbot Point System

Table 152 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – non-electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	961,644	963,409	915,645	865,172
Capital Expenditure	5,606	-	-	-
Return on capital (WACC)	65,767	65,506	62,258	58,827
Return on capital (depreciation)	63,220	67,586	69,142	70,732
Less inflationary gain	(21,503)	(21,418)	(20,356)	(19,234)
Maintenance expenditure allowance	15,369	14,106	14,306	14,980
Operating expenditure allowance	13,355	14,498	14,913	15,010
Working Capital	409	421	421	421
Tax Allowance (gamma adjusted)	12,626	14,387	15,166	15,867
Total annual (unsmoothed) MAR	149,243	155,086	155,850	156,603
2016 Access Undertaking capital carryover account	(2,154)	(2,203)	(2,254)	(2,306)
Total (adjusted) MAR	147,090	152,883	153,596	154,297

Moura System

Table 153 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – non-electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	263,141	315,958	320,829	323,117
Capital Expenditure	8,755	14,039	12,401	8,318
Return on capital (WACC)	18,487	22,438	22,658	22,536
Return on capital (depreciation)	12,571	16,197	17,183	17,989
Less inflationary gain	(6,045)	(7,336)	(7,408)	(7,368)
Maintenance expenditure allowance	11,407	13,137	14,530	14,891
Operating expenditure allowance	4,059	5,139	5,757	5,794
Working Capital	121	149	158	162
Tax Allowance (gamma adjusted)	2,856	3,071	3,779	4,051
Total annual (unsmoothed) MAR	43,458	52,795	56,657	58,054
2016 Access Undertaking capital carryover account	698	714	730	747
Total (adjusted) MAR	44,155	53,509	57,387	58,801

Newlands System

Table 154 Aurizon Network – Response to Draft Decision – Proposed maximum allowable revenue – non-electric assets ($'000, nominal)

Building Block	FY2018	FY2019	FY2020	FY2021
Opening Asset Value (for pricing)	195,324	201,599	204,606	204,720
Capital Expenditure	12,720	10,130	7,899	6,098
Return on capital (WACC)	14,146	14,396	14,449	14,334
Return on capital (depreciation)	10,855	11,592	12,249	12,832
Less inflationary gain	(4,625)	(4,707)	(4,724)	(4,687)
Maintenance expenditure allowance	4,032	3,712	3,765	3,942
Operating expenditure allowance	3,504	3,815	3,924	3,950
Working Capital	84	86	89	91
Tax Allowance (gamma adjusted)	2,566	2,605	2,774	2,920
Total annual (unsmoothed) MAR	30,561	31,500	32,526	33,382
2016 Access Undertaking capital carryover account	308	315	322	329
Total (adjusted) MAR	30,869	31,815	32,848	33,712

UT5 RAB Roll-Forward

Table 155 Aurizon Network – Response to Draft Decision – RAB by value system – non-electric ($ million, nominal)[1]

	FY2018	FY2019	FY2020	FY2021
1. Blackwater (excluding WIRP)				
Opening asset value	1,603	1,627	1,638	1,641
Plus capital indicator	92	75	70	75
Plus indexation	39	39	39	39
less depreciation	107	103	107	116
Closing asset value	1,627	1,638	1,641	1,640
2. WIRP in the Blackwater System[2]				
Opening asset value	674	655	635	613
Plus capital indicator	-	-	-	-
Plus indexation	16	15	15	14
less depreciation	35	35	36	37
Closing asset value	655	635	613	591
3. Goonyella				
Opening asset value	1,547	1,571	1,582	1,586
Plus capital indicator	87	72	68	65
Plus indexation	38	38	38	38
less depreciation	100	99	102	96
Closing asset value	1,571	1,582	1,586	1,593
4. Newlands				
Opening asset value	195	202	205	205
Plus capital indicator	13	10	8	6
Plus indexation	5	5	5	5
less depreciation	11	12	13	13
Closing asset value	202	205	205	202
5. GAPE[3] (Including Byerwen NAPE)				
Opening asset value	961.6	963.4	915.6	865.2
Plus capital indicator	5.6	-	-	-
Plus indexation	22.2	22.2	21.1	19.9
less depreciation	65.4	69.9	71.5	73.2
Closing asset value	924.1	915.6	865.2	811.9
6. Moura (including WIRP deferrals and WIRP NCL)				
Opening asset value	263.1	316.0	320.8	323.1
Plus capital indicator	8.8	14.0	12.4	8.3
Plus indexation	6.3	7.6	7.7	7.6
less depreciation	13.0	16.8	17.8	18.6

	FY2018	FY2019	FY2020	FY2021
Closing asset value	265.1	320.8	323.1	320.4
7. Total CQCN (including deferrals)				
Opening asset value	5,244.0	5,334.7	5,296.3	5,233.3
Plus capital indicator	205.8	171.4	158.4	154.0
Plus indexation	125.3	126.6	125.5	123.9
less depreciation	330.6	336.5	346.9	353.7
Closing asset value	5,244.6	5,296.3	5,233.3	5,157.5

(1) Opening asset value includes equity raising cost.

(2) WIRP in the Blackwater system consists of WIRP Blackwater and WIRP Rolleston.

(3) Includes electric costs on the GSE segment as these costs are recovered through AT1 to AT4.

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	FY2018	FY2019	FY2020	FY2021
1. Blackwater (excluding WIRP)				
Opening asset value	372	362	353	342
Plus capital indicator	3	5	4	6
Plus indexation	9	8	8	8
less depreciation	21	22	23	24
Closing asset value	362	353	342	332
2. WIRP in the Blackwater System[1]				
Opening asset value	69	67	65	63
Plus capital indicator	-	-	-	-
Plus indexation	2	2	1	1
less depreciation	4	4	4	4
Closing asset value	67	65	63	60
3. Goonyella				
Opening asset value	242	236	234	231
Plus capital indicator	3	7	6	6
Plus indexation	6	6	6	5
less depreciation	14	14	15	15
Closing asset value	236	234	231	227
7. Total CQCN (including deferrals)				
Opening asset value	682.5	664.8	651.8	635.3
Plus capital indicator	5.6	11.4	9.6	11.9
Plus indexation	15.8	15.6	15.2	14.9
less depreciation	39.2	39.9	41.3	42.9
Closing asset value	664.8	651.8	635.3	619.3

(1) WIRP in the Blackwater system consists of WIRP Blackwater and WIRP Rolleston.