



Professor Roy Green
Queensland Competition Authority
Level 27
145 Ann Street
BRISBANE QLD 4000

Aurizon Network Pty Ltd (Aurizon Network) - The 2017 Draft Access Undertaking (UT5)

30 November 2016

Dear Professor Green

In accordance with the Initial Undertaking Notice issued by the QCA on 11 May 2016 (as extended by the QCA on 1 September 2016), please find enclosed Aurizon Network's Draft Access Undertaking (**UT5**) and accompanying explanatory material.

Aurizon Network recognises the significant investment by industry in the development and approval of the 2016 Access Undertaking (**UT4**). Aurizon Network has therefore substantially retained the core policy positions from UT4 in UT5. Only a limited number of changes have been proposed to address practicality, efficiency, customer specific requests and matters that Aurizon Network believes are beyond the powers afforded to the QCA.

Aurizon Network's revenue proposal for UT5 aims to reflect the inherent risks of the network business, which it believes are higher than what the QCA has previously considered. The revenue proposal provides Aurizon Network with the opportunity to generate sufficient revenue to meet its efficient costs, whilst earning a return that is commensurate with the risks it faces. It is Aurizon Network's view that a lowering of the return, must be met with a corresponding lowering of the related commercial and regulatory risks.

Stakeholders have contributed to the development of UT5 policy matters, through a range of channels including presentations and individual briefings. Consistent with the endorsed position of industry, Aurizon Network has been seeking agreement on the drafting of the Access Undertaking with the QRC as the representative of the interests of producers.

Aurizon Network supports the QCA's objectives in the Statement of Regulatory Intent published on 22 July 2016, including a timely and efficient process. To facilitate this, Aurizon Network proposes to continue to actively engage with stakeholders post-lodgement. Specifically, we propose to engage with:

- the QCA, by providing explanatory briefings on the UT5 submission in order to increase the timeliness and efficiency of the informal and formal processes for the provision of additional information as legislated under the QCA Act; and
- industry through individual discussions and explanatory workshops to help inform their response to this submission.

Aurizon Network believes that the explanatory workshops that would be of benefit to both the QCA and stakeholders, would be in relation to inflation, maintenance, operational expenditure and Weighted Average Cost of Capital (WACC).

To aid transparency and responsiveness, Aurizon Network's non-confidential version of its submission, including the Draft Access Undertaking, related agreements and explanatory material, will be published on the Aurizon website at <http://www.aurizon.com.au/>. Aurizon Network will also provide customers (operators and producers) with guidance on the proposed tariff and key drivers of change applicable to them under UT5.

I look forward to working with the QCA on seeking a timely and appropriate resolution to UT5.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Alex Kummant', with a stylized flourish at the end.

Alex Kummant
Executive Vice President Network

Aurizon Network Submission 2017 Draft Access Undertaking

Prepared by Aurizon Network
30 November 2016



Executive Summary

The Access Undertaking is a critically important document for Aurizon Network as it guides negotiations with our customers, sets out how we must provide services and regulates the maximum allowable revenues we can earn from providing access.

The 2017 Draft Access Undertaking (UT5) has been prepared in response to the compulsory process commenced by the Initial Undertaking Notice (IUN) issued by the Queensland Competition Authority (QCA) on 11 May 2016. Importantly, while the compulsory process impacts on Aurizon Network's rights, we recognise the significant investment by industry in the development of the 2016 Access Undertaking (UT4). Therefore, with a view to providing as much regulatory certainty as possible for all stakeholders and facilitate an efficient and timely process for approval of UT5 under the compulsory undertaking provisions, Aurizon Network has only made incremental changes from UT4 in our UT5 submission. The vast majority of the undertaking, and the operational and financial methodologies included in UT4, have been retained for UT5. As a result, only nine aspects of the undertaking have changed, and the methodology for the calculation of the Operating Expenditure, Maintenance and depreciation allowance is almost unchanged – reflecting only factual differences in inputs.

Aurizon Network has adopted a revised approach to calculating our cost of capital in order to reflect the Pricing Principles of the QCA Act which provides Aurizon Network with the opportunity to generate revenue based upon earning “a return on investment commensurate with the regulatory and commercial risks involved”.

We believe that the inherent risks within the Aurizon Network assets are higher than what the QCA has considered previously, because of the following:

- > there are a relatively small number of customers, which are all exposed to a single asset class (coal);
- > the volatile operating environment of the Central Queensland Coal Network (CQCN), including increased counterparty risk and longer term structural issues with regard to future demand of thermal coal;
- > the Regulated Asset Base (RAB) is fragmented by system (Moura, Blackwater, Goonyella, Newlands and Goonyella to Abbot Point System) which results in an increased risk of asset stranding; and
- > revenue deferrals which result in expansion capital being excluded from the RAB because customers ramp-up volumes were not aligned with the original project expectations. For example the QCA's final decision to defer revenue in UT4 (approximately \$260m of Wiggins Island Rail Project (WIRP) related capex).

It is for these reasons that we do not believe the risk profile of Aurizon Network is akin to a regulated utility. We also observe the ‘real world’ empirical evidence of the significantly higher credit metrics that the ratings agencies apply to Aurizon Network for the same credit ratings as regulated utilities as a consequence of their assessment of the higher risk profile inherent in the CQCN. If Aurizon Network is provided with a lower regulated return than that set out in this submission then in order to remain consistent with the QCA Act, the QCA must adjust Aurizon Network's regulatory arrangements such that the commercial and regulatory risks flowing from these arrangements are reduced accordingly.

Our proposed cost of capital contained in this submission is calculated at 6.78% (based upon a placeholder averaging period to 30 June 2016). We have applied this cost of capital to a significantly larger RAB of \$6,225m, as a result of customer requested expansions delivered during the UT3 and UT4 period (a 27% increase since the commencement of UT4 and 90% increase since the commencement of UT3). Aurizon Network's revenue proposal increases the overall Maximum Allowable Revenue (MAR) to \$4,892m over the 4 year regulatory period primarily as a result of the increased RAB. This proposal represents a tariffs increase of 11% from FY2017 (UT4) to FY2018 (UT5) on average across the CQCN, based on forecast volume of 226mtpa. If the FY2018 tariffs were assessed on the system capacity, i.e., 308mtpa, the tariff would fall by 26%.

In this context, Aurizon Network emphasises the importance of a long term, balanced approach to the management of the CQCN in order to maintain its reliable performance and resilience – both now and in the future and also as

part of our regulatory obligations. Aurizon Network's performance during the UT4 period resulted in three consecutive years of record railings (FY2014-2016). This performance has contributed to the \$18.5b of coal royalties flowing to the Queensland economy over the last 10 years.

In the context of a regulatory framework that does not permit adjustments in access tariffs to reflect prevailing coal market conditions, this revenue proposal seeks to ensure the performance, resilience and future capability of the CQCN whilst providing a price for access to the declared service that reflects efficient costs and a return in line with commercial and regulatory risks.

Where possible Aurizon Network has included in its undertaking and in this submission, feedback from stakeholders as a result of industry consultation. Aurizon Network looks forward to engaging with the QCA and stakeholders in a constructive and consultative process after the lodgement of UT5.

The remainder of the Executive Summary provides the key points for each of the Chapters of the submission.

Chapter 1 – Introduction

Aurizon Network operates the CQCN, an integrated and interconnected heavy haul rail transport network which links more than 40 mines to five export coal terminals, using over 2,600km of track. Aurizon Network underpins a competitive market for above rail services provided by three rail haulage companies, with access rights held by both rail operators and coal producers.

The significant investment in the CQCN over the regulatory period at the request of our customers has resulted in the RAB growing from \$3,283m in UT3 to \$4,907m at the commencement of UT4 to \$6,225m at the commencement of UT5. This expansion of the CQCN has ensured Aurizon Network has the capacity to deliver for customers to meet their market opportunities. The UT5 proposal seeks to sustain reliability and performance levels and accommodate demand growth into the future without the requirement to construct new track. Along with that strategic investment, Aurizon Network has focussed on operational performance initiatives that have resulted in:

- > a lost time injury frequency rate of zero in FY2015 and FY2016;
- > an improvement in the delivery of the agreed plan from 89.2% to 92.1% since FY2015; and
- > a decline in below rail cancellations attributable to Aurizon Network from 12.1% in FY2015 to 9.5% in FY2016.

Over the recent period, global coal prices have experienced significant volatility which has resulted in a lowering of our customer's credit ratings and a deconsolidation in the industry via a number of sale processes that remain ongoing. We have also seen three producers (Peabody, Cockatoo and Bandanna) endure insolvency events during the UT4 period.

During this time, customers have focussed on minimising cost, whilst maximising throughput to continue to improve their unit cost and to drive productivity at their mine sites. Our customers expect the same from Aurizon Network – maximising capacity through productivity and increased performance of the existing asset base.

Aurizon Network must be well positioned to deliver its customers' requirements in times of volatile price and demand for metallurgical and thermal coal. Aurizon Network's reliability and efficient cost base must continue to allow coal producers in the CQCN to meet current and future demand rapidly and efficiently in order to remain competitive on a global scale.

Chapter 2 – Legislative Framework

Chapter 2 provides a detailed discussion of the legislative framework governing the QCA's role as a competition regulator. In order to establish the strategic context for the approach to UT5, this chapter discusses two key

elements of that legislative framework – the QCA’s statutory powers in approving an undertaking and the application of the pricing principles in Part 5 of the QCA Act.

Chapter 3 – Policy Positions

Given that UT4 has only recently come into effect after a lengthy regulatory process and its practical operation is yet to be tested, Aurizon Network has sought to make only incremental changes from the UT4 base line. For UT5, proposed changes are limited to matters that either:

- > address issues of practicality, workability or efficiency which are apparent at this early stage of UT4’s operation;
- > respond to specific customer requests for change; or
- > remove UT4 positions which Aurizon Network considers are not within the QCA’s powers to compel and which materially impact on Aurizon Network’s legitimate business interests

Policy Matter	Rationale for change
Relinquishment and resumption processes	A change to the policy position to allow for productivity improvements which enable more efficient capacity management practices.
Negotiated Access Conditions	QCA approval of Access Conditions is limited to only those that are material, and that approval is limited to confirming that they do not unfairly differentiate.
Aurizon Network’s right to invest	Allowing Aurizon Network the option to invest in its network if it chooses to do so at a regulated rate of return.
Treatment of capacity shortfalls	Rather than being forced to fund post expansion capacity shortfalls, Aurizon Network proposes a more flexible approach to work with the relevant access seekers to determine the most appropriate solution.
Supply chain coordination	Removal of the obligation to implement operational changes suggested by Supply Chain Groups. In the interest of transparency, if Aurizon Network decides not to implement such changes it must provide reasons.
Appropriate dispute resolution provisions	Alignment of the dispute resolution process to the requirements of the QCA Act and to ensure consistency with Aurizon Network obligations arising under safety laws.
Miscellaneous matters of practicality and clarification	Clarification of the incorporation of the: <ul style="list-style-type: none"> • Standard User Funding Template • Process to review Aurizon Network capacity; and • Treatment of any asset disposal and the subsequent adjustment to the RAB

A number of the issues listed above are in relation to expansions. The expansion framework within the Access Undertaking also provides for the inclusion of a Standard User Funding Agreement (SUFA), which, under UT4, is due to be considered by the QCA at a similar time to UT5.

Chapter 4 – The UT5 Maximum Allowable Revenue Proposal

Aurizon Network’s Revenue Proposal for UT5 is consistent with the pricing principles of the QCA Act. The pricing principles outlined in section 168A state that the price of access to the regulated service provided by Aurizon Network should:

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

In evaluating Aurizon Network’s exposure to such regulatory and commercial risks, it is essential that the QCA has full regard to the commercial environment in which Aurizon Network operates. Failure to consider this environment

exposes Aurizon Network to the regulatory risk of being unable to generate enough revenue for it to be compensated for providing access to the declared service which ultimately impedes the promotion of efficient investment in and operation and use of the service

Key drivers for the UT5 revenue proposal are:

- > a change in forecast inflation methodology (applied to both the RAB roll-forward and revenue models) which reflects a reduction in inflation expectations for the UT5 regulatory period (1.22% compared with 2.5% for UT4);
- > a change in gamma from 0.47 in UT4 to 0.25 affecting the tax building block;
- > the UT5 RAB now includes the majority of the \$921m of actual WIRP capital expenditure of which \$682m was applied during UT4 term; and
- > the majority of the estimated WIRP revenue deferrals of \$235m¹ that was applied in the UT4 final decision will be recovered in UT5.

¹ Converted to start year terms and includes capital cost and UT4 WACC escalation to compensate Aurizon Network for foregone revenue recovery over deferred UT4 period. This amounts relates to WIRP Blackwater and does not include WIRP Moura.

Table 1 Proposed UT5 MAR compared to UT4 Final Decision (\$m)

Building Blocks	UT5 proposed	UT4 Final Decision	Nominal Variance	Real FY2015\$ Variance	Rationale for variance
Return on Capital (WACC)*	1,592	1,526	67	(23)	<ul style="list-style-type: none"> Proposed WACC reduction from 7.17% to 6.78%^ 4 year return on expansion capex that was commissioned only half way through the UT4 regulatory period; and Cessation of Blackwater WIRP revenue deferrals.
Depreciation (less Inflation)	1,141	771	370	302	<ul style="list-style-type: none"> Change in both the application and inflation setting methodology resulting in a forecast rate of inflation at 1.22% UT4 expansion capital included for the full 4 year UT5 term; and Same depreciation methodology as UT4
Maintenance Cost	921	805	115	61	<ul style="list-style-type: none"> Inflation escalation Additional infrastructure to be maintained compared to UT4 Investment in new, more efficient mechanised plant to replace life-expired machines.
Operating Cost	855	815	40	(9)	<ul style="list-style-type: none"> Overall reduction in the operating costs Methodology consistent with UT4 Final Decision.
Tax	328	144	184	164	<ul style="list-style-type: none"> Gamma set at 0.25 in-line with the market value interpretation of gamma.
Total MAR	4,838	4,062	776	495	
Capital Carryover	54	(129)			
Total adjusted MAR	4,892	3,933			
Tariff \$/nt	\$5.36** (FY2018)	\$4.81 (FY2017)			Overall this is a 55cent / net tonne increase in the tariff. Of this change, approximately 33 cents is due to inflation and 4 cents is due to maintenance costs

* Includes Working Capital Allowance of \$13m over the UT5 Regulatory period consistent with UT4. UT4 allowance was \$12m.

** This represent only one year of the UT5 term and not the average over the period.

^Using a placeholder averaging period to 30 June 2016.

Chapter 5 - Inflation

The current revenue and RAB roll forward models use different inflation rates which creates an inconsistency within the regulatory framework. Currently, inflation is:

- > added to the RAB using the actual inflation realised throughout the years; and
- > deducted from the MAR using forecast inflation currently based upon the mid-point of the Reserve Bank of Australia's target range (2.5%).

The current framework effectively targets a real return on capital, which is inconsistent with nominal debt contracts in place.

More importantly, the inconsistency results in Aurizon Network being either over or under compensated as a consequence of the differences between forecast and actual inflation. In the event that actual inflation is higher than the forecast inflation used, Aurizon Network will benefit from the additional growth applied to the value of the RAB as part of the RAB roll-forward. This is because the amount of inflation reduced from the revenue allowance is less than the amount that is added to the opening RAB for the next regulatory period. On the other hand, Aurizon Network will be undercompensated when the actual inflation is lower than the forecast inflation used.

For UT5, Aurizon Network is seeking to use forecast inflation to index RAB to eliminate this modelling inconsistency. This proposal satisfies the NPV=0 principle and does not increase the inflation risk to users when compared to existing approach.

The rate of inflation in the Australian economy has been trending downwards since 2014. The average rate of inflation in FY2015 and FY2016 was around 1.5%, materially below the QCA's forecast inflation methodology which results in a rate of 2.5%. This results in Aurizon Network being under compensated in the regulatory cycle due to the larger revenue deduction.

Maintaining an inflation forecast of 2.5% for UT5 implies a strong negative real risk-free rate which is inconsistent with market expectations. The Reserve Bank of Australia (RBA) has also expected the inflation to remain lower over the next two years.

Accordingly, UT5 seeks to replace the 'mid-point methodology' with the breakeven rate of inflation. This is calculated using the difference in yields between inflation indexed Commonwealth Government Securities (CGS) and Nominal CGS. The breakeven inflation forecast has a number of advantages:

- > it is a market-based methodology which is more reflective of the applicable market conditions;
- > it is the weighted average of all possible outcomes rather than the most likely outcome (RBA forecast); and
- > it has smoothing effect on tariffs as breakeven inflation has a strong positive correlation with the nominal risk-free rate.

Chapter 6 – Forecast Volumes

Aurizon Network expects a small growth in volume for FY2018 (+1.9%) and FY2019 (+3.2%) relative to the forecasts approved by the QCA for FY2017. Volumes in FY2020 and FY2021 are consistent with FY2019.

Table 2 Aurizon Network's volume forecasts by system

System	Proposed volume forecast (million tonnes)					
System	FY2016 Actual	FY2017 QCA FD	FY2018	FY2019	FY2020	FY2021
Total	225.9	221.4	225.7	228.4	228.4	228.4

Aurizon Network believes that the current market volatility may result in a significant variance to forecast volumes over the UT5 period.

Chapter 7 – Regulated Asset Base

Aurizon Network has seen a material increase in the value of the RAB since its first undertaking. This growth has come from the expansion of the CQCN through significant projects like WIRP that have been developed through consultation with stakeholders. These expansions are capital intensive and Aurizon Network seeks to recover its cost from these expansions through Access Tariffs. For the UT5 term Aurizon Network is proposing to recover a portion of the revenue attributable to WIRP capital expenditure that was deferred by the QCA during UT4.

Chapter 8 – Capital indicator

Aurizon Network is submitting a UT5 Capital Indicator of approximately \$778m over the UT5 regulatory period. The Capital Indicator is comprised primarily of capital renewal projects (over 90%) funded by Aurizon Network. The balance of the estimated cost is for post-commissioning projects and other projects not classified as expansion or renewal. This is an over 50% decrease in the capital indicator from the UT4 period, reflecting both Aurizon Network's continued focus on prudent capital allocation and an outlook that assumes there will be no expansion projects commenced during the UT5 period.

Chapter 9 – Maintenance Costs

Aurizon Network's maintenance regime emphasises sustainable, long-term asset management practices to ensure performance continues at current levels. As the accredited Rail Infrastructure Manager of the CQCN, Aurizon Network is obliged by legislation and engineering standards to deliver its maintenance program to meet the required standards. This obligation is a critical driver in establishing the required maintenance scope presented in this proposal. It is essential that Aurizon Network is provided with an allowance that is at least enough to meet the efficient costs of providing the maintenance activities necessary to comply with its legislative and regulatory obligations.

Maintenance expenditure for the UT5 regulatory period has been developed in line with the approved UT4 allowance and is forecast to increase in nominal terms from \$805m in UT4 to \$921m. This increase is driven by three key factors:

- > The inflationary impacts on unit rates across the UT5 regulatory period at the forecast Maintenance Cost Index (MCI);
- > Increased scope of maintenance activities due to the ageing asset profile, the increase in volumes from UT4 to UT5 and the quantum of the RAB infrastructure; and
- > Recovery of costs associated with new mechanised maintenance assets that were purchased to replace life-expired machinery and will deliver productivity benefits in the delivery of these tasks.

Chapter 10 - Operating Expenditure

Aurizon Network has responded to the volatile market conditions by continuously challenging its internal structure and processes to drive productivity. The Operating Allowance component of the UT5 submission has been developed in line with the recently approved UT4 and hence represents an efficient benchmark allowance proposal.

Operating expenditure for the UT5 regulatory period is forecast to increase in nominal terms from \$815m in UT4 to \$855m. This is driven by the following changes to material categories being:

- > Inflation – escalation of real costs in line with QCA approved application to the relevant categories in the Operational Allowance (+\$49m); and
- > External Costs – optimisation of the number of connection points within the electrified network (-\$12m).

Chapter 11 – Weighted Average Cost of Capital

Aurizon Network has an obligation to its investors to ensure that it proposes a rate of return that will provide it with adequate compensation for its commercial and regulatory risks as required under the QCA Act. In setting that rate of return, Aurizon Network has had regard to the continuing volatility and uncertainty in its market environment. Particular consideration has been given to the customer base and its changing commercial and business risk profile.

Ultimately if Aurizon Network's rate of return is not commensurate with the returns that investors require, Aurizon Network will be unable to deliver an adequate return to existing shareholders and more importantly, will be unable to raise the capital it needs to fund efficient investment, including necessary renewals expenditure.

In order to satisfy the requirements of the QCA Act and ensure that Aurizon Network is able to sustainably access capital to fund existing assets and future investments, it is essential that the rate of return:

- > is assessed from the perspective of investors and rating agencies;
- > reflects Aurizon Network's commercial and regulatory risks; and
- > has regard to the characteristics of the investor base and their requirements.

In this UT5 Revenue Proposal, Aurizon Network has proposed conservative point estimates for the Market Risk Premium and Asset Beta parameters, where our consultants, Frontier Economics and Brattle both provided evidence and recommended a MRP of 7.5% and Brattle provided evidence of an Asset Beta between 0.55 and 0.65, before recommending the mid point (0.60) of this range. If incorporated these parameters would have resulted in a WACC of 7.35%. The MRP represents a midpoint between that used by the QCA in UT4 and Aurizon Network's consultant's recommendation. While asset beta is at the lower end of the range evidenced by Aurizon Network's consultant. Aurizon Network has taken this approach in order to minimise potential areas of disagreement

Aurizon Network's UT5 WACC proposal is summarised in the table below. It reflects an indicative twenty day averaging period to 30 June 2016.

Table 3 Aurizon Network's WACC proposal and UT4 Final Decision

Parameter	Aurizon Network's Proposal
Risk free rate	2.13%
Risk free rate term	10 years
Gearing ratio	55%
Benchmark credit rating	BBB+
Asset beta	0.55
Equity beta	1.0
Market risk premium	7.0%
Debt risk premium	2.47%
Debt raising costs	█%
Interest rate swap costs	█%
Cross currency swap costs	█%
Gamma	0.25
Return on equity	9.13%
Return on debt	4.86%
WACC (post tax nominal vanilla)	6.78%

Chapter 12 – Depreciation

Aurizon Network's UT5 proposal concerning depreciation is consistent with the UT4 Final Decision. For assets:

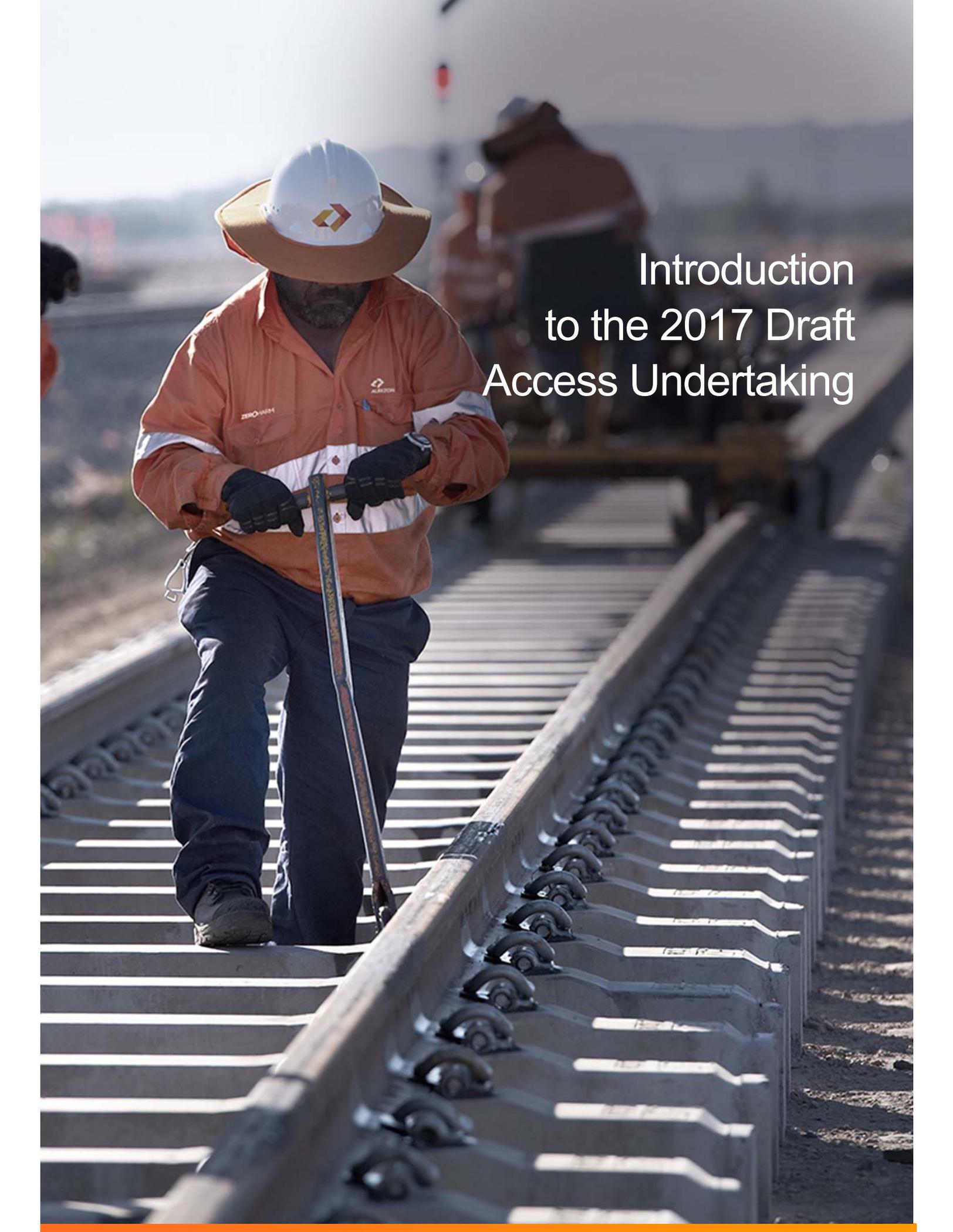
- > included into the RAB prior to FY2010, a straight line depreciation methodology applies; and
- > included into the RAB from FY2010 onwards, the rolling 20-year asset life depreciation methodology applies.

Chapter 13 – Reference Tariffs

The approach to modelling the reference tariffs remains unchanged from the method approved by the QCA in its UT4 Final Decision and remains consistent with the pricing principles in the QCA Act. The reference tariffs, on average across the CQCN increase 11% from \$4.81 per nt (FY2017) to \$5.36 per nt (FY2018). This increase is based on forecast tonnes of 226mt for FY2018.

Table of Contents

Executive Summary	2
Introduction to the 2017 Draft Access Undertaking	
1. Introduction	14
2. Legislative Framework	31
Policy	
3. Policy Positions	47
Maximum Allowable Revenue	
4. The UT5 Maximum Allowable Revenue Proposal	102
5. Inflation	114
6. Forecast Volumes	122
7. The Regulatory Asset Base	126
8. Capital Indicator	138
9. Maintenance Costs	143
10. Operating expenditure	193
11. Weighted Average Cost of Capital	245
12. Return of Capital (Depreciation)	303
13. Reference Tariffs Proposal	305
Glossary	349



Introduction to the 2017 Draft Access Undertaking

Introduction to the 2017 Draft Access Undertaking

Table of Contents

1.	Introduction	14
1.1	The context and drivers for UT5 and accompanying Revenue Proposal.....	14
1.2	The CQCN regulatory environment.....	15
1.3	The Central Queensland coal sector.....	16
1.4	Aurizon Network's improvements in performance and productivity	25
1.5	Customer Engagement.....	29
2.	Legislative Framework	31
2.1	Test for approval of an access undertaking	31
2.2	Relevance of QCA's recent UT4 decision.....	32
2.3	Amending an undertaking for appropriateness	32
2.4	Limits on QCA's powers	33
2.5	Section 138(2) Factors and the pricing principles	34
	Appendix C.1 Volume Initiatives.....	43
	Appendix C.2 Reliability Initiatives.....	44

List of Figures

Figure 1	Spot and Contract Price for Thermal and Metallurgical Coal: HCC (Peak Downs Quality), USD, FOB.....	17
Figure 2	Average Total Cash Cost for Australian miner	17
Figure 3	Coal Price related to CQCN Tonnes	18
Figure 4	Queensland coal exploration expenditure	19
Figure 5	Metallurgical Coal Transport Costs	21
Figure 6	Aurizon Network Safety Performance	25
Figure 7	Financial year tonnage history by System.....	26
Figure 8	Performance to plan by System	27
Figure 9	Cancellations	27
Figure 10	Below Rail Delay Impact	28
Figure 11	Below Rail Cancellation Impact.....	28

1. Introduction

Aurizon Network recognises the importance of the role of its Access Undertaking to all stakeholders in the CQC and the influence it will have on customers, investors and the region as a whole. Aurizon Network is committed to supporting an efficient process for the approval of UT5 and outcomes that achieve the objects of the *Queensland Competition Authority Act (Qld) 1997 (QCA Act)*, being:

“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.”

The Access Undertaking is a critical document for Aurizon Network as it guides interactions with customers, 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.

Aurizon Network’s 2017 Draft Access Undertaking (UT5) sets out the proposed terms upon which access to the CQC will be made available to users of the infrastructure. The accompanying proposal for the MAR and Reference Tariffs for the UT5 regulatory period continues to reflect the efficient costs of providing access to the safe and reliable network managed by Aurizon Network. The MAR also provides for a rate of return on Aurizon Network’s investment in its RAB that is commensurate with regulatory and commercial risks that prevail in the current market conditions. Aurizon Network believes that the assessment of risk must take into account the volatility in demand and price, the nature of Aurizon Network’s customer base and the external risk assessments applied by ratings agencies and corporate bond markets.

1.1 The context and drivers for UT5 and accompanying Revenue Proposal

Aurizon Network is seeking an Access Undertaking which provides a sound basis for operational stability and sustainable investment in the CQC to meet the ongoing requirements of customers. This approach will ultimately provide the appropriate incentive to continue to operate and invest in the rail infrastructure efficiently, and to do so in a way that promotes competition. This means that Aurizon Network will look to generate revenue, reflective of the efficient costs of providing access to the CQC, coupled with a return that is commensurate with its risk profile.

Aurizon Network has developed UT5 and the accompanying Revenue Proposal using the recently approved UT4 Access Undertaking its point of reference.

1.1.1 A narrower scope of amendments to the Undertaking

In the interest of regulatory certainty and consistent with stakeholder consultation, Aurizon Network has sought to pursue only incremental change within UT5 by focussing on a small number of specific issues. These are outlined in the Executive Summary of this submission. Examples of items that were substantively discussed in UT4 and which Aurizon Network has kept consistent with the QCA’s final approval include the:

- > application of the Capital Asset Pricing Model (CAPM) to develop the Weighted Average Cost of Capital (WACC);
- > majority of underlying methods to create the Operational and Maintenance expenditure building blocks (eg. Ballast undercutting scope/costs, corporate overheads and maintenance cost index);
- > return of Capital (Depreciation) methodology – rolling 20 year asset lives;
- > pricing principles; and
- > majority of the Access Undertaking other than a small number of policy changes.

The approach of seeking only incremental change within UT5 flows across both policy and revenue, which both use UT4 as the base for the development of UT5. This incremental approach, has produced a Draft Access Undertaking

(DAU) and Revenue Proposal which both meets the objects of the QCA Act and satisfies the statutory criteria set out in that Act for regulating access to the declared services. This approach also reflects the very recent and thorough consultation and approval process for UT4.

There are matters that Aurizon Network has chosen not to amend in UT5 as it would prefer to work with Stakeholders to address any identified concerns and develop the appropriate voluntary regulatory mechanism to address those concerns. This approach has been communicated with stakeholders.

Aurizon Network is committed to working with the QCA and stakeholders to tightly manage the number of issues under consideration.

By adopting only incremental change, Aurizon Network is seeking to transition to a collaborative, timely and efficient process to resolve UT5, thus providing increased regulatory certainty for all stakeholders.

To introduce the context for UT5, this Introduction chapter discusses key developments impacting the anticipated UT5 environment and how they have shaped the consideration of the process and substance of UT5. The three primary contextual themes are:

- > the current regulatory environment;
- > the Central Queensland coal sector; and
- > Aurizon Network's performance in managing and operating the CQCEN.

1.2 The CQCEN regulatory environment

The regulatory environment in which Aurizon Network operates must provide the conditions for the economically efficient operation of and investment in a safe and reliable CQCEN, for the current regulatory period and beyond.

Having a renewed UT5 regulatory framework in place in a timely manner will promote regulatory certainty, for the benefit of all parties. The lengthy processes required to conclude the last two Undertakings contributed to an environment of regulatory and pricing uncertainty. With the contents of this submission, Aurizon Network is actively seeking to reverse that trend.

This section briefly discusses aspects of the regulatory environment that have shaped Aurizon Network's UT5 submission. UT5 and the accompanying Revenue Proposal seeks to promote the objective of third party access in the QCA Act and to increase certainty regarding regulated access to the service.

1.2.1 The compulsory undertaking process

Aurizon Network has prepared UT5 in response to the IUN issued by the QCA on 11 May 2016.

By issuing this notice, the QCA has adopted a different approach to previous voluntary undertakings and has indicated that it believes that the compulsory process is necessary to provide outcome certainty for stakeholders.

Of some concern is that the compulsory process will directly impact on the manner in which Aurizon Network negotiates and agrees positions with its customers and industry and on how the results of those negotiations are incorporated in the Access Undertaking. In particular, it has the potential to limit stakeholder interaction, impact the consultation dynamic and ease of completing agreed amendments to the DAU. Aurizon Network is therefore encouraged by the QCA's Statement of Regulatory Intent that outlines that there will be opportunities for collaboration between stakeholders to facilitate agreement. Aurizon Network looks forward to working with the QCA and stakeholders to incorporate any agreed positions into the undertaking in line with this compulsory process.

1.2.2 Clarity on the legislative framework for the role of the QCA in regulating competition

This DAU and Revenue Proposal are largely based on the recently approved UT4 Access Undertaking. Naturally with each new undertaking a comparison is made with the previous undertaking for consideration of the changes to

rights or protections for access seekers and access holders. In this way, each undertaking is the product of multiple negotiations across many years, where provisions or policy positions are 'built on' those previously approved by the QCA. By the nature of the process to develop and approve an undertaking, the undertaking as it currently stands includes a number of positions that have been accepted and at times proposed by Aurizon Network as a result of negotiations with stakeholders rather than as a product of the statutory requirements of the QCA Act. In the interest of regulatory certainty, Aurizon Network has retained these voluntary positions in its Access Undertaking.

Chapter 2 of this submission provides a detailed discussion of the legislative framework governing the QCA's role as a competition regulator. In order to establish the strategic context for the approach to UT5, this chapter discusses two key elements of that legislative framework – the QCA's statutory powers in approving an undertaking and the application of the pricing principles in Part 5 of the QCA Act.

1.3 The Central Queensland coal sector

Aurizon Network plays an important role in the international coal supply chain, enabling the transportation to port of 58% of Australian coal export production in FY2016². The below rail infrastructure of the CQCN links over 40 coal mines to five export coal terminals, and enables the competitive market for above rail services consisting of three rail operators. With an export split in FY2016 of 76% metallurgical and 24% thermal, the CQCN is exposed to varying types of risks that come with the two different coal types.

The supply chains of the Central Queensland coal sector are increasingly sophisticated in their responses to changing market conditions, which includes pursuing opportunities to use alternative ports, the use of new technology and the increase in network density. The outlook for the whole of the coal sector supply chain, both over the course of the regulatory period and beyond, is therefore a fundamental consideration for how Aurizon Network manages access to the CQCN in line with the objects of the QCA Act.

1.3.1 Current market conditions

Since the approval of UT3, the global coal market has been subject to cyclical market conditions characterised by a sustained decline in coal price and significant volatility, as illustrated in Figure 1. The recent price surge is discussed later in this Chapter.

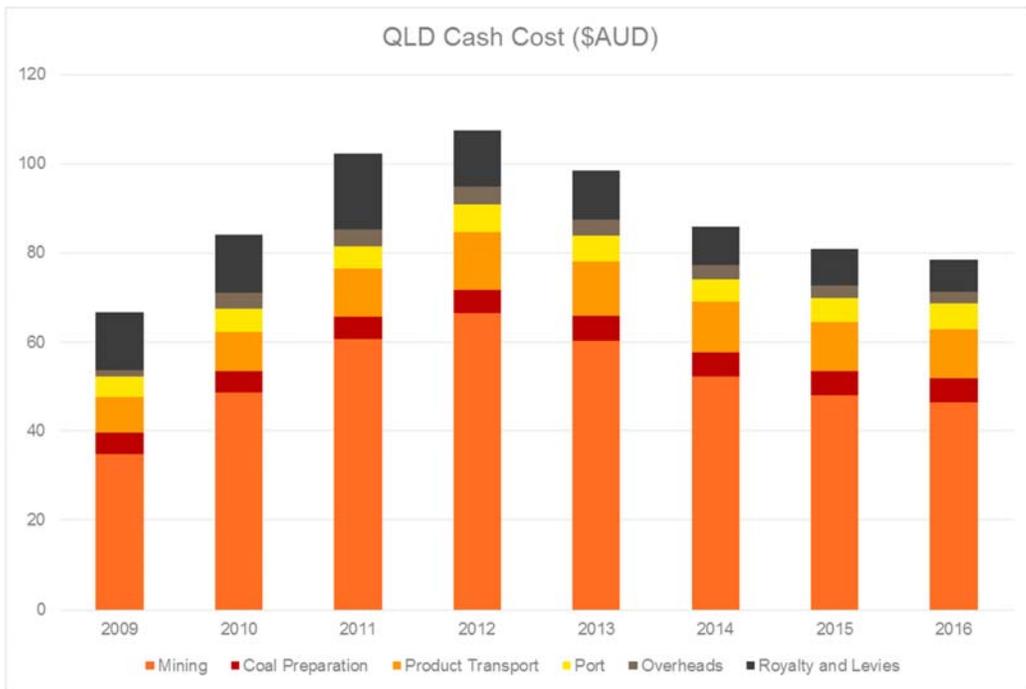
² ABS Exports (FY16: 388mt), Network Volumes (FY16: 226mt)

Figure 1 Spot and Contract Price for Thermal and Metallurgical Coal: HCC (Peak Downs Quality), USD, FOB



In order to remain cost competitive, producers sought to respond to price pressures by driving greater productivity and operating at volumes driven by unit cost reduction as illustrated in Figure 2 below.

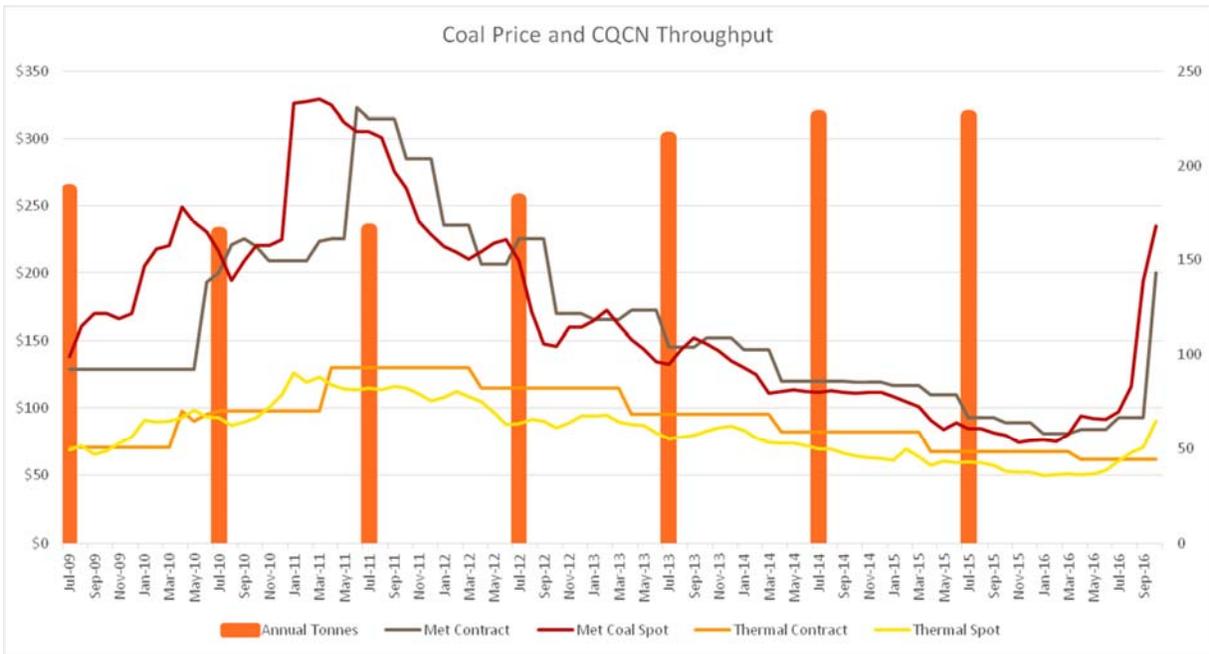
Figure 2 Average Total Cash Cost for Australian miner³



³ Wood Mackenzie, Historical Costs Australia, Coal Supply Data Tool (Q3 2016)

This response produced an increase in coal volumes to maintain low unit costs. This was evident within the CQCN in recent years, where record railings continued to be achieved against a decreasing coal price, illustrated in Figure 3.

Figure 3 Coal Price related to CQCN Tonnes



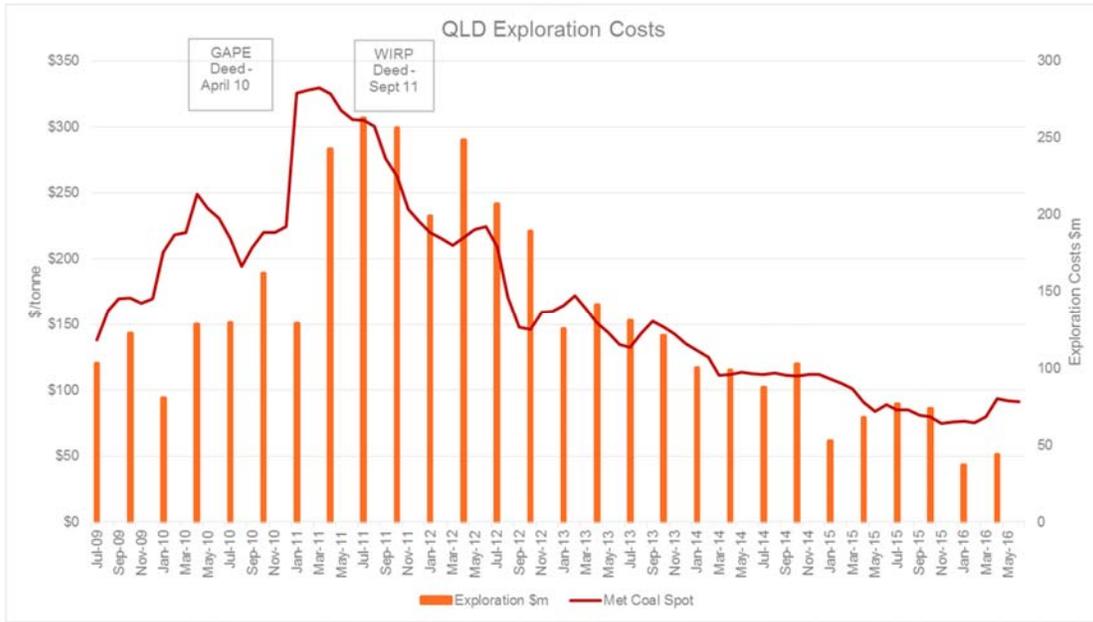
Despite the drive towards a unit cost reduction, there were periods since the approval of UT3, where around a quarter of Australian metallurgical coal production was understood to have operated at a negative cash margin. The resulting impact on, and decision by, producers saw:

- > a number of mines, including Blair Athol and Isaac Plains put into 'Care and Maintenance';
- > divestment and change in ownership of individual mining assets, including those owned at the time by Rio Tinto (Blair Athol and Clermont), Vale and Sumitomo (Isaac Plains) and Anglo (Callide and Foxleigh); and
- > producers unable to respond to the market conditions and thus entering voluntary administration, most notably Cockatoo Coal.

The speed with which the market has turned and actions taken by producers highlights the inherent risk to which Aurizon Network and its infrastructure is exposed. These are risk that other regulated entities do not face, due to the size and nature of their customer base.

The action taken by producers during the downward cycle, is in clear contrast with the previous upward cycle, which was typified by high prices, infrastructure constraints and resulting demand for additional capacity. Investment in the coal mining industry in Queensland has historically fluctuated with the prevailing metallurgical price and expectations of future price. Figure 4 illustrates that historical expenditure for coal exploration in Queensland since 2009 has tended to track with price. Due to the unknown sustainability of the coal price, the level of investment may lag or decisions to invest/explore may be delayed.

Figure 4 Queensland coal exploration expenditure⁴



The changing coal price aligned with the demands of Aurizon Network customers has historically resulted in capital intensive capacity expansions being requested directly from customers at times of high coal prices. Customers who have requested that these projects proceed, have ultimately entered into access or commercial agreements to support these large capital projects. These capacity expansions, which are ultimately reviewed and approved by the QCA to be included into the RAB, have led to a variation to the existing access tariffs that Access Holders are required to pay as Aurizon Network recovers its invested capital in accordance with the Access Undertaking and the QCA Act.

Although requested in periods of higher coal prices, these capacity investment decisions are for assets with an operational life of up to 50 years. This asset life will at times produce tension between the recovery of the cost of the asset and the prevailing market conditions, but the importance of encouraging investment in the long term infrastructure is a challenge that all parties need to carefully consider in their role in supporting a sustained economic contribution.

In this current volatile market we believe producers will try to balance cost savings with maximising throughput to take advantage of the increase in recent coal prices. They will expect that every link of the supply chain will be able to respond to the sudden change in market conditions to enable them to take advantage of the uplift in coal price and deliver the maximum amount of their product to its destination. The overall ability of the supply chain to meet the immediate performance demands from customers and adhere to the daily operational requirements has a direct impact on productivity and the competitiveness of the industry within the global market. The demands from customers are not just limited to daily requests, but an overall need to provide additional capacity without deploying additional capital. This can only be provided through a continued focus on operational improvements.

In this volatile market, demand uncertainty is an emerging trend for Aurizon Network’s customers. This is seen through a direct increase in the number of requests for shorter term access agreements, rather than renewing for the typical 10 year period. Some customers have chosen to extend below rail access rights on a short term basis through the transfer of access rights rather than enter new contracts. Other customers have extended existing

⁴ ABS Mineral and Petroleum Exploration

contracts for shorter than standard terms so as to not exceed contracted terms with other links in the supply chain. Other parts of the CQCN supply chain are seeing similar circumstances, with Dalrymple Bay Coal Terminal (DBCT) experiencing shorter contract profiles with a significant reduction forecast from 78.7mtpa in FY2018 to 24mtpa in FY2020⁵.

In September 2016 the global coal market experienced a price rally. In November 2016, the metallurgical coal spot price had reached US\$311.50 per tonne, increasing 317% from a low in November 2015. During the same period, the thermal coal spot price reached a peak of US\$114.80 in November 2016, increasing 130% from a low in January 2016. Recent spot prices have flowed through to contract prices, with the most recent quarterly renegotiations resulting in metallurgical coal contract prices of greater than US\$200 per tonne and thermal coal contract prices of US\$61.60.

The recent price surge has been driven by a number of macroeconomic factors however the primary driver has been a reduction in China's domestic supply, due to the implementation of the 276 day working policy (from the previous limit of 330 days). Recently, the Chinese government has reviewed this policy and made announcements aiming to relax the restrictions on domestic production. These further announcements have resulted in some change to coal prices whilst Chinese producers still consider these policy changes. This results in continued volatility and uncertainty.

In addition to the domestic mining policy restrictions, a colder winter forecast has resulted in early restocking. China steel mills and thermal power plants have turned to the seaborne market to meet these coal shortages, thus putting upward pressure on the spot price. The speed and scale of the metallurgical coal price escalation in 2016 has outpaced other rallies seen over the past ten years, including the CQCN flood events in 2008 and 2011 and China's entry into the seaborne market in 2009

1.3.2 The future market outlook

Aurizon Network expects there will be an on-going long term demand for the output of the Central Queensland coal market due to the quality of coal reserves, cost competitiveness, proximity to end markets and access to reliable world class infrastructure. However, over the short-term the sustainability of the recent price rally is uncertain, with a consensus view that a rebalance is expected with volatility within the price, to return. Longer term demand risk will prevail being influenced by exposure to political, economic and environmental factors adopted by Australia and its Asian trade partners, China, India, Japan, South Korea and Taiwan.

Demand conditions for metallurgical coal

Aurizon Network's predominant exposure is to the seaborne metallurgical coal market, with approximately 76% of total coal hauled across the CQCN in FY2016.

Metallurgical coal has no viable alternative in the 'Basic Oxygen Furnace' (BOF) method of steelmaking, which represents 70% of global steel production. Steel production is increasingly competitive and is underpinned by cost and quality.

Resource analysts have a long-term forecast view on the sustainability of coal that indicates that metallurgical coal will be required for the majority of steel production for the longer term. These are long term views and cannot accurately forecast any political, economic and environmental policy changes that individual countries may make.

Many countries turn to the seaborne market due to lack of domestic metallurgical coal deposits for their steel production. However, this in itself is volatile and can see rapid changes in the levels of demand within a short period of time.

⁵ DBCT2015 DAU Supplementary Submission, 11 March 2016, Pg 6

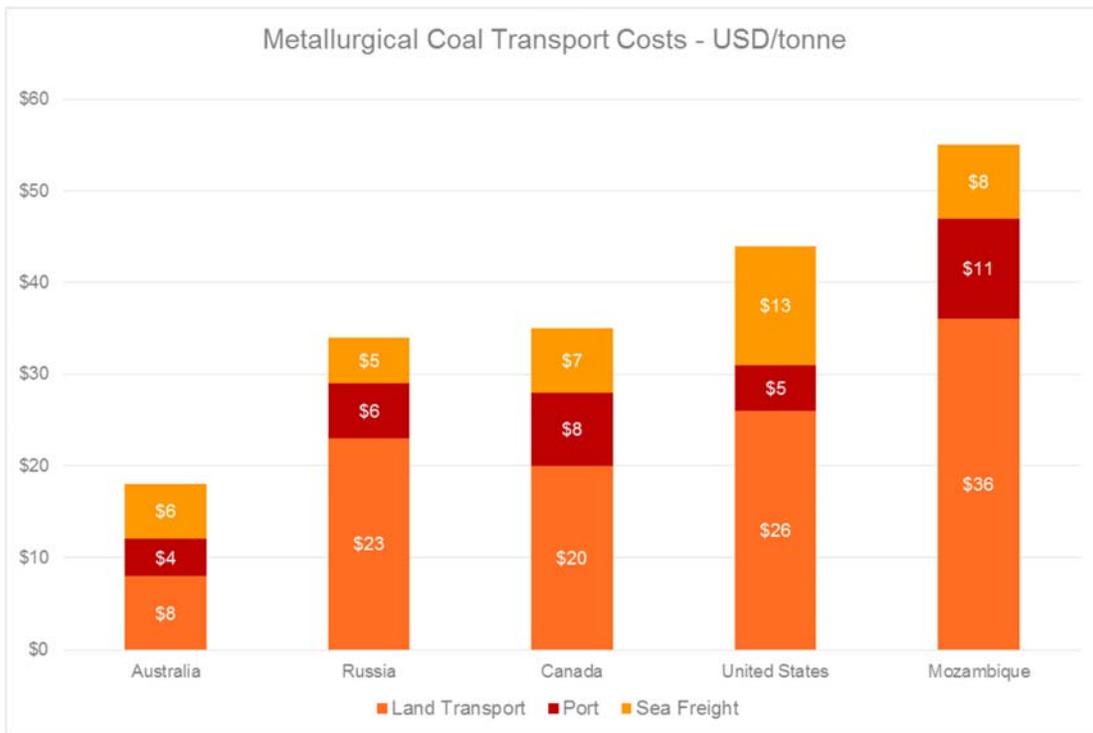
China, the world's largest metallurgical coal producer, requires seaborne inputs to bridge its gap in demand. The implementation of the 276 day working policy has resulted in a change in seaborne demand. The sustainability of this demand has the potential to subside with further policy change that would loosen the production restrictions on China's domestic coal mining.

Most other steel producing countries, including Japan and South Korea, will continue to rely on imports to meet their coal needs due to lack of domestic reserves. A high level of steel consumption is expected to be driven by more consumer intensive manufacturing and export, however the predictability of this demand should be constantly reviewed due to the volatility of the marketplace.

The combination of low cost and reliable export infrastructure and capacity to service increased demand will continue to underpin Australia's position in the global seaborne metallurgical coal market. When compared to other significant metallurgical coal exporting nations, Australia has the lowest average transportation and port costs. This is underpinned by Australia's established heavy haul coal networks interconnected with a small number of large port terminals, in close proximity to the largest importers of metallurgical coal, India and China.

Aurizon Network must be well positioned to deliver for its customers volatile demand needs for metallurgical coal. Aurizon Network's reliability and efficient cost base must continue to allow the producers within the central Queensland coal region to remain competitive on a global scale.

Figure 5 Metallurgical Coal Transport Costs⁶



Demand conditions for thermal coal

Thermal coal accounted for approximately 24% of coal hauled across the CQCN in FY2016. Key thermal coal export destinations of Japan, South Korea, India and China all have plans to continue using coal for power generation through the adoption of more efficient power generation technologies. While a greater share of investment will be

⁶ Wood Mackenzie Coal Costs Benchmarking May 2016. Freight: Wood Mackenzie Global Coal Markets as at 2016, arrival India. Australia: Hay Point, United States: Hampton Roads, Canada: West Coast

directed towards renewable energy capacity in these countries, coal-fired power generation will still have a place in the energy mix for the longer term.

For thermal coal, while China is an important driver of the demand equation, the key issue is climate change. As highlighted by Macquarie, there have been changes to the traditional institutional support for coal on a global basis as more weight is placed on Environmental, Social and Governance concerns and an increasing focus on Responsible Investments.⁷ This is particularly the case for thermal coal, which has been described by some as already being in a 'structural decline' given the pressures by the community and governments to move away from thermal coal in electricity generation towards the use of renewables.⁸ Macquarie observes:

*'There is a weak structural outlook for thermal coal driven by a global transition away from coal and towards cleaner energy sources.'*⁹

Whilst climate change policy will affect the demand for seaborne thermal coal, it will become increasingly important that the highest quality coal is used to reduce greenhouse gas emissions. On average, Australia's thermal coal exports have high energy content and relatively low ash content when compared to most other major sources of thermal coal. The quality of Aurizon Network customers' coal means that there is likely to be a demand for coal produced in the Central Queensland coal fields. That demand is however subject to long term structural issues surrounding the future demand of thermal coal.

1.3.3 Responding to the outlook

Aurizon Network's UT5 and Revenue Proposal has been developed to enable operational activities and maintenance at levels that can support the current demand for reliable railings of increasing volumes of coal, balanced against servicing additional capacity requirements without deploying additional capital expenditure beyond that which is required to sustain the network. The consideration of the MAR, especially the cost of capital, must necessarily consider the impact of a volatile outlook on the appropriate level of return.

Aurizon Network's Revenue Proposal for this submission provides an increase in the overall MAR. This Revenue Proposal is being submitted during a period of volatility which has seen an extended downturn followed by a rapid increase in coal prices as a result of changing macro-economic factors. Aurizon Network reaffirms that it owns and manages an asset that will have a life spanning multiple coal price cycles and has a regulatory framework that prevents any adjustments in access tariffs based upon coal market conditions. This Revenue Proposal balances those items by providing a price for access to the declared service that reflects the efficient costs of providing such access and a return that reflects its commercial and regulatory risks.

Managing and operating the network to maximise capacity, reliability & efficiency

In previous growth market cycles for coal, Aurizon Network customers requested additional physical capacity be constructed within the CQCN. Examples of this include both the Wiggins Island Rail Project and the Goonyella to Abbot Point Extension projects. The timing of these projects is outlined within Figure 4 above. In addition to responding to these expansion requests through the physical delivery of those projects, Aurizon Network has:

- > worked with customers to find alternative capacity options, instead of capital intensive infrastructure projects (eg. longer and heavier trains);
- > delivered innovative information technology solutions to manage the increasingly complex nature of the coal network to optimise train scheduling (eg. Advance Planning and Execution software);
- > operated the network to achieve greater reliability and throughput (eg. efficient maintenance regimes to maximise system capacity and throughput);

⁷ Macquarie (2016). Coking Coal Opportunities.

⁸ Conroy, J. (2015). "Citi says Thermal Coal in Structural Decline", The Australian, May 29. <http://www.theaustralian.com.au/business/business-spectator/citi-says-thermal-coal-in-structural-decline/news-story/7618262352efce7d5a6bf827e5228a61> {Accessed 27 October 2016}

⁹ Macquarie (2016). p. 7.

- > voluntarily participated in supply chain forums to enhance the overall competitiveness of the relevant supply chain (eg. bottleneck and sensitivity analysis); and
- > developed Access Undertaking mechanisms to help improve capacity and flexibility (eg. short term transfers mechanism).

This response from Aurizon Network, has provided stakeholders within the CQCN supply chain with reliable performance and therefore greater certainty. This level of certainty cannot be viewed lightly, as not only does it allow stakeholders to plan their daily operations in a more efficient manner (i.e. stock pile management, ship ordering, mine maintenance) this certainty will also allow those stakeholders to make efficient capital intensive investment decisions (eg. rollingstock, outloading facilities), with confidence in the ongoing reliability delivered by Aurizon Network.

In the current operating cycle the demand is for reliable but flexible transportation of increasing coal tonnes. The focus for Aurizon Network's asset renewals, maintenance and operations processes during the UT5 regulatory period is therefore to provide for long-term reliability and ongoing availability in a low capital funding environment. For example, the targeting of the planning and execution of maintenance to reduce below rail delays and cancellations at the most efficient cost, whilst delivering the planned maintenance activity with minimal impact on supply chain throughput.

In order to provide constant and reliable access at an efficient level of cost, Aurizon Network is also focused on optimising the life of assets, keeping a tension between investment in maintenance and capital. This tension is created by allowing the asset to wear in a manner which maximises the life of the network infrastructure for the lowest whole of life cost. Aurizon Network cannot responsibly permit the network to be run down in response to short-term market conditions. Any short term response to 'dial down' the capacity or reliability of the network through a decreased maintenance task, will result in both an increased level of inefficient 'fix-on-fail' maintenance activities and an unnecessarily long 'dial up' process to recover the network to a point where it can service the previous, or even an increased, level of customer requirements. There is a clear difference in the levels of efficiencies between planned and unplanned maintenance, which is best demonstrated using the below example:

In March 2015, routine inspections identified a rail defect on the Goonyella system Up-Road. An unplanned possession was required to replace the 108 metre length of rail. The Up-Road was subsequently closed to all traffic to enable re-railing and all traffic was re-directed to the Down-Road with a 30 kilometre per hour speed restriction. The unplanned nature of this intervention led to:

- > below rail delays of 24 hours and 59 minutes; and
- > cost of approximately \$1.4 million to rectify; a unit rate of \$13,194 per metre.

By comparison, through a planned approach to maintenance Aurizon Network's current unit rate proposed within UT5 is \$420 per metre for its rail replacement activities. The planned and coordinated delivery of this activity will also aim to minimise track possession times to restore the network to full operability.

When the requirement to 'dial-up' maintenance is determined, there is a resulting lag in the recovery of any service level, with a proportionate increase in the costs to recover the asset. This process is far from being efficient and will ultimately impact the reliability of the CQCN. Keeping a focus on minimising the whole-of-life costs has therefore shaped Aurizon Network's approach to the level of asset renewals and maintenance as incorporated in the Revenue Proposal for UT5.

During the UT4 term, Aurizon Network worked with Access Holders to identify the cost and operational impacts in the event that their mine was put into 'care and maintenance'. When putting a mine in care and maintenance, Aurizon Network must consider:

- > Operational impacts - its planned maintenance and capital programs for the infrastructure that that mine may use; and

> Economic Impacts - how to recover the cost of any investment into the infrastructure that that mine may be using.

Responding to these customer requests, amongst other things, ultimately re-inforced that the rail infrastructure has a substantially different life to that of a mine asset and that the regulatory regime needed to be able to respond to these situations.

A shift towards shorter term and/or more flexible contracts is an effective way for producers to introduce risk mitigation into their commercial arrangements. It has the effect, however, of shifting risk onto Aurizon Network insofar as the maturity profile of contracts are misaligned with the maturity profile of the asset Aurizon Network is responsible and accountable for providing (and generating a return from). With the expectation that the average maturity term of its contracts is reducing, Aurizon Network is working with industry to understand requirements and develop solutions that can meet these competing needs. This will be addressed in the future pricing review for which all stakeholders have indicated support.

Aurizon Network is also working with customers to explore ways to create capacity improvements that do not involve large levels of capital funding. Examples of this includes the ongoing focus on the accuracy of the System Operating Parameters to identify those low cost operational improvements that may free-up latent capacity. It is Aurizon Network's view that the proposed Relinquishment Provisions which are included as a voluntary position in UT5 with support from stakeholders (details of which are set out in our policy submission) will also assist with this objective. This solution, along with others, can only be developed through an ongoing commitment with operators and producers to find cost effective productivity improvements in the supply chain.

Aurizon Network expects that any demand for additional capacity (beyond current capacity) provided by the CQCN would occur only in association with stronger coal export prices. As the short to medium outlook is for a sustained level of demand, but with uncertain prices, no new major capital growth is anticipated during the term of UT5. For the period of UT5 Aurizon Network anticipates that the majority of capital expenditure will be for the purposes of renewing existing assets. This position is reflected in the composition of the Capital Indicator.

A return on investment that reflects the risk of coal demand uncertainty

The consequence of coal demand risk must not be interpreted as only the risk of a substantial decline in the central Queensland coal sector. Under revenue cap regulation, any reduction in demand can tip access pricing into uneconomical and unsustainable levels. Similar outcomes would occur in other parts of the supply chain, including above-rail and port services, which in combination would trigger higher transportation charges and accelerate the rate of demand deterioration. This view was shared by rating agency Moody's:

"However, other participants in the coal logistics infrastructure chain, such as the dedicated coal terminals, also rely on take-or-pay contracts and will likely similarly seek to increase their tariffs to remaining miners in the event of counterparty failure. Such an event will result in a generalized level of increased transport costs for remaining mines which they may not be able to afford, and therefore elevates the uncertainty around Aurizon Network's ability to fully recapture lost revenue."¹⁰

Coal demand uncertainty coupled with a concentrated group of customers, who have received credit downgrades from ratings agencies is a material regulatory and commercial risk borne by Aurizon Network. The QCA position over UT4 was to address this matter through the application of deferrals. However, all this does is place both RAB fragmentation and the demand risk onto Aurizon Network for no additional compensation. As such, both the policy outcomes and revenue positions within the Access Undertaking must address these risks.

The UT4 Final Decision to defer a significant portion of the capital costs of the WIRP has magnified Aurizon Network's coal risk exposure. The decision to not allow full socialisation of capital costs was ostensibly because of a change in coal market conditions that meant some mines chose to delay the commencement of their operations or prolong the ramp-up after Aurizon Network had constructed the infrastructure. However, deferring the collection of

¹⁰ 2016, Moody's, Moody's reviews Aurizon Holdings and Aurizon Network for possible downgrade, available at www.moody.com.

Aurizon Network’s return on capital and depreciated capital costs until a future period (for which there is greater market uncertainty for coal, including the number and profitability of customers) means Aurizon Network holds long term coal demand risk. This risk is magnified when one reviews the changing customer profile within the CQCN, with an average credit rating profile downgrade of 2.6 notches over the last three years and with smaller and substantially more junior producers purchasing mines from those larger and more diversified mining companies looking to divest.

The previous decision to benchmark Aurizon Network’s costs of equity against comparator firms with no similar exposure results in this risk not being reflected in the rate of return. In light of this, Aurizon Network has included the majority of WIRP capital expenditure that was previously deferred into the RAB for pricing purposes, resulting in an uplift in the MAR. This and other relevant considerations are discussed further in the WACC section.

1.4 Aurizon Network’s improvements in performance and productivity

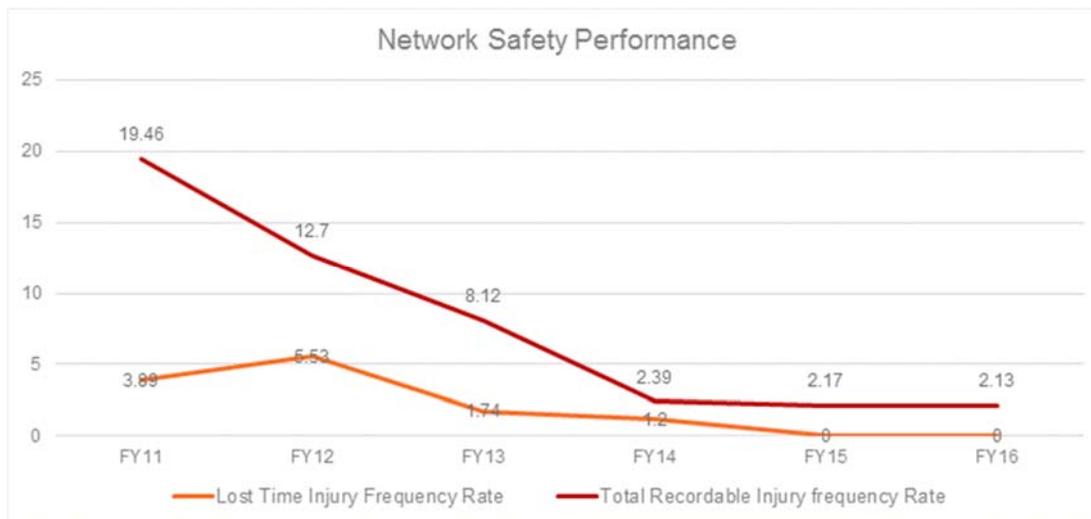
Aurizon Network’s performance over the UT4 regulatory period to date has been one of continuous performance improvement and productivity gains. The performance achievements underscore Aurizon Network’s commitment to customer service, to support customers in accessing their end markets, and to help them react to changing conditions.

The strong focus on productivity and efficiency over recent years has yielded record volumes, major reductions in delays and derailments, low levels of network caused cancellations and, importantly, a significant increase in above rail competition. The following section highlights Aurizon Network recent performance, particularly with regard to the key metrics of safety, reliability, and availability.

1.4.1 Safety Performance

Safety is a core value for both Aurizon Network and stakeholders across the entire supply chain. The Lost Time Injury Frequency Rate (LTIFR) has continued to decline in recent years to zero in FY2016. The Total Recordable Injury Frequency Rate (TRIFR), has declined significantly overall in recent years.

Figure 6 Aurizon Network Safety Performance



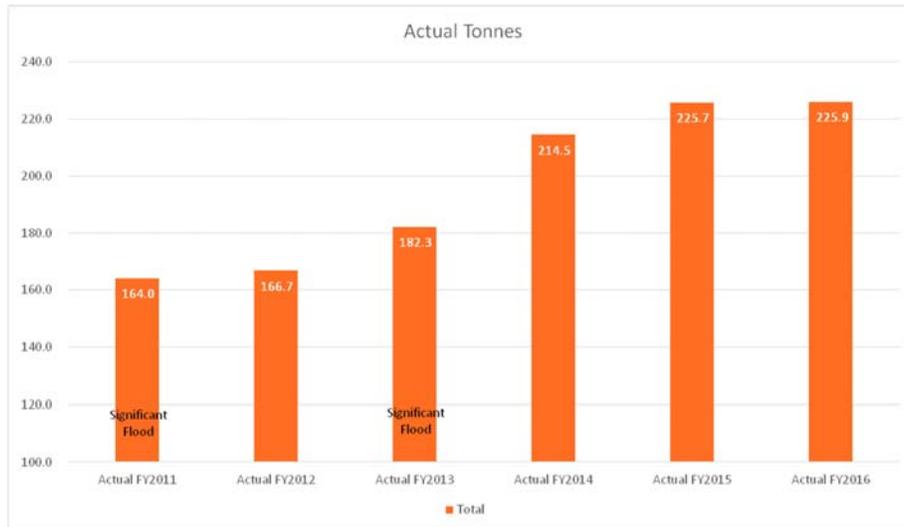
Aurizon Network will continue to prioritise safety throughout the UT5 regulatory period and this will be reflected in the planning and delivery of activities to maintain and operate the CQCN asset to the requirements of the Safety Regulator and in accordance with Aurizon Network’s Safety Management System.

1.4.2 Volume

Aurizon Network has delivered volume throughput across the four systems of the CQCN in FY2016, moving in excess of 220 million tonnes of coal for the second consecutive year. This result reflects the combined efforts of our customers, supply chain partners, and employees. Aurizon Network supported production volumes through system availability of 86%, an increase on the 84% achieved in FY2015.

It is important to note, that although there have been increased raiing, this is still less than what customers have requested expansions for which has resulted in a system capacity of 308 million tonnes.

Figure 7 Financial year tonnage history by System



Aurizon Network has outlined in appendix C1 and C2 to this introduction, initiatives that it has introduced that will ultimately enable greater volumes to be transported across the network. These initiatives are mainly focussed on operational activities that will reduce Aurizon Network’s impact on coal carrying trains. These improvements will ultimately lead to greater throughput and increased certainty within the CQCN

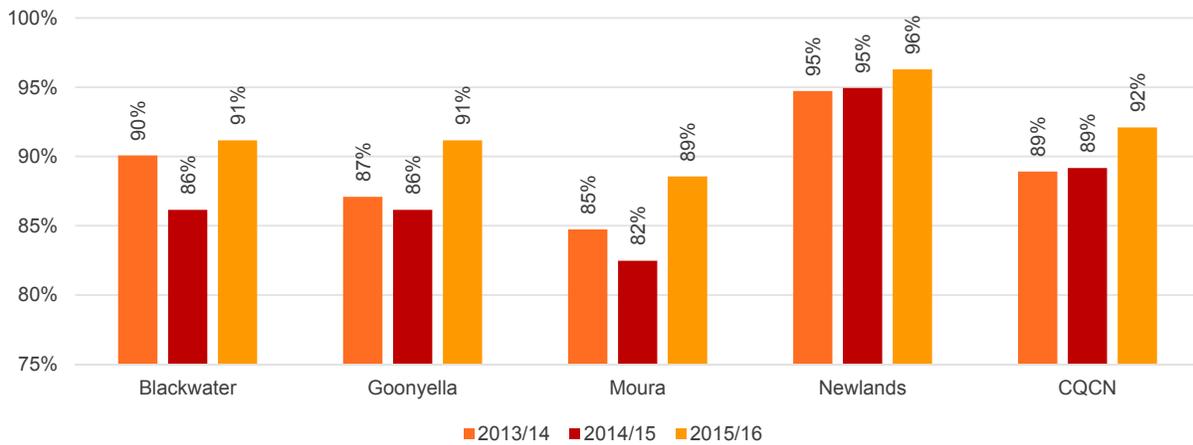
1.4.3 Reliability

Reliability across the supply chains and within Aurizon Network Operations is measured through ‘Performance to Plan’ and ‘Below Rail Impact’. Across the UT4 regulatory period Aurizon Network has been investing in, and realising benefits from, initiatives to strengthen the reliability in our existing assets and continuously improve processes.

Performance to Plan

Aurizon Network improved its reliability in delivery to plan, improving from 89.2% to 92.1%, a 3.3% improvement on FY2015. This performance increase was a result of a reduction in cancellations from the weekly schedule, as well as consistent performance in rescheduling additional services to recover to plan. The advancements in reliability were impacted positively by recovery to plan, and achieved through effective co-ordination with Aurizon Network customers. Recovery to plan performance was particularly important in responding to the extreme weather events that are an annual challenge for operations in central Queensland. Improved recovery times following extreme weather events, along with increased coordination with mine, port and rail operators across the CQCN, significantly reduced the impact on production in FY2016.

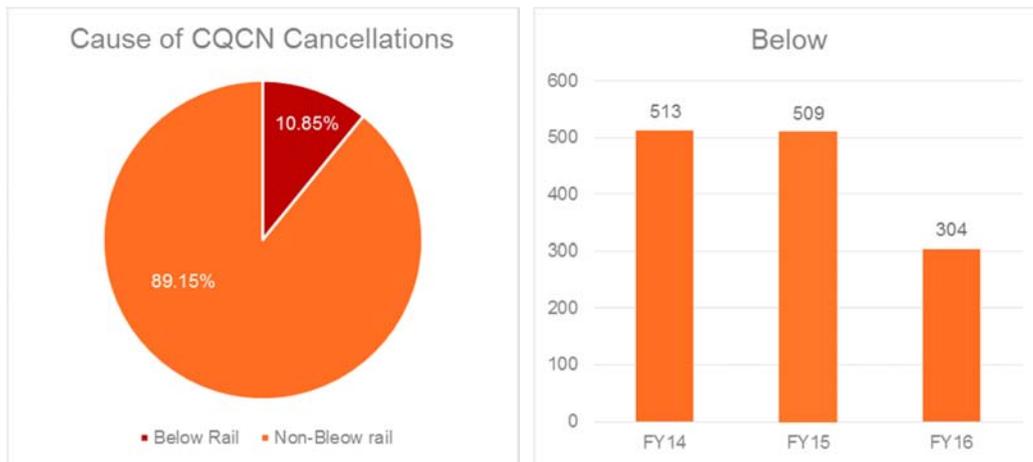
Figure 8 Performance to plan by System



Cancellations

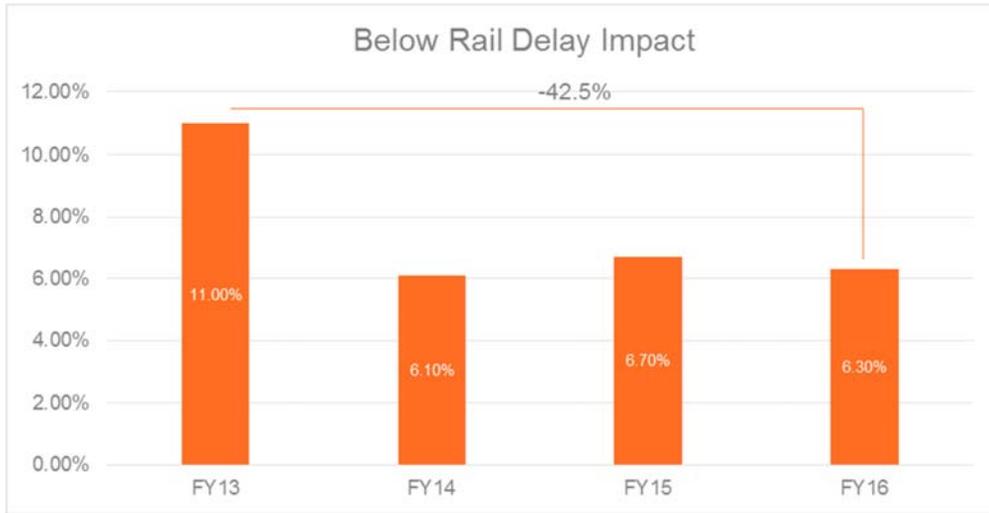
Below rail cancellations attributable to Aurizon Network have also been steadily falling. In FY2016, from a total of 27,749 agreed trains, 3,199 services were cancelled across CQCN. Of this total of number of cancelled trains, only 304 were attributable to Aurizon Network, which is a reduction from 513 in FY2015.

Figure 9 Cancellations



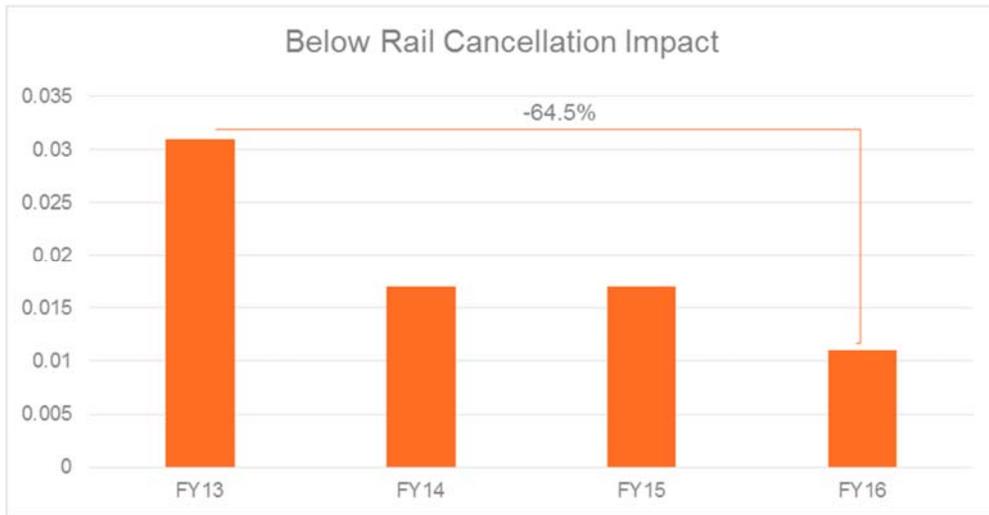
This continuous improvement was also seen in below rail delays showing an improvement across the CQCN in FY2016, with 6.3% of delays attribute to Aurizon Network, compared to 6.7% in FY2015.

Figure 10 Below Rail Delay Impact



The largest improvement in FY2016 came through a decrease in below rail cancellations from FY2015. In FY2016, 1.1% of weekly agreed services were cancelled due to below rail causes, compared to FY2015 when 1.7% of agreed services were cancelled, equating to a 35.3% improvement.

Figure 11 Below Rail Cancellation Impact



1.4.4 Planning for continued performance and productivity improvement throughout UT5

Aurizon Network continues to balance availability, capacity and its maintenance and renewals program to achieve the levels of performance and productivity that are demanded by the supply chain, at an efficient cost over the life of the asset. The efficient scope of the maintenance and asset renewals programs, and the costs associated with this (including operating costs) are directly linked to these performance and productivity goals.

Appendices 1 and 2 to this section provide an illustrative overview of the volume and reliability initiatives Aurizon Network is investing in, and the benefits they generate.

1.5 Customer Engagement

As part of the development of UT5, Aurizon Network has proactively engaged with its customers and stakeholders on our policy positions and conducted a Maintenance Symposium. This section provides an overview of the customer engagement process and summarises the outcomes.

Aurizon Network strongly believes that ongoing customer engagement is important to enable UT5 to be resolved in an efficient and timely manner. Aurizon Network is firmly of the belief that customer engagement should continue post UT5 submission on 30 November 2016.

1.5.1 Overview of Customer Engagement Process

Aurizon Network has sought to engage with customers and stakeholders on UT5 by being committed to open, transparent and timely communication throughout the process. Aurizon Network also committed to actively consult with customers to discuss their regulatory priorities and concerns and have used these insights to help inform the development of UT5 positions.

This was achieved via a series of one-to-one engagements, workshops and written updates to end customers, Rail Operators and stakeholders in the time leading up to submission of UT5.

Nevertheless, the nature of the development of the undertaking, with its forced timeframes, resulted in a compressed consultation process with the engagement and consultation limited to policy and maintenance matters.

The table at the conclusion of this section provides the timeline of engagement activity undertaken to date and information provided to customers and stakeholders.

1.5.2 Outcomes of Customer Engagement Process

Aurizon Network sought to provide up to date and timely information to customers, initially regarding the options Aurizon Network had in response to the QCA's Initial Undertaking Notice and then how Aurizon Network would seek to respond, including what specific policy items would be addressed as part of UT5.

Aurizon Network also took the opportunity to seek customer feedback on their priorities for the broader regulatory program and how they would like to be consulted. The proposed UT5 Maintenance Allowance and policy submission was also presented to customers.

Aurizon Network therefore considers customers are better informed in regards to the UT5 process and positions and have been given an opportunity to clarify and provide feedback to us on proposed positions prior to the DAU being submitted.

As a result of the UT5 customer engagement process, Aurizon Network has included the Relinquishment Provisions for Productivity Improvements as an additional policy item in UT5. Aurizon Network intends to continue conversations with its customers both through the formal QCA submission process and through continued engagement to understand specific concerns on policy items, and where appropriate, seek to address these concerns in the final UT5.

Customers made Aurizon Network aware of the priority of UT4 activities and broader regulatory program activities, such as a Pricing Principles Review. This feedback has also been taken into account by Aurizon Network in the planning and resourcing of these activities including ensuring continued engagement with customers on these matters.

During the consultation process, Aurizon Network shared undertaking drafting with key stakeholders to establish if agreed positions could be reached in the compressed timeframe that was available. We have adjusted our drafting of the undertaking in respect of certain matters to reflect feedback from the QRC, however agreement on the relevant clauses has not yet been confirmed at this stage. In addition Aurizon Network will continue to engage with stakeholders post submission to establish if agreement can be reached.

1.5.3 Timeline of Engagement Activity

Date	Engagement Activity	Who
27 June 2016 – 4 July 2016	1:1 Briefings – AN UT5 Approach and Policy Items	Operators, End Customers & Stakeholders (QRC, Balance Resources)
26 July 2016	Workshop – Network Regulatory Program	Operators, End Customers & Stakeholders (QRC, Balance Resources, QCA)
1 August 2016	Written Update - Network Regulatory Program Summary & Actions	Operators, End Customers & Stakeholders (QRC, Balance Resources, QCA)
15 August 2016	Presentation – Maintenance Symposium	Operators, End Customers & Stakeholders (QRC, Balance Resources, QCA)
27 September 2016	Written Update - Detailed Policy Update	Operators, End Customers & Stakeholders (QRC, Balance Resources, QCA)
September and October	1:1 consultation with the QRC on specific policy items and drafting 1:1 consultation with Operators on specific policy items	QRC & Operators
27 November – 30 November	Phone updates advising of lodgement updates and post lodgement engagement	End Customers and Operators
December	1:1 briefings and workshops on specific matters	QRC, End Customers, Operators, QCA

2. Legislative Framework

2.1 Test for approval of an access undertaking

Under section 138(2), the QCA may approve a Draft Access Undertaking (**DAU**) only if the QCA considers it “appropriate to do so having regard to each” of the factors listed in sections 138(2)(a) to (h) (**Section 138(2) Factors**).

The Section 138(2) Factors condition the consideration of whether it is “appropriate” to approve a DAU. That is, in forming a view as to whether it is appropriate to approve a DAU, regard must be had to each of the Section 138(2) Factors.

While the language of section 138(2) is ostensibly permissive (“the authority may...”), the correct construction of this section is that if the DAU is appropriate having regard to the Section 138(2) Factors, the QCA does not have a residual discretion not to approve the DAU. Similar to the declaration criteria under Part IIIA of the *Competition and Consumer Act 2010* (Cth), the factors specified in section 138(2) are appropriately understood as conferring a power on the QCA (to approve a DAU) which must be exercised by approving a DAU where the QCA considers it appropriate having regard to the Section 138(2) Factors. Where a DAU is appropriate having regard to the Section 138(2) Factors, there is no other matter or matters that could be devised that would guide the exercise of any residual discretion.¹¹

In this connection, the QCA does not have a power to refuse to approve a DAU that it considers appropriate having regard to the Section 138(2) Factors because it may prefer a different DAU that it considers is also appropriate having regard to the Section 138(2) Factors. This is because the QCA Act does not provide the QCA with a discretion to withhold approval to a DAU that is appropriate on the basis that the QCA considers that there is a putative DAU that the QCA considers is “more appropriate”.¹²

The above follows because the Section 138(2) Factors apply in the same manner to the approval of a DAU that has been prepared by the responsible access provider as they do to the approval of a DAU that has been prepared by the QCA. As the relevant decision making test is whether the DAU is appropriate, as opposed to being the DAU that the QCA considers is most appropriate, the QCA is not empowered to withhold approval to an appropriate DAU on the basis that the QCA prefers some other DAU which it also considers appropriate. Put another way, the question is whether the DAU is “appropriate” – not what access undertaking would be appropriate, or most appropriate – having regard to each of the Section 138(2) Factors.¹³

¹¹ In *The Pilbara Infrastructure Pty Ltd v Australian Competition Tribunal* (2012) 246 CLR 379, the High Court found that although section 44H(4) provided that the relevant Minister “cannot declare a service unless he is she is satisfied of all of the following matters”, the specified matters “should be understood as stating an exhaustive list of the considerations that may bear upon the decision to declare a service” (423, [116], French CJ, Gummow, Hayne, Crennan, Kiefel and Bell JJ). The Court continued (423–424, [116]):

“Read as a whole, s 44H should be understood as conferring a power on the Minister which must be exercised by declaring the service if the Minister is satisfied of all of the six criteria specified in s 44H(4). If the Minister is satisfied of all six criteria, including in particular, that access (or increased access) to the service would not be contrary to the public interest, no satisfactory criterion or criteria could be devised which would guide the exercise of some residual discretion... That is, if the Minister, having considered the matter, is satisfied of all of the six criteria, the Minister must declare the relevant service.”

¹² This may be contrasted with the position under the National Electricity and Gas Laws, for example, which provide that where the Australian Energy Regulator (**AER**) is confronted with two or more possible decisions that will or are likely to contribute to the achievement of the national electricity (gas) objective, the AER must make the decision that the AER is satisfied will or is likely to contribute to the achievement of the national electricity (gas) objective to the greatest degree (National Electricity Law, section 16(1)(d); National Gas Law, section 28(1)(b)(iii)(A)).

¹³ This position is consistent with that articulated by the Australian Competition Tribunal and the Federal Court in a similar statutory context in *Re GasNet Australia (Operations) Pty Ltd* [2003] ACompT 6; [2004] ATPR 41-978 and *ACCC v Australian Competition Tribunal* [2006] 152 FCR 33; 232 ALR 153; [2006] ATPR 42-124

2.2 Relevance of QCA's recent UT4 decision

In preparing its UT5 DAU, Aurizon Network has sought, where possible, to limit departures from methodologies approved by the QCA in its approval of UT4 revenue, particularly in its calculation of efficient maintenance and operating costs. Similarly, Aurizon Network has proposed only a limited number of changes to the policy positions approved by the QCA in UT4. Aurizon Network has done this, not because it necessarily agrees with the relevant aspect of the approach that the QCA has taken in UT4, but in the interests of minimising areas of potential difference between Aurizon Network and the QCA with a view to facilitating an efficient approval process for the UT5 DAU.

While Aurizon Network acknowledges the QCA must assess the UT5 DAU as a new undertaking and apply its statutory considerations afresh, Aurizon Network submits the QCA should give significant weight to the use of a methodology and undertaking text largely identical to the one approved in a very recent undertaking process, particularly in circumstances where:

- > except where specifically addressed in this submission, there has been no material change to the facts and circumstances relevant to the QCA's consideration of the Section 138(2) Factors; and
- > there is no evidence, expert opinion or factual or legal analysis submitted by Aurizon Network or stakeholders, to suggest that the QCA's UT4 approved position was in error.

Accordingly, while the QCA must consider UT5 on its merits, we submit that in the absence of evidence to the contrary, the QCA's consideration need not extend to a reconsideration of the underlying methodologies or of aspects of the undertaking which are identical to UT4.

Where Aurizon Network's UT5 proposal differs from the UT4 methodology or position, Aurizon Network has been careful to support these departures with relevant material, or to explain why the facts or circumstances relevant to the QCA's consideration of the Section 138(2) Factors differ. Prior to reaching a decision whether or not to approve UT5, the QCA is required to take this material into account.

2.3 Amending an undertaking for appropriateness

Aurizon Network's incremental approach to change from UT4 is intended to facilitate a conclusion by the QCA that the submitted UT5 DAU is appropriate, and should be approved by the QCA.

However, if the QCA nonetheless considers aspects of UT5 are not appropriate, Aurizon Network is keen to ensure that the process for the identification of changes (together with potential drafting to give effect to such changes) that the QCA considers are required to bring the DAU into conformance with the Section 138(2) Factors is as smooth and efficient as possible.

We note that:

- > if the QCA considers a DAU is not appropriate, the requirement under the QCA Act is for the QCA to provide a notice to the responsible person which sets out the reasons for the QCA's refusal to approve the DAU and which requests the person to amend the DAU in the way the QCA considers appropriate (section 134(2)). **(This need not take the format of detailed redrafting. It could take the form of a detailed description of the QCA's policy concern and the nature of the amendment that would address that concern);**
- > the reference to "appropriate" in section 134(2) is a reference back to section 138(2) and the power of the QCA to approve a DAU only if it considers it appropriate to do so having regard to the Section 138(2) Factors. What is required by section 134(2) is an identification of why the QCA did not consider the DAU appropriate, having regard to the Section 138(2) Factors, and the amendments that would be required to the DAU in order for the QCA to consider the DAU to be appropriate. **(The QCA proposed amendments should relate only to those matters necessary to address the issues that resulted in the QCA's decision that the DAU was not appropriate, not to all matter in the undertaking);**

- > any particular issue identified by the QCA may be adequately addressed by a range of different amendments. Where the specific amendments the QCA asks for are made, it follows that the DAU will be approved (section 134(3)). However, where amendments to the DAU do not necessarily take the form set out in the notice, the QCA is required to consider whether those amendments address the issues identified by the QCA as to why it did not consider the DAU appropriate. **(An access provider may be able to achieve the QCA’s policy objective via an alternate drafting or alternate mechanism – where the access provider does so effectively, there should be no impediment to QCA approval);** and
- > the QCA is not able to require a DAU to be amended in a way that is “*minor and inconsequential*” (within the meaning of section 138(6)).

If the QCA does issue a secondary undertaking notice and proposes amendments to the undertaking, we consider that it would be appropriate for the QCA to:

- > avoid unnecessary redrafting where feasible, ideally outlining instead the nature of the amendments it considers appropriate to address its concerns; and
- > whether it redrafts or not, engaging collaboratively with Aurizon Network prior to Aurizon Network’s submission of a conforming undertaking to determine whether particular or alternate amendments proposed by Aurizon Network (in consultation with industry, where appropriate) would address the QCA’s concerns.

Such a process should ensure an undertaking that is both appropriate in terms of QCA policy objectives, and also workable and effective from an industry and business perspective. While this may lead to approval of an undertaking that differs from any precise wording proposed by the QCA in a Secondary Undertaking Notice, the resultant undertaking could be equally, or perhaps even more, effective in facilitating access to the declared service.

2.4 Limits on QCA’s powers

When considering appropriate amendments to a submitted access undertaking, it is important that the QCA has regard to statutory constraints on its power to require provisions within the Undertaking. Fundamentally, the purpose of an access undertaking is to facilitate access to the declared service by setting the terms upon which that access will be provided. It is not appropriate for the QCA to seek to impose terms which extend beyond this. Similarly, it is not appropriate for the QCA to seek to impose terms which are inconsistent with the QCA Act.

In previous undertaking processes, matters have been included within Aurizon Network’s undertakings which extend beyond the scope of matters which the QCA has power to require in an undertaking process. In many cases, these matters have been volunteered by Aurizon Network. In others, they have resulted from QCA requirements, which for various pragmatic reasons, Aurizon Network has determined not to challenge.

In the interests of facilitating a swift and efficient approval process, Aurizon Network has not sought to remove all such provisions from UT5, but has removed or modified only a limited number of such items (described in more detail in the Policy Chapter (Chapter 3) of this submission), which it considers create significant workability issues or are clearly inconsistent with Aurizon Network’s legitimate business interests. As a result, UT5 continues to include numerous “volunteered” provisions, which the QCA could not otherwise compel through the undertaking approval process.

We note that while the QCA can reject and require the deletion of any provisions included in a DAU where the provision is not “appropriate” (within the meaning of that term in section 138(2)), it cannot seek to impose amended or new provisions in response to a DAU if the QCA does not have the statutory power to require those provisions in the first place – i.e. where Aurizon Network has “volunteered” a provision which the QCA cannot compel, the QCA does not have power to change or amend that provision (except by its deletion).

2.5 Section 138(2) Factors and the pricing principles

In assessing UT5, it is critical that the QCA approves a revenue position that is consistent with the pricing principles in section 168A. Specifically, the QCA must ensure that the price of access to a service should:

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

To the extent the QCA has previously expressed views which suggest that: the pricing principles are somehow in tension with the other Section 138(2) Factors; could be addressed by ensuring that Aurizon Network earns “no more than” its efficient costs; or do not need to be complied with,¹⁴ Aurizon Network does not accept that position.

The Section 138(2) Factors are not in tension with the pricing principles—not only is it possible to give effect to each of them, the QCA Act requires that effect is given to each of them.

The object of Part 5 of the QCA Act 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 (section 69E). This object is given effect by the pricing principles in section 168A, and in particular, the pricing principle in section 168A(a), that a price should generate expected revenue for the service that is at least enough to meet the efficient costs of providing access to the service and include a return on investment commensurate with the regulatory and commercial risks involved.

In the context of the National Electricity Law, the Australian Competition Tribunal (**Tribunal**) has found that the pricing principles in section 7A of that Law (which include that a regulated network service provider should be provided with a reasonable opportunity to recover at least efficient costs, and that the return should be commensurate with the regulatory and commercial risks involved in providing services), are consistent with and promote the national electricity objective (which similarly is the promotion of efficient investment in, and operation and use of, services).¹⁵

“The principles in s 7A can be taken to be consistent with and to promote the objectives in s 7. The principles are themselves stated normatively in the form of what is intended to be achieved. They state that the price charged by a Network Service Provider (“NSP”) for its service should allow a return commensurate with the regulatory and commercial risks involved in providing the service in the context that the NSP should be provided with a reasonable opportunity to recover at least the efficient costs it incurs and with effective incentives in order to promote economic efficiency with respect to the services it provides. Economic efficiency includes efficient investment in the system with which it provides services, efficient provision of services, and efficient use of the system.

It is well accepted in the literature of regulatory economics and in regulatory practice that all these efficiency objectives are in principle met by setting prices for services that allow the recovery of efficient costs, including the cost of capital commensurate with the riskiness of the investment in the assets...used to provide services.

It might be asked why the NEL principles require that the regulated NSP be provided with the opportunity to recover at least its efficient costs. Why ‘at least’? The opportunity is critical to the answer. The regulatory framework does not guarantee recovery of costs, efficient or otherwise. Many events and circumstances, all characterised by various uncertainties, intervene between the ex ante regulatory setting of prices and the ex post assessment of whether costs were recovered. But if, as it were, the dice are

¹⁴ See for example, the QCA’s April 2016 final decision for UT4 at page 29, Vol IV where it stated that “Aurizon Network should be permitted to recover **no more** than efficient costs and return on investment commensurate with regulatory and commercial risks involved.” [Emphasis added]. Similar statements appear elsewhere in that final decision, including at pages 20 and 105 of Vol IV.

¹⁵ *Application by EnergyAustralia* [2009] ACompT 8, [79]–[82].

loaded against the NSP at the outset by the regulator not providing the opportunity for it to recover its efficient costs (eg, by making insufficient provision for its operating costs or its cost of capital), then the NSP will not have the incentives to achieve the efficiency objectives, the achievement of which is the purpose of the regulatory regime.

Thus, given that the regulatory setting of prices is determined prior to ascertaining the actual operating environment that will prevail during the regulatory control period, the regulatory framework may be said to err on the side of allowing at least the recovery of efficient costs.”

On the particular issue of whether, under the regulatory regime in the National Electricity Law, the regulator may be permitted to make a decision that would not provide a service provider with a reasonable opportunity to recover at least its efficient costs, the Tribunal has found that the national electricity objective and the revenue and pricing principles are not in tension and that such an outcome would not be permissible. In the context of a submission made by the AER that the AER did not need to act consistently with the revenue and pricing principles, and that while the regulator “may take into account” the principles, it is not bound to do so, the Tribunal noted:¹⁶

“The Tribunal, of course, accepts that there are matters of judgment about how the RPP [revenue and pricing principles] (or a particular element of one of the principles) should be taken into account. It does not accept that, as perhaps the AER is saying, the NEO [national electricity objective] in its application may give rise to a result which means that a DNSP [distribution network service provider] is not given a reasonable opportunity to recover at least its efficient costs in providing direct control network services. As the Tribunal has sought to express in its Introductory remarks, it does not regard ss 7 and 7A as other than complementary so that the NEO may give rise to a reviewable regulatory decision which in fact is inconsistent with the RPP or one of the elements of the RPP.

Therefore, while there may be matters of judgment concerning how the Section 138(2) Factors are taken into account, the QCA, in considering whether it is appropriate to approve a DAU, is not permitted to make that decision in a manner that would not give effect to each of the Section 138(2) Factors. Specifically, it cannot make a decision that:

- > would not give effect to the pricing principles or render them subordinate to other Section 138(2) Factors; or
- > mis-applies the pricing principles, by requiring that Aurizon Network earn “no more than” its efficient costs.

2.5.1 Introduction of pricing principles and object of Part 5 into the QCA Act

Aurizon Network’s view on the pricing principles is supported by consideration of the history of the introduction of both the pricing principles and object of Part 5 into the QCA Act.

The QCA Act, as first enacted, set out the same general framework in respect of the preparation and approval of draft access undertakings as appears in the current legislation. However, there were some aspects that were different. For example, as first enacted, the QCA Act did not include a reference to the pricing principles and did not set out a specific object for the access regime under Part 5.

The key provisions under the QCA Act, as first enacted in 1997, relating to the QCA’s authority to approve draft access undertakings were sections 138(2) and (3) which provided:

- “(2) The authority may approve a draft undertaking only if it considers it appropriate to do so having regard to the following—
- (a) the legitimate business interests of the owner of the service;

¹⁶ Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, [537].

- (b) *the public interest, including the public interest in having competition in markets (whether or not in Australia);*
 - (c) *the interests of persons who may seek access to the service;*
 - (d) *any other issues the authority considers relevant.*
- (3) *However, the authority may approve a draft undertaking only if—*
- (a) *it is satisfied the undertaking is consistent with any access code for the service; and*
 - (b) *it has published the undertaking and invited persons to make submissions on it to the authority within the time stated by the authority; and*
 - (c) *it has considered any submissions received by it within the time.” (emphasis added)*

The *Queensland Competition Authority Amendment Act 2008 (Qld) (2008 Act)*, amongst other matters, introduced the pricing principles and the object of Part 5. It also provided that these matters would be included as factors under section 138(2). However, the pricing principles at that time only related to the price for access to a declared service.

Further amendments under the *Motor Accident Insurance and Other Legislation Amendment Act 2010 (Qld)* expanded the application of the pricing principles beyond the price for access to a declared service so that they apply to any service governed by the QCA Act – for example, a service that was not a declared service but was subject to a voluntary access undertaking.

The 2008 Act arose out of a review of the QCA Act by the Queensland Government and the Competition and Infrastructure Agreement (**CIRA**)¹⁷ which was agreed in February 2006.

Under clause 2.1 of the CIRA, the COAG governments agreed:

“to establish a simpler and consistent national approach to economic regulation of significant infrastructure”.

Under clauses 2.4 and 2.7 of the CIRA, the COAG governments agreed that:

“2.4 All third party access regimes for services provided by means of significant infrastructure facilities will include the following consistent regulatory principles.

- a. *Objects clauses that promote the economically efficient use of, operation and investment in, significant infrastructure thereby promoting effective competition in upstream or downstream markets.*
- b. **Regulated access prices should be set so as to:**
 - i. *generate expected revenue for a regulated service or services that is at least sufficient to meet the efficient costs of providing access to the regulated service or services and include a return on investment commensurate with the regulatory and commercial risks involved;*
 - ii. *allow multi-part pricing and price discrimination when it aids efficiency;*

¹⁷ As the Explanatory Notes point out, the CIRA was the culmination of COAG’s consideration of economic regulatory frameworks. In that respect, the Commonwealth commissioned report on the effect of economic regulation on significant export infrastructure investment formed the background to COAG’s considerations.

- iii. *not allow a vertically integrated access provider to set terms and conditions that discriminate in favour of its downstream operations, except to the extent that the cost of providing access to other operators is higher; and*
- iv. *provide incentives to reduce costs or otherwise improve productivity...*

2.7 *The principles in **clause 2.4** and 2.6 **will be incorporated in existing access regimes for services provided by means of significant infrastructure facilities** and Part IIIA of the Trade Practices Act 1974 as soon as practicable or as they are reviewed, provided that they are included in such regimes no later than the end of 2010.*” (emphasis added)

The language of the CIRA contemplates specific principles that must be applied when setting access prices.

The pricing principle amendments required to access regimes by the CIRA (which were reflected in the 2008 and 2010 amendments to the QCA Act discussed above) had the effect of creating a price floor to be applied by regulators thereby increasing certainty for infrastructure investors.

The Explanatory Notes¹⁸ indicate that the amendments “*include a nationally consistent objects clause and pricing principles in the third party access regime*”. They go on to state that:

“When other jurisdictions implement the CIRA reforms to their respective regulatory regimes, it will bring consistency across jurisdictions’ regulatory regimes and improve the timeliness of regulator’s decision making.

The Bill will simplify and increase certainty in the regulatory process which will encourage efficient investment in significant infrastructure in Queensland” (at page 2)

In respect of the inclusion of a Part 5 objects clause and “*uniform pricing principles*” to the Queensland regime, the Explanatory Notes for the legislative changes state:

*“The inclusion of an objects clause and uniform pricing principles will provide **overriding guidance** for the Authority and Ministers in making regulatory decisions under the access regime in the Act.*

The same clause and principles will be applied to all jurisdictions’ access regimes which will promote national consistency in regulatory practice, contribute to consistent and transparent regulatory outcomes and increase certainty for investors, access providers and access seekers which will benefit infrastructure investment.” (at page 4 – emphasis added)

In addition, the second reading speech in relation to the 2008 Act¹⁹ states that:

*“In February 2006 under COAG’s Competition and Infrastructure Reform Agreement, state governments agreed to establish a simpler and consistent national approach to economic regulation of significant infrastructure. **The intention is to encourage greater investment in regulated export related infrastructure in particular.***

The bill will improve the QCA Act by increasing certainty for regulated entities operating within Queensland’s regulatory framework. This improvement is obviously good news for Queensland as Queensland will also be the first state to implement the COAG recommendations. This timely and decisive response shows how committed this government is to doing what it can to attract and encourage

¹⁸ <http://www.legislation.qld.gov.au/Bills/52PDF/2008/QCompAuthAB08Exp.pdf>

¹⁹ http://www.parliament.qld.gov.au/documents/hansard/2008/2008_02_13_WEEKLY.pdf#page=33

investment in significant infrastructure in the state. This reform sets infrastructure delivery front and centre for the Queensland Competition Authority.” (emphasis added)

and:

*“Including the new objects clause places an emphasis on efficient investment in and use of infrastructure. The new pricing principles will provide **overriding guidance** for the authority and ministers when making regulatory decisions. It will also help **ensure** that decisions are made on a more consistent basis over time as they will be made in the context of the overall objectives of the QCA Act. These new provisions in the QCA Act will help provide greater certainty for investors, access providers and access seekers as to how the QCA Act will be applied in particular circumstances. Again this will benefit and encourage infrastructure investment in Queensland.” (Emphasis added)*

2.5.2 The history of pricing principles in Australian competition law

While some of the history relating to the introduction and application of pricing principles in the QCA Act is set out above, the application of pricing principles (and objects clauses) as part of Australian competition law access regimes has a long history.

That history is relevant to the application of the QCA Act in its current form.

Hilmer Report

The Hilmer Report²⁰ (25 August 1993) was foundational in developing an Australian competition and third party access regulatory regime.

The Hilmer Committee considered two broad approaches relating to access pricing, the first being:

“...a broad discretion could be entrusted to an independent regulator, leaving it to decide where the balance should be drawn in particular circumstances, perhaps guided by some broad and general guidelines as to the factors to be taken into account....” (Page 255 of the Hilmer Report)

and the second approach:

“...would be to ... stipulate more specific pricing principles in the context of declaring a right of access to particular facilities. Once those principles were established, the parties would be free to negotiate access agreements, subject to a requirement to place those agreements on a public register. If the parties could not agree on an access price, either party could insist on binding arbitration in accordance with the declared principles.” (Page 255 of the Hilmer Report)

The Committee favoured the second approach because:

“...the key policy issues relating to pricing principles are more transparent and are made by an elected representative. Once principles are in place the parties have a greater degree of certainty over their respective rights and obligations. This approach is also less interventionist than regulated outcomes and should facilitate the evolution of more market-oriented solutions over time.” (Page 255 of the Hilmer Report)

²⁰ <http://ncp.ncc.gov.au/docs/National%20Competition%20Policy%20Review%20report.%20The%20Hilmer%20Report.%20August%201993.pdf>

Competition Principles Agreement – 11 April 1995

In April 1995, the COAG governments entered into the Competition Principles Agreement (**CPA**). Amongst other matters, under the CPA it was agreed that the Commonwealth Government would establish a federal third party access regime for services.

The CPA also stated various principles that a State/Territory access regime should conform with or incorporate. However, despite the Hilmer Report, the CPA did not expressly refer to an objects provision for the access regime or to pricing principles.

Competition Policy Reform Act 1995 (Cth)

Subsequently, the *Competition Policy Reform Act 1995* (Cth) introduced a third party access regime (**Part IIIA**) into the *Trade Practices Act 1974* (Cth) (**TPA**).

Despite the Hilmer Report, Part IIIA (as originally introduced) did not make provision for pricing principles or include an objects clause for Part IIIA. The issue of access pricing was left to negotiation or regulatory arbitration. Part IIIA effectively adopted the ‘first approach’ from the Hilmer Report – i.e. entrusting an independent regulator with a broad discretion – rather than specifying pricing principles.

The QCA Act was enacted shortly afterwards in 1997 similarly without pricing principles or an objects clause for the access regime.

Review of the National Access Regime – 28 September 2001

In October 2000, the Productivity Commission (**PC**) was tasked to review of the ‘National Access Regime’. In particular, the PC was to report on the arrangements established under clause 6 of the CPA and Part IIIA, and ways of improving them.

In the PC’s report,²¹ it indicated one area of deficiency in the national access regime as:

“It contains no overarching objective or pricing principles to guide negotiations between access providers and seekers and to underpin regulatory determinations. This has increased uncertainty for service providers and access seekers alike, as well as raising the spectre of inappropriate determinations.” (at page XX)

and

“...the Commission has proposed a range of modifications to the architecture of Part IIIA to ensure that access regulation is better targeted and more workable. These include:

- *inserting an objects clause and pricing principles to guide regulators and industry and to discourage unwarranted divergence across industry-specific regimes;”* (at page XII)

In summarising the PC’s recommendations and findings on the issue of an objects clause for Part IIIA and pricing principles, the PC stated that:

*“Clear specification of objectives is fundamental to all regulation...
Inclusion of an objects clause in Part IIIA would be highly desirable to:*

- *provide greater certainty to service providers and access seekers about the circumstances in which intervention may be warranted;*
- *emphasise, as a threshold issue, the need for the application of the regime to give proper regard to investment issues;*

²¹ <http://www.pc.gov.au/inquiries/completed/access/report/access.pdf>

- promote consistency in the application of the regime by the various decision makers; and
- help to ensure that decision makers are accountable for their actions...

Part IIIA decision makers would be required to have regard to this objects clause in all of their coverage decisions and determinations.

The Commission is also proposing that pricing principles be embodied in the regime. Amongst other things, these principles would:

- condition negotiations between service providers and access seekers and thereby increase the likelihood of negotiated outcomes;
- indicate how the broad objectives of Part IIIA should be reflected in regulatory determinations under the regime ...

A key requirement in the Commission's suggested principles is that pricing determinations under Part IIIA provide a sufficient return to service providers to justify continuing investment in the infrastructure concerned." (at pages XXII and XXIII)

The PC's recommendations relating to the need for an objects clause and pricing principles were heavily related to preserving incentives to invest:

"A number of these recommendations would help to facilitate investment in essential infrastructure services. Indeed, the emphasis in the proposed objects clause and pricing principles is very much on preserving incentives for investment ..." (at page XXV)

The PC linked the pricing principles to a need to create a certain and clear price floor for regulators in seeking "to reduce access prices that are inefficiently high".

The PC report included extensive analysis on the need for an objects clause and pricing principles. While the PC's analysis is illuminating, it is not possible nor appropriate to set out the entirety of that analysis in this submission. However, the PC did state that:

"...the Commission considers it appropriate to give particular weight to ensuring that investment in essential facilities is not jeopardised. While it is unarguable that access can promote investment in markets using the services of essential facilities, such investment is contingent on preserving incentives to build or expand those facilities in the first place." (page 128)

"If an objects clause is to have more than symbolic value, it is important to ensure that, in an operational sense, the objectives are pursued. In the first instance, this depends on the criteria which govern the various access routes — declaration-arbitration, certification and undertakings. Impinging on all of these routes is the matter of access pricing..." (at page 137)

and

*"Thus, to meet its objectives and perform its framework function adequately, Part IIIA must address pricing concerns. While Part IIIA currently contains some broad criteria to guide regulators when conducting arbitrations for declared services, assessing undertakings and certifying access regimes as effective, these are so general as to be of limited value. **More specifically, in an operational sense, the criteria do little to signal what constitute 'efficient access prices'.** For example, when arbitrating an access dispute for a declared service, the ACCC must take a range of matters in to account, all of which could have an impact on the prices set.*

These criteria are:

- (a) *the legitimate business interests of the provider, and the provider's investment in the facility;*

- (b) *the public interest, including the public interest of having competition in markets (whether or not in Australia);*
- (c) *the interests of all persons who have rights to use the service;*
- (d) *the direct costs of providing access to the service;*
- (e) *the value to the provider of extension whose cost is borne by someone else;*
- (f) *the operational and technical requirements necessary for the safe and reliable operation of the facility; and*
- (g) *the economically efficient operation of the facility (s. 44X).*

Clearly, the ACCC must exercise significant judgement in interpreting what each matter means for pricing. As the Law Council observed:

... the meaning of some of the terms used in the arbitration criteria ... are unclear. It is also uncertain whether all criteria must equally be satisfied, or whether some may be traded off against others. (sub. 37, p. 21)" (at page 138 – emphasis added)

and:

"As well as assisting regulators, inclusion of transparent pricing principles housed within access legislation would help to ensure that their decisions were consistent with the intent of the legislation. Where a regulator is required to interpret vague and conflicting pricing criteria, it is open to accusations that its own views will affect pricing outcomes." (at page 139)

The PC sets out a detailed analysis on the need for pricing principles to be incorporated in Part IIIA. While it is not appropriate to set out that analysis in full here, the PC referred, amongst other matters, to the effect of the pricing principles:

"...a key role of pricing principles is not so much to prescribe what should happen in a particular situation, but to rule out approaches and methodologies which would be inappropriate. More generally, even pricing principles which signal that a particular outcome could fall within a wide band provide, at least tacitly, some discipline on regulators to justify the outcome of a particular determination. For example, transparent pricing principles might allay concerns that a regulator will simply bring its own values to bear when setting the terms and conditions of access..." (Page 142) (emphasis added)

Australia's Export Infrastructure Report to the Prime Minister by the Exports and Infrastructure Taskforce – May 2005²²

The Prime Minister's Exports and Infrastructure Taskforce was tasked with identifying "any bottlenecks, of a physical or regulatory kind, in the operation of Australia's infrastructure that may impede the full realisation of Australia's export opportunities".

In considering the regulatory objectives of third party access regimes, the Taskforce stated:

"While regulation in Australia operates under a wide range of differing regimes, a common feature of these regimes is that they require regulators to pursue multiple, somewhat conflicting objectives. Given these 'laundry lists' of objectives, regulators have generally interpreted their function as being that of weighing the various goals that they have been set and seeking, within that weighting, some especially desirable point. Given the resulting wide regulatory discretion, it is hardly surprising that this system is characterised by ambit claims and other influence-seeking tactics..." (page 40)

²² <http://www.baeconomics.com.au/wp-content/uploads/2011/08/Export-Infrastructure-Report-to-PM.pdf>

After noting the Commonwealth Government's intention to insert an object clause into Part IIIA and the Government's related response to the PC's review of the National Access Regime, the Taskforce stated that:

"It is important that this economic efficiency interpretation is the overriding objective of access regulation and that alternative 'laundry lists' do not distract from the consistent application of this central objective."

The Taskforce also considered that there was a need for more consistency across jurisdictions in the regulation of major infrastructure. On 10 February 2006, this ultimately resulted in the CIRA, discussed in section 2.5.1 above.

2.5.3 A contrary "statutory indication" exists in the QCA Act

There are, in addition, a number of statutory indicators that point to a requirement on the QCA to make a decision that complies with (or does not offend) the pricing principles.

For example, section 138A provides that:

- "(1) An approved access undertaking for a service may require or permit the owner or operator of the service to do the following, in the circumstances stated in the undertaking—*
- (a) treat access seekers differently in negotiating access agreements, or amendments to access agreements, relating to the service; or*
 - (b) treat users differently in providing access to the service.*
- (2) However, subsection (1) does not authorise an approved access undertaking to require or permit the owner or operator to do anything inconsistent with the pricing principles mentioned in section 168A."*

Section 138A(1) is permissive – it permits discriminatory treatment of access seekers and users under an access undertaking. Section 138A(2) curtails that permission by expressly requiring that any discrimination cannot offend the pricing principles.

If the QCA in approving an access undertaking could weight other factors in precedence to the pricing principles, section 138A(2) would not be required. The existence of section 138A(2) supports the fact that an access undertaking must comply with the pricing principles in order to be considered appropriate.

Another statutory indicator that the pricing principles are requirements to be met with respect to prices for declared services, whether under an access undertaking or otherwise, can be found in the operation of section 100 of the QCA Act.

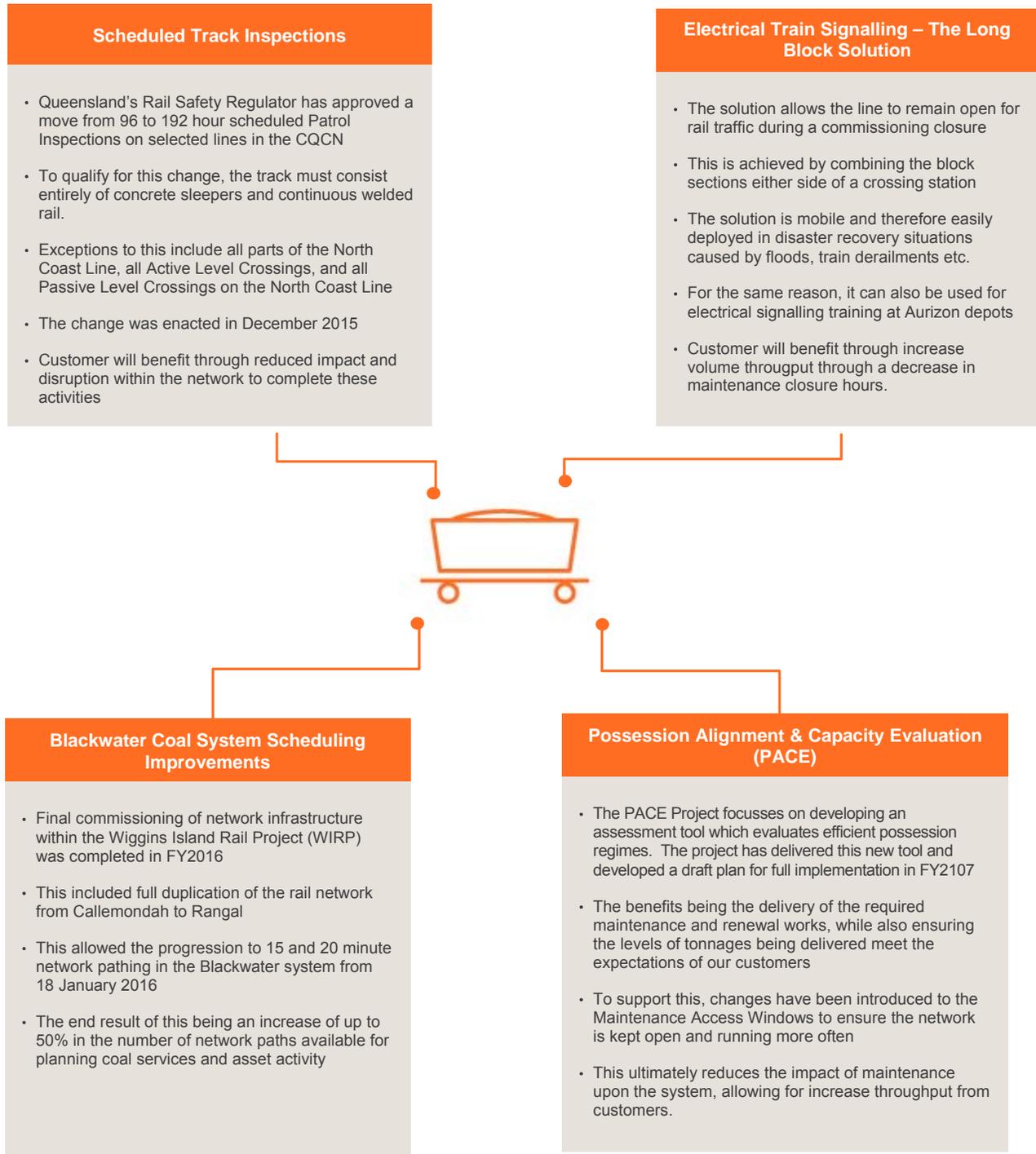
Section 168 expressly permits an access agreement to "change, restrict or otherwise be inconsistent with" an approved access undertaking. On its face, nothing in section 168 requires an access agreement to set a price for access that is consistent with section 168A. However, section 100(4) provides that in the negotiation of an access agreement price discrimination cannot occur if it would result in a "a price for access to the declared service that is inconsistent with the pricing principles mentioned in section 168A".

A provision to the same effect in respect of users appears in section 168C. Indeed, sections 168C(2) and (3) have the effect of applying the pricing principles even to existing contracts. This point is reinforced by section 168C(4) which make it clear that the pricing principles must be given effect even though section 102 expressly allows an access provider to enter into access agreement with different access seekers on different terms.

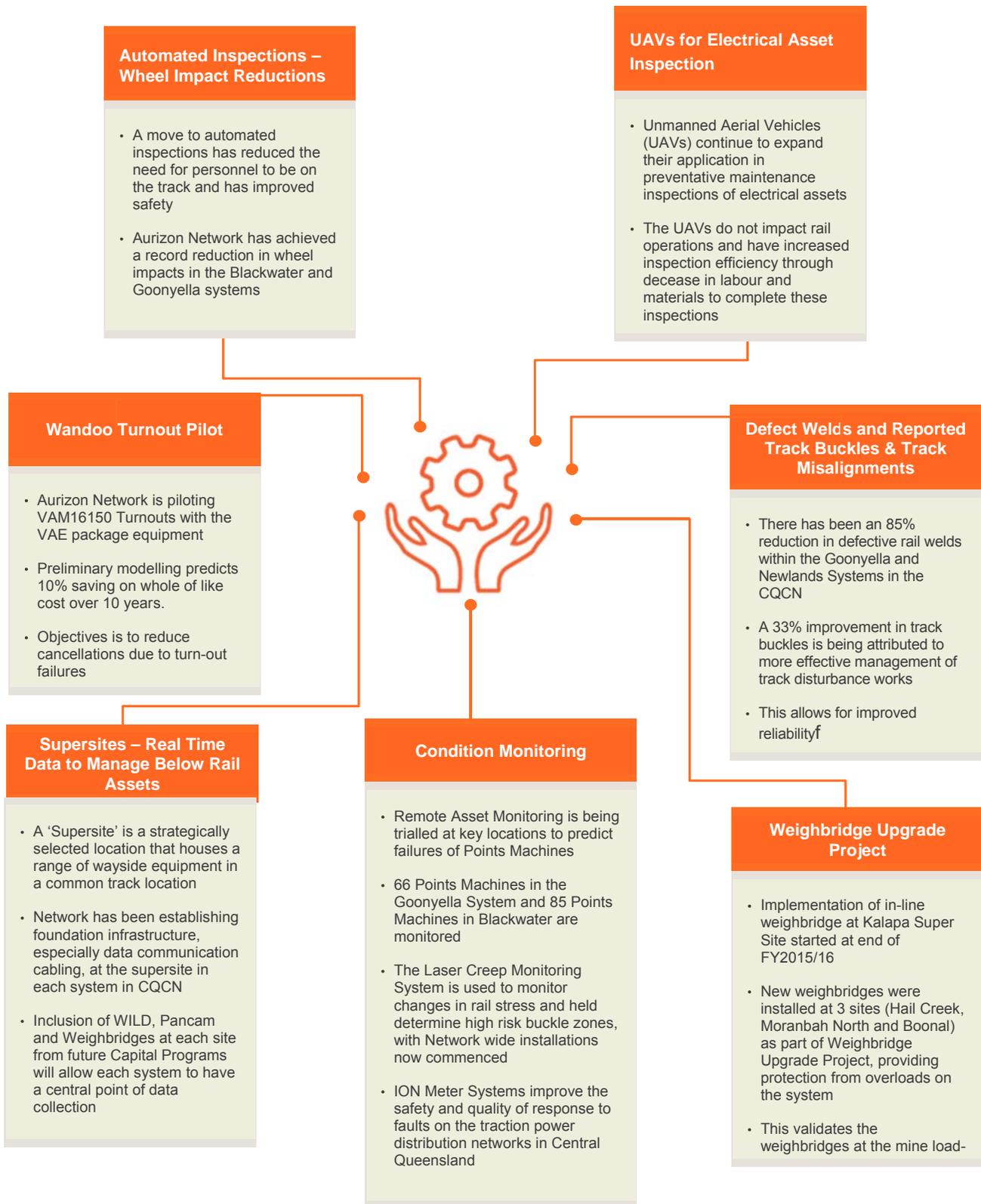
Again the statute in sections 100 and 168C confirm that Parliament intended that prices for declared services comply with the pricing principles.

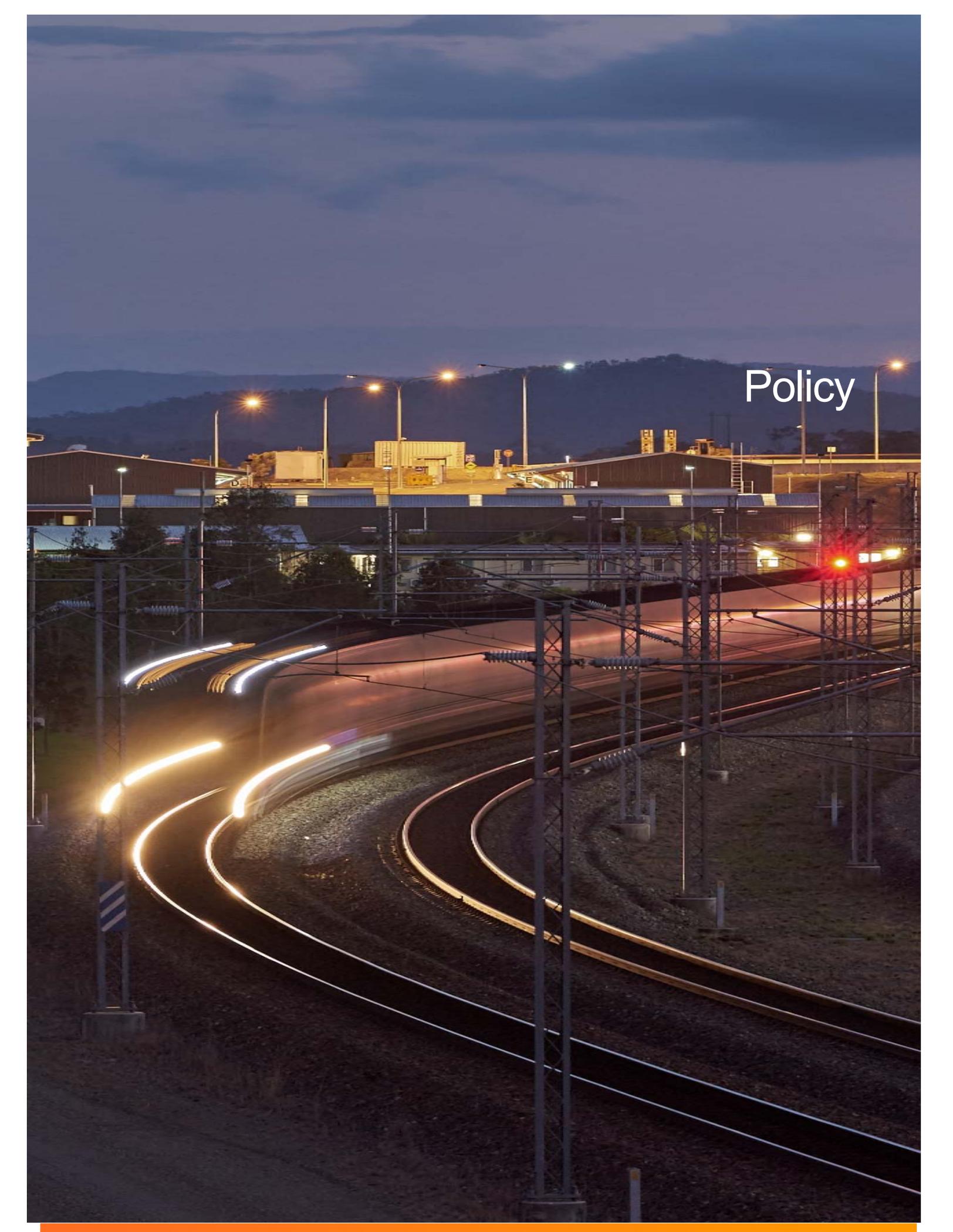
There is no point to any of sections 138A(2), 100(4), 168C(3)(b) or 168C(4) if the pricing principles are not fundamental requirements for an access undertaking or an access agreement.

Appendix C.1 Volume Initiatives



Appendix C.2 Reliability Initiatives





Policy

Policy Positions – Table of Contents

3.	Policy Positions	47
3.1	Introduction.....	47
3.2	Relinquishment Processes to support productivity improvements	50
3.3	Negotiated Access Conditions	55
3.4	Aurizon Network’s right to invest in Network Expansions.....	60
3.5	Capacity shortfall rectification obligation	63
3.6	Supply chain coordination.....	70
3.7	Dispute resolution process.....	75
3.8	The process for incorporation of SUFA into UT5	83
3.9	The process for capacity review	86
3.10	Valuation of the Regulatory Asset Base.....	89
3.11	Summary of proposed drafting changes relative to UT4	92

3. Policy Positions

3.1 Introduction

In developing UT5, Aurizon Network has taken the approach that where appropriate to do so, UT5 should be based on UT4.

Given that UT4 has only recently come into effect after a lengthy regulatory process and its practical operation is yet to be tested, Aurizon Network has chosen not to make changes to every aspect of UT4 with which it disagrees and has instead chosen to focus its adjustments under UT5 on a limited number of matters that either materially impact Aurizon Network's legitimate business interests or are important to industry. These matters seek to:

- > address issues of practicality, workability or efficiency which it is possible to identify at this stage of UT4's operation; and
- > remove UT4 positions which Aurizon Network considers to be clearly beyond power, where these materially impact on Aurizon Network's legitimate business interests and which Aurizon Network is not prepared to accept in UT5.

Aurizon Network's approach to UT5 is intended to limit the number and nature of the adjustments being proposed in the undertaking, so as to reduce the time and cost required for the QCA and industry to consider the undertaking, thus ensuring an effective and timely regulatory process and delivering greater regulatory certainty.

Aurizon Network has included within UT5 a number of the policy positions that go beyond what Aurizon Network is required to include in an access undertaking under the QCA Act. While positions have been volunteered as part of a pragmatic approach to facilitate a timely and efficient assessment process, we note that it would be inappropriate for the QCA to seek to amend these voluntary provisions (without Aurizon Network's agreement) as it does not have power to do so.

Prior to approving an undertaking, the QCA must be satisfied that the undertaking is appropriate having regard to the matters specified in s138(2) of the QCA Act. As the QCA has only recently issued its UT4 Final Decision, in which it determined that each of the policy positions in UT4 is appropriate, Aurizon Network submits that the QCA need not reconsider the appropriateness of such matters to the extent that they are reflected in UT5.

Aurizon Network is committed to an undertaking that provides a practical and flexible underpinning for the provision of access to the declared service. Therefore, if during the regulatory period it identifies further issues of practicality or workability within the undertaking, it proposes to deal with these via separate draft amending access undertakings.

3.1.1 Consultation

Aurizon Network's consultation on these policy positions has included:

- > an initial workshop with industry on draft policy positions;
- > a written update to industry on changes to policy positions following that workshop;
- > provision of a draft version of the undertaking and a draft version of this policy submission to the Queensland Resource Council (**QRC**) for comment;
- > provision of extracts of the undertaking relating to relinquishments to individual stakeholders, including rail operators, for comment; and
- > one on one discussions with the QRC to determine if it is possible to develop agreed positions with the QRC on any aspect of Aurizon Network's proposed policy positions.

Aurizon Network has adjusted its drafting of the undertaking in respect of certain matters to reflect feedback from the QRC, however, agreement on the relevant clauses has not been confirmed at this stage.

Discussions with the QRC are ongoing to determine if there are policy items where agreed positions could be advanced. If such positions are reached, post-submission, Aurizon Network and the QRC will inform the QCA of the relevant positions and any proposed changes required to the submitted document. If having considered those changes, the QCA is minded to approve them, Aurizon Network will be happy to meet with the QCA to discuss the most efficient method to ensure that those changes are included in the final undertaking approved by the QCA.

3.1.2 Matters covered in this policy submission

The matters that Aurizon Network has focused on for UT5 include:

- > relinquishment and resumption processes that support productivity improvements;
- > negotiated Access Conditions;
- > Aurizon Network's right to invest;
- > the treatment of capacity shortfalls;
- > supply chain coordination;
- > appropriate dispute resolution provisions;
- > miscellaneous matters of practicality and clarification, including:
 - process for incorporation of a SUFA template into UT5;
 - process for review of network capacity; and
 - adjustment of the RAB for disposal and certain other triggers.

The following paragraphs deal with each of these topics in summary form. A more detailed discussion follows that summary.

Relinquishment processes

During customer consultation, customers sought inclusion into UT5 of relinquishment provisions for productivity improvements that had broadly been agreed with industry during UT4 but not accepted by the QCA. The relinquishment provisions allow a reduction in contracted train paths without a relinquishment fee in three distinct circumstances:

- > where an Operator consistently over a 12-month period exceeds the maximum payload of its trains;
- > where an Access Holder requests an increase to the maximum payload of its trains; or
- > where it is the preferred option to increase capacity of the network without requiring unnecessary and costly expansions.

Aurizon Network supports these provisions as they address the fact that existing relinquishment provisions:

- > do not provide for more effective management of capacity;
- > do not provide for mechanisms to create capacity in the most cost effective way; and
- > act as a barrier to Access Holders initiating and participating in productivity improvements.

Aurizon Network is in the process of receiving feedback from its customers in relation to the detail of this proposal. If it receives feedback post-submission that it considers should be incorporated within any final approved version UT5, it will advise the QCA of the relevant changes and stakeholder feedback. If those changes are considered appropriate by the QCA, Aurizon Network will work with the QCA to determine the best mechanism to ensure their inclusion in the final approved version of UT5.

Negotiated Access Conditions

UT4 requires QCA approval for all Access Conditions. Under UT5, Aurizon Network has volunteered a process whereby the QCA's approval of Access Conditions is only required in respect of Access Conditions which are material in nature. In assessing the Access Conditions for approval, the QCA's enquiry is limited to whether the conditions unfairly differentiate between users in a way that is prohibited by the QCA Act.

The right of Aurizon Network to invest

UT4 provides for Access Seekers to have a right to fund an Expansion even where Aurizon Network is prepared to do so at the regulatory rate of return. Aurizon Network's position is that where it is prepared to invest in an Expansion at the regulated rate of return it should be able to do so, irrespective of whether an Access Seeker wishes to adopt user funding. UT5 reflects this approach. To provide otherwise would impair Aurizon Network's right to invest in its own network, without any statutory basis to do so. That is because a restriction on Aurizon Network's right to invest is not required to facilitate access to the declared service.

Treatment of capacity shortfalls

In its UT4 submission, Aurizon Network volunteered to fund (subject to specific conditions) a capacity shortfall that occurs in relation to an Expansion funded by Aurizon Network. In its UT4 Final Decision, the QCA adopted a markedly different position, giving rise to obligations on Aurizon Network to fund the rectification of a capacity shortfall in various circumstances – including where Aurizon Network did not fund the original Expansion.

Under UT5, Aurizon Network has proposed no capacity shortfall rectification obligation. The QCA Act does not permit the QCA to impose an obligation on an Access Provider to fund the cost of Expansions.

Supply chain coordination

In UT4 Aurizon Network must participate in Supply Chain Groups and must, provided its incremental costs are to be recovered, adopt operational changes determined by those groups that could increase capacity. Although Aurizon Network has worked, and will continue to work, collaboratively with Supply Chain Groups to identify productivity initiatives, it has significant concerns around the workability of the provisions, and in particular the mandated adoption of operational changes identified by Supply Chain Groups.

For example:

- > workability issues arise where the interests of a Supply Chain Group and users not represented by that Supply Chain Group, or the interests of two Supply Chain Groups, diverge; and
- > the increase in costs imposed by such operational changes on all users may not be justifiable relative to the capacity uplift achieved.

For this reason, UT5 does not include an obligation on Aurizon Network to adopt operational changes proposed by Supply Chain Groups. However, in the interests of transparency, where Aurizon Network chooses not to adopt such operational changes, it must provide reasons.

Resolution of disputes

Aurizon Network has submitted a dispute resolution process that is closely based on the access dispute provisions of the QCA Act. That process also confirms that the QCA cannot override Aurizon Network's legislative safety obligations except to the extent that the QCA obtains advice from, and acts consistently with the advice of, the Rail Safety Regulator.

Matters of practicality and clarification

In addition, Aurizon Network has addressed in UT5 several matters of practicality and clarification, including:

- > the process for the incorporation of the Standard User Funding Agreement (SUFA) template within UT5 and how and when reviews (and as necessary amendments) of that template will be conducted;
- > the process for the review of Aurizon Network's network capacity; and
- > how the value of the RAB is affected by the disposal of assets, and how the QCA may adjust the RAB value where specified triggers occur.

3.2 Relinquishment Processes to support productivity improvements

3.2.1 Issue

As a result of consultation with customers, Aurizon Network has proposed provisions in Part 7 of the Access Undertaking, the Standard Access Agreement and Standard Train Operations Deed that allow the reduction of Nominated Monthly Train Service Entitlements (Train Paths) in an Access Holder's access agreement under certain circumstances.

Aurizon Network is in the process of receiving feedback from its customers in relation to the detail of this proposal. If it receives feedback post-submission that it considers should be incorporated within any approved version of UT5, it will advise the QCA of that position and the relevant stakeholder feedback. If those changes are considered appropriate by the QCA, Aurizon Network will be happy to work with the QCA to determine the best mechanism to ensure their inclusion in the final approved version of UT5.

3.2.2 UT4 treatment

Under UT4 Aurizon Network may only reduce an Access Holder's Train Paths if the Access Holder satisfies the resumption test. The test is satisfied where:

- > an Access Holder does not cause the operation of at least 85% of the Train Services allowed under its Train Service Entitlement over a period of four consecutive quarters; and
- > Aurizon Network can show that there is a sustained alternative demand for the capacity being used by the Access Rights in question²³.

In addition, an Access Holder has the ability to relinquish its Train Paths at any time subject to payment of a Relinquishment Fee to Aurizon Network.²⁴

Effectively the existing relinquishment and resumption provisions are designed to reduce Train Paths to respond to a reduction in tonnage demand by the Access Holder.

Aurizon Network proposed in its April 2015 and February 2016 UT4 submissions to the QCA that Train Paths in a Standard Access Agreement may be reduced for three distinct reasons (collectively 'Proposed Relinquishment Provisions'):

1. where an Operator consistently over a 12-month period exceeds the Maximum Payload;
2. where an Access Holder requests an increase to its Maximum Payload; and
3. where an increase to Maximum Payload is the preferred option to increase capacity.

The Proposed Relinquishment Provisions were submitted by Aurizon Network to encourage the efficient utilisation of capacity and to complement existing relinquishment provisions that provide for a reduction in Train Paths due to a

²³ Clause 7.6(a) of [the UT4 Access Undertaking]

²⁴ Clause 7.4.3 of [the UT4 Access Undertaking]

reduction in demand. The existing relinquishment and resumption provisions are not designed to address the requirement to reduce Train Paths as a result of productivity improvements.

The Proposed Relinquishment Provisions were broadly accepted by industry, with a mechanism to reduce Train Paths following an Access Holder's request to increase its Maximum Payload being included by Aurizon Network at the request of the QRC²⁵. Additionally, during consultation with industry in relation to UT5, customers indicated that they would like Aurizon Network to include the Proposed Relinquishment Provisions as a policy issue in its UT5 submission.

The QCA did not accept the Proposed Relinquishment Provisions in UT4 as it considered the provisions:

- > adversely impacted Access Holders' certainty and security of contracted access rights; and
- > were not necessary given:
 - long term non-utilisation of access can be managed via existing relinquishment and resumption provisions; and
 - short term non-utilisation can be managed via the short-term transfer mechanism (which is now included as part of UT4).

Additionally, the QCA did not understand how the mechanisms to manage overloads interacted with the ability for Aurizon Network to reduce Train Paths when an Operator exceeded its Maximum Payload, and concluded that the existing overload provisions were sufficient for Aurizon Network to manage circumstances where an Operator's wagons exceed their Maximum Payloads. The QCA's reasoning in this regard is open to question for the reasons set out below.

3.2.3 Aurizon Network's assessment of UT4 treatment

The absence of the Proposed Relinquishment Provisions in UT4 means the Standard Access Agreement and Standard Train Operations Deed do not have an effective mechanism for Aurizon Network and/or Access Holders to reduce Train Paths to:

- > reflect increases to an Operator's train payload (which is a key assumption used in calculating the required number of Train Paths during the term of an Access Agreement), resulting in an Access Holder who increases its payload holding Train Paths in excess of what is required to haul the same volume of tonnes; and
- > enable Aurizon Network and industry to increase capacity in the supply chain without having to undertake significant below rail expansion of the network where it is the lowest capital cost option for doing so.

The result is that Aurizon Network and Access Holders are constrained in their ability to effectively manage, and cost effectively create, capacity for the benefit of the supply chain. The following discussion assesses the ability of Aurizon Network and/or Access Holders to reduce Train Paths.

Aurizon Network's ability to reduce Train Paths

Aurizon Network does not have a mechanism to adjust Train Paths under an Access Agreement when an Operator consistently, and over a prolonged period, exceeds its Maximum Payload.

The QCA incorrectly concluded that Aurizon Network could address this issue through the existing overload provisions.²⁶ The management of overloads and circumstances where an Operator exceeds its Maximum Payload are entirely separate issues.

²⁵ This was included in the QRC's October 2013 submission to the QCA in response to Aurizon Network's 2013 Draft Access Undertaking (AN 2013 DAU). The AN 2013 DAU was subsequently withdrawn and replaced by Aurizon Network's 2014 Draft Access Undertaking on 11 August 2014. The concept was included in Aurizon Network's 2014 Draft Access Undertaking, but was ultimately not accepted by the QCA.

²⁶ See UT4 Final Decision, Volume I, p. 282

- > Overloads relate to individual wagons which have specified weight limits set out in Aurizon Network's safety management system (specifically in Standard 71), replicated in Schedule 5 of each Standard Train Operations Deed.
- > Maximum Payload relates to the total weight of an Operator's rollingstock configuration for a particular train service (which consists of a number of locomotives and wagons) and is a concept used only in the calculation of how many Train Paths will be required to carry a specified volume of tonnes.

In other words, an Operator may not overload its wagons, but as a result of changes to its train configurations (for example, adding more wagons to the train configuration) it may exceed the Maximum Payload. Clearly the existing overload provisions are inadequate to address the circumstance where an Operator consistently, and over a prolonged period, exceeds its Maximum Payload.

In the absence of the Proposed Relinquishment Provisions, Aurizon Network must rely on the existing resumption test in the Undertaking to reduce Train Paths. However, this test was only designed to address substantial drops in tonnage demand, as opposed to incremental productivity improvements over time resulting in the same throughput of coal being satisfied with less Train Paths, thereby promoting efficiency on the network. Aurizon Network cannot rely on the existing resumption test to reduce Train Paths where an Operator has exceeded its Maximum Payload on the basis that:

- > any increases in an Operator's Payload in a 12-month period are unlikely to result in the utilisation of less than 85% of an Access Holder's train services; and
- > Aurizon Network may not be able to satisfy the requirement to show that there is a sustained alternative demand for the capacity being used by the access rights in question.

Contrary to the QCA's view, the ability for Aurizon Network to reduce Train Paths in this circumstance does not impact certainty and security of Access Holders' contracted access rights. This is because Access Holders will be guaranteed the same tonnage profile despite the reduction in Train Paths, and Operators and Access Holders have greater control over the Train Payload that is employed to utilise the relevant Access Rights than Aurizon Network does. Aurizon Network would only have the ability to reduce Train Paths when the Operator and/or the End User chooses to consistently utilise trains which exceed the Maximum Payload.

Access Holder's ability to reduce Train Paths

Access Holders do not currently have any mechanism to request an increase in Maximum Payload (to enable longer trains to be used as a productivity improvement) and accordingly reduce Train Paths under the Standard Access Agreement and Standard Train Operations Deed.

In the absence of such a mechanism Access Holders must rely on existing relinquishment provisions, which require the Access Holder to pay a Relinquishment Fee. The Relinquishment Fee is effectively an exit fee preventing the Access Holder from passing on its costs to the supply chain as a result of its decision to fully or partially surrender access rights. The purpose of the Relinquishment Fee is distorted when it disincentivises an Access Holder from improving efficiencies driven by advances in technology and operational processes.

In fact, the Access Holder is effectively penalised for pursuing these efficiency gains as the Relinquishment Fee²⁷ is calculated as 50% of the present value of the AT2, AT3 and AT4 tariffs (effectively the Take or Pay component) of the reduced Train Paths for the remaining term of the Access Agreement with a reduction applied in certain circumstances²⁸. Only the AT2 tariff is calculated on a train path basis with AT3 and AT4 being calculated on a Net Tonne per Kilometre (NTK) and Net Tonne (NT) basis respectively. On the basis that the reduction in Train Paths is due to operational improvements and the total volume of coal being hauled does not change, the Access Holder will

²⁷ Reference is to Relinquishment Fee calculated under UT2 and UT3 Standard Access Agreement. Relinquishment Fee under UT1 Standard Access Agreements is payable on 40% of Access Charges payable over 2 years.

²⁸ Relinquishment Fee payable under UT2 and UT3 Standard Access Agreement is reduced in circumstances where all or part of the reduced Train Paths is being utilised by another Access Seeker.

in total pay less AT2 charges but contribute the same proportion of AT3 and AT4 revenue. Effectively the Access Holder is charged additional AT3 and AT4 by virtue of being required to pay the Relinquishment Fee in these circumstances.

The existing relinquishment provision penalises Access Holders for reducing Train Paths as a result of productivity improvements rather than incentivising them to do so. In this context, the barrier constituted by the relinquishment denies the Supply Chain the obvious benefits in the freeing up of Train Paths for use by other Access Seekers or holders, either on an ad hoc basis or a long-term Access Agreement, and potentially lessening or removing the requirement for costly network infrastructure enhancements.

Aurizon Network acknowledges there is an element of socialisation (AT2) under this proposal. Feedback received during consultation is that industry prefers no socialisation of costs under the Proposed Relinquishment Provisions. In response, Aurizon Network and the QRC are currently working through a mechanism to achieve this and welcomes other stakeholder comments on the proposed mechanism which is outlined in the section below entitled Proposed UT5 treatment.

It should also be noted that the current proposal does not preclude Access Holders from utilising trains with a payload less than the Revised Nominal Payload following a reduction in Train Paths and then raiing lower volumes thereby not contributing the same proportion of AT3 and AT4 revenue. This will result in:

1. socialisation of the shortfall in AT3 and AT4 revenue to other system users; and
2. an increase in tariffs in future years, as Aurizon Network would reflect the lower payload and volumes in the annual Reference Tariff review.

In the interests of making minimal variations to the Proposed Relinquishment Provisions that were substantially agreed with industry in UT4, Aurizon Network has not sought to address the above issue in its current submission. Rather we propose to include an ability to review and make amendments to the Proposed Relinquishment Provisions should this issue manifest, and the impact of socialisation has a material adverse impact to the relevant coal system.

Whilst Access Holders could choose to use the short-term transfer process in the Undertaking²⁹ to transfer Train Paths it does not need as a result of the productivity improvements, this is only a short term solution and is not an effective way of managing capacity in the long term, particularly given the required reduction in Train Paths is likely to be permanent.

This relinquishment provision was specifically included in Aurizon Network's UT4 submissions to the QCA at the request of industry and it was negotiated and substantially agreed between Aurizon Network and industry (QRC) and some operators as part of the UT4 process. Relevantly, as the provision is a relinquishment provision, it would not be able to be triggered by Aurizon Network.

Aurizon Network and Access Holders choose to reduce Train Paths to create additional capacity

Aurizon Network and Access Holders are, in general, incentivised to create additional capacity in the most cost effective way. In some circumstances this may be through Operators increasing their Maximum Payload as opposed to Aurizon Network investing in below rail infrastructure. Existing access agreements, including under UT4, do not provide a mechanism for Aurizon Network to facilitate this, which means that Aurizon Network would be required to seek the commercial agreement of numerous Access Holders. This would likely result in Aurizon Network being forced to undertake a more costly below rail investment where it cannot obtain the consent of Access Holders who may not have a commercial incentive to increase their payloads and reduce Train Paths.

²⁹ Clause 7.4.2(g) of [the UT4 Access Undertaking]

3.2.4 Proposed UT5 treatment

Aurizon Network has included the Proposed Relinquishment Provisions in the Standard Access Agreement and Standard Train Operations Deed in substantially the same form as the provisions in the Standard Access Agreement and Standard Train Operations Deed included with its April 2015 and February 2016 submissions to the QCA on its 2014 Draft Access Undertaking.

Minor variations from the UT4 position have been included as part of the draft UT5 Access Undertaking, which forms part of this Submission, specifically the inclusion of Clauses 7.4.3(f) – 7.4.3(k) of UT5. These clauses have been included to reflect the inclusion of the Proposed Relinquishment Provisions in the Standard Access Agreement and Standard Train Operations Deed whilst the standard resumption provisions that apply to all access agreements are included in Clause 7.4.3 of the draft UT5 Access Undertaking.

Further variations to this UT5 submission may be required to reflect the outcomes of ongoing consultation with the QRC. In particular Aurizon Network and the QRC are working through a mechanism to avoid socialisation of costs. In its initial form, this mechanism contemplates that where Train Paths are relinquished under these provisions, the Access Holder will pay a fee equal to the AT2 component of access charges that would have been payable in relation to the Train Paths that have been relinquished.

Aurizon Network considers inclusion of the Proposed Relinquishment Provisions provide for more effective management of capacity as it addresses matters that existing relinquishment and resumption provisions do not. It is also more practical and effective than relying on the short term transfer process.

The Proposed Relinquishment Provisions enable Aurizon Network and industry 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. It also ensures that there are standard provisions which apply to all Access Holders if any of the circumstances outlined above occur and a reduction in Train Paths is required.

3.3 Negotiated Access Conditions

This section addresses matters relevant to Access Conditions.

Under UT5 the QCA's approval of agreed Access Conditions is required only in respect of amendments to the Standard Access Agreement that are material in nature, and that approval process is limited to ensuring that the negotiated conditions do not disadvantage other parties or contravene the access undertaking or the QCA Act.

This is consistent with the overall scheme of the QCA Act under which priority is given to commercial negotiation between the parties with only those matters that cannot be agreed between an Access Provider and Access Seeker being subject to QCA arbitration.

3.3.1 UT4 treatment

Under UT4 Access Conditions are any conditions additional to those in the Standard Access Agreement (whether in the Access Agreement or a separate agreement) that mitigate Aurizon Network's or an Access Seeker's exposure to additional cost or risk associated with providing access for that Access Seeker's proposed Train Services and which are not, or would not, be included in the calculation of the Reference Tariff based on the approved WACC. In addition to this general definition of Access Conditions, UT4 sets out various specific conditions that are, by definition, Access Conditions.

This is generally consistent with the definition of Access Conditions in UT3. However, UT4 and UT3 diverged in some material respects, for example:

- > under UT3 Access Conditions related to mitigating Aurizon Network's exposure to "financial risks" whereas UT4 relates to mitigating Aurizon Network's or the Access Seeker's exposure to "any additional costs or risks"; and
- > the Access Condition approval processes under UT3 related to Major Expansions with a projected cost in excess of \$300 million, whereas under UT4 the approval process applies whenever Access Conditions are being negotiated, whether or not those Access Conditions are associated with an Expansion.

Under UT4, the approval process requires Aurizon Network prior to (or where negotiations started before the Approval Date, during) negotiation of Access Conditions, to provide a report to all relevant Access Seekers, Customers and the QCA which amongst other things details:

- > the Access Conditions;
- > quantification of the additional costs or risks it is seeking to mitigate;
- > why the risk cannot be mitigated by an Access Agreement, insurance or other financial instrument; and
- > confirmation that Aurizon Network considers the proposed Access Conditions would not contravene a provision of the Undertaking or the QCA Act.

Following provision of the report, Aurizon Network and the Access Seeker(s) may continue to negotiate on the Access Conditions for sixty (60) days unless otherwise extended by the QCA ("Negotiation Timeframe").

To the extent Aurizon Network and the Access Seeker(s) agree to the Access Conditions within the Negotiation Timeframe, the QCA will approve the Access Conditions unless it is of the opinion that any of the matters outlined in clause 6.13.2 (e) (i)-(iv) of UT4 apply.

If Aurizon Network and the Access Seeker(s) have not agreed to the Access Conditions within the Negotiation Timeframe, the QCA, in determining whether or not to approve the Access Conditions, takes into account additional matters as set out in clause 6.13.2 (f) (i)-(vii) of UT4.

3.3.2 Aurizon Network's assessment of UT4 treatment

The result of the broadened definition of Access Conditions and approval requirement is that a much larger number of agreements will be required to be approved by the QCA prior to execution. The preparation of an Access Conditions report, prior even to the negotiation of the agreements, is also required. The impact of this is discussed with respect to the following series of issues.

Application beyond Expansions

Access Seekers often request non-standard terms to address customer specific requirements, which if agreed with Aurizon Network, potentially require approval by the QCA, adding time, cost and risk to the finalisation of these non-standard access agreements by Aurizon Network and Access Seekers.

The position required by the QCA in UT4 arguably requires that every agreement relating to access that differs from, or is in addition to, a Standard Access Agreement, be approved by the QCA. For example, every change to:

- > guarantee arrangements to reflect the provision of an alternative form of security;
- > commencement dates to align with timing of the Access Seeker's mine specific infrastructure becoming operational; and
- > the termination and suspension provisions to allow Aurizon Network to terminate or suspend in circumstances where the Access Holder defaults under their related connection or connection funding agreements,

would require approval by the QCA.

The QCA proposal, which superimposes on any negotiations a role for the QCA to oversee and approve any Access Conditions, is inconsistent with a regulatory regime based on a negotiate-arbitrate model, in which the appropriate role of the regulator is to intervene in access negotiations only where the parties to a proposed access agreement cannot agree to its terms.

Workability

The QCA has materially expanded the scope of the Access Conditions regime, but has not addressed the time consuming nature of the approval process or its alignment to the expansion process. For example, the QCA approval process for the Wiggins Island Rail Project (**WIRP**) deeds (approved by the QCA under UT3) took well in excess of 8 months and resulted in additional cost, risk and uncertainty for Aurizon Network and WIRP customers. The lengthy approval process meant that there was no final QCA approval of the WIRP deeds in place before commitments for funding and construction of the expansion had to be made. Separate early works contracts had to be negotiated in order to meet timing requirements. This highlights the risk of delays adversely affecting customers and holding up expansions, potentially at significant cost.

The broader application of the Access Conditions approval regime in UT4, applying to even quite minor variations to the Standard Access Agreements, increases the risk of significant delays and uncertainty in the access negotiation process. This applies to both Expansion agreements and non-expansion agreements.

Proportionality

The UT4 position does not take into account the other protections that exist within UT4 (and within the proposed UT5) for access seekers who do not wish to agree to a term proposed by Aurizon Network that deviates from the Standard Access Agreement. Specifically:

- > the Standard Access Agreement acts as a safe harbour: Aurizon Network must contract on the terms of the Standard Access Agreement, unless otherwise agreed with the Access Seeker³⁰; and

³⁰ Clause 5.1(c) and Clause 5.1(d) of UT4 and the proposed UT5

- > if a dispute were to arise between Aurizon Network and the relevant Access Seeker in relation to a proposed variation from the Standard Access Agreement, the Access Seeker has the option of referring that matter for dispute resolution under Part 11 of UT4 (and under the proposed UT5).

Moreover, in the context of Access Conditions relating to Expansions, the UT4 position does not take into account the availability of User Funding as an alternative to agreeing Access Conditions with Aurizon Network.

As sophisticated and well-resourced commercial enterprises and robust participants in the regulatory process, Access Seekers are capable of assessing whether any Access Conditions put forward by Aurizon Network are appropriate. If Access Seekers are not satisfied with those Access Conditions, they may choose to fund the Expansion themselves through the user funding framework.

As part of the user funding framework, Aurizon Network is in the advanced stages of developing the Standard User Funding Agreements (SUFA), so an approved template for the framework will be available as a 'safe harbour' funding option in time for any proposed Expansion that has proceeded to the Feasibility study stage of the Expansion Process.

No power to approve Access Conditions

The fundamental framework of the QCA Act is a negotiate-arbitrate model. Simply put, Aurizon Network and the Access Seeker seek to negotiate the provision of access and if the parties cannot agree, the matters in dispute can be referred to, and determined by, the QCA as an access dispute within the limits of its arbitration powers.

The negotiate-arbitrate framework encapsulated under the QCA Act does not require that any agreement reached by the parties be subject to an approval process by the QCA. The QCA Act does not give the QCA any function relating to the approval of any aspect of access agreements.

It is also relevant that under section 168 of the QCA Act, an access agreement may exclude, change or restrict the application or operation of, or may otherwise be inconsistent with, an approved access undertaking. Section 168 of the QCA Act clearly contemplates that an Access Provider and an Access Seeker are entitled to negotiate access on terms that are inconsistent with an access undertaking approved by the QCA, and that doing so does not invalidate the access agreement.

By way of contrast, while section 168 protects an Access Provider's and an Access Seeker's rights to agree an outcome that is inconsistent with an approved access undertaking, where they cannot agree and the matter is referred to the QCA for arbitration as an access dispute, the QCA cannot make an access determination that is inconsistent with the relevant approved access undertaking.

This serves to highlight the importance, paramountcy and power of negotiations between an Access Provider and an Access Seeker and the limitations placed on the QCA.

Any provision of an access undertaking that prevents an Access Provider and an Access Seeker from freely negotiating terms (even if those terms are inconsistent with an access undertaking) divests the Access Provider and Access Seeker of their fundamental right to negotiate. Doing so would be counter to the fundamental framework on which the QCA Act is based and therefore inappropriate.

Any process in an access undertaking that permits the QCA to accept or otherwise approve Access Conditions, or an agreed deviation from a Reference Tariff, is by default entirely voluntary and cannot be required by the QCA.

Inconsistency with the Competition Principles Agreement

Clauses 6(4)(a)-(c) of the Competition Principles Agreement, to which the State of Queensland is a signatory, places primacy on commercially negotiated outcomes so that regulatory intervention only occurs where agreement between the parties cannot be reached. These principles are intended to be embodied with the Queensland Rail Access Regime.

In its successful application to the Commonwealth for certification of the Queensland Rail Access Regime under the Competition and Consumer Act 2010 (Cth), the Queensland Government explicitly noted that:

"The [Queensland Rail Access] Regime incorporates the principle of the primacy of contractual negotiations through the adoption of a "negotiate/arbitrate" model in the QCA Act. This operates so that once a service is declared the following process applies:

- (a) *the service provider is obliged to negotiate with the access seekers in respect of an access agreement; and*
- (b) ***if, and only if**, commercial agreement cannot be reached then an access dispute may be raised and arbitration by the QCA is available. (emphasis added)*

The primacy of contractual negotiations is also recognised by the Access Undertaking which contains the following provisions:

- (a) *a detailed negotiation framework to facilitate commercial negotiation;*
- (b) *a dispute resolution process where commercial agreement cannot be reached; and*
- (c) *an acknowledgement that the standard access agreement approved by the QCA (Standard Access Agreement) applies "unless otherwise agreed between QR Network and the Access Seeker". This acknowledges that the Standard Access Agreements only apply when commercial agreement has not been reached. This applies irrespective of whether the Access Undertaking has been submitted voluntarily under section 136 of the QCA Act or the QCA has required the owner or operator to submit the Access Undertaking under section 133 of the QCA Act.*

Therefore it is clear that the Regime incorporates the principle of the primacy of contractual negotiation."

The UT4 requirement that **all** Access Conditions (whether agreed or not) must be approved by the QCA contradicts the principle of primacy of commercial negotiation enshrined in the Competition Principles Agreement and which the Queensland Government has stated is embodied in the Queensland Rail Access Regime. Accordingly, the UT4 approach is not only inconsistent with its legislative framework, but also with the intended policy objective of the Queensland Government.

3.3.3 Proposed UT5 treatment

Aurizon Network's voluntary proposal in UT5 is that:

- > QCA approval of Access Conditions is required only in relation to variations from the Standard Access Agreement that are material.
- > Access Conditions which are material are those which:
 - result in a significant increase in costs to either Aurizon Network or the contracting Access Seeker;
 - result in a significant variation in risk allocation as between Aurizon Network and the contracting Access Seeker relative to the risk allocation which applies under the Standard Access Agreement;
 - result in a material adverse impact, in terms of increased costs or risk, on other users of the Rail Infrastructure;or
 - are otherwise deemed to be material by the contracting Access Seeker.
- > the QCA's approval only serves to certify that the Access Conditions do not:
 - materially and unfairly differentiate against the Access Seekers or Access Holders who will be directly affected by the condition and who will not be parties to the agreements containing the relevant conditions; or
 - contravene a provision of the QCA Act.

Approval of the Access Conditions will be sought once Aurizon Network and the Access Seeker have agreed the Access Conditions but before they become binding. Aurizon Network considers this approach more practical and

effective than the UT4 requirement to submit a report when parties intend to commence negotiating Access Conditions – as by definition, the commercial bargain will not at this stage have been struck.

Aurizon Network considers that its volunteered proposal is appropriate and removes any concern that the QCA or interested stakeholders may have in relation to Access Conditions potentially disadvantaging other parties.

In this regard, Aurizon Network notes that the QCA has access to all executed access agreements and can make its own assessment in the furtherance of its regulatory functions as to whether those agreements evidence any non-compliance with the QCA Act or an approved access undertaking.

3.4 Aurizon Network's right to invest in Network Expansions

3.4.1 Issue

This policy matter relates to whether Aurizon Network has a paramount right to invest in an Expansion on regulatory terms.

3.4.2 Overview

If Aurizon Network is prepared to invest in an Expansion at the regulated rate of return, it should be entitled to do so, irrespective of whether an Access Seeker wishes to adopt user funding. To require otherwise impairs Aurizon Network's right to invest in its own network without any statutory basis for doing so. A restriction on Aurizon Network's right to invest on regulatory terms is not required to facilitate access to the declared service. The user funding option should only apply where Aurizon Network is not willing to invest on regulatory terms.

3.4.3 UT4 treatment

UT4 grants Access Seekers the right to adopt user funding even if Aurizon Network:

- > is willing to fund (that is, invest in) an Expansion on regulatory terms; and
- > notifies Access Seekers of its willingness to fund by the applicable deadline in the Expansion Process.

This treatment has the result of conferring upon Access Seekers a paramount right to invest in an Expansion and preventing Aurizon Network from being able to invest in its own business.

3.4.4 Network's assessment of the UT4 treatment

The UT4 treatment is inappropriate on the basis that:

- > the treatment is inconsistent with the object of Part 5 of the QCA Act; and
- > the QCA has no power to override Aurizon Network's right to invest in its own network.

Each of these considerations is addressed in turn.

Inconsistency with the object of Part 5 of the QCA Act

The object of Part 5 of the QCA Act 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."*³¹

The retention of a right to invest in an Expansion on regulatory terms after Aurizon Network has provided notice that it is willing to do so meets the object of Part 5 of the QCA Act. An investment on regulatory terms which the QCA has approved as appropriate must surely promote efficient investment in rail infrastructure as required by the object of Part 5 of the QCA Act.

The absence of a paramount right for Aurizon Network to invest in its own business strikes at one of the key pillars of the object of Part 5 of the QCA Act – the investment pillar. This is because it creates an approved access undertaking that does not protect Aurizon Network's right to invest in efficient Expansions of its own network. In effect the approach reflected in the Final Decision operates to allow the dilution of Aurizon Network's proprietary

³¹ Section 69E of the QCA Act.

rights in its network, in circumstances where it is neither necessary nor appropriate to do so to facilitate access to the declared service.

On the basis of the object of Part 5 of the QCA Act, therefore, the extinguishment by the UT4 Final Decision of Aurizon Network's right to invest in an Expansion on regulatory terms cannot be justified.

No power to extinguish Aurizon Network's right to invest

Neither the CDD nor the Final Decision for UT4 identified the legislative basis for requiring an access undertaking to grant to Access Seekers a paramount right to fund Expansions in priority to Aurizon Network's ability to fund. Aurizon Network is unable to identify any legislative basis for this requirement.

If the price for access is built up in accordance with the QCA Act and the access undertaking approved by the QCA and the Access Provider is willing to fund the Expansion on regulatory terms, no basis exists for an access dispute in relation to the funding of the Expansion. The approach in UT4 is to seek to achieve an outcome through UT4 that could not be achieved if it were determining an access dispute.

Indeed, whenever the QCA makes an access determination relating to an Expansion it must only do so if, amongst other matters, it is satisfied that the legitimate business interests of both the owner and operator are protected.³² Aurizon Network's right to invest on regulatory terms in its facility (such as an investment in an Expansion) is squarely within the scope of its legitimate business interests. An access determination that is inconsistent with that right would clearly result in those legitimate business interests not being protected, and would therefore be outside of the QCA's powers.

It is not within the scope of an access dispute for an Access Seeker to dispute the right of an Access Provider to fund the relevant Expansion on regulatory terms merely because the Access Seeker feels that there is some commercial advantage to be gained by doing so. The dispute would in effect not be about access, but about the right of the Access Seeker to invest in, and receive a return from, the relevant Expansion. The QCA Act does not confer on the QCA a right to adjudicate on who should be entitled to invest in Aurizon Network's rail network.

If the QCA is unable to make an access determination overriding Aurizon Network's right to invest in an Expansion that is necessary to provide access, then the QCA can have no power to require such an outcome under an approved access undertaking. The UT4 provisions on this matter therefore go beyond the powers of the QCA envisaged by the access dispute provisions of the QCA Act.

Aurizon Network accepts that where it cannot, or is unwilling to, fund the cost of an Expansion that is necessary for access, the relevant Access Seekers should have an option to fund the costs of the Expansion themselves. This is consistent with the QCA Act, the object of Part 5 of the QCA Act, and the powers of the QCA. It is another thing entirely for the QCA to establish a regime where Access Seekers have a paramount right to fund Expansions, even if Aurizon Network is willing to do so on regulatory terms. This goes well beyond what is required to facilitate or provide access to the declared service and is beyond the power of the QCA.

3.4.5 Proposed UT5 treatment

Aurizon Network proposes that its provision of a notice (within the timeframe specified by the Undertaking) that it is willing to fund on regulatory terms would establish Aurizon Network's right to fund, and remove any right of the Feasibility Funders to adopt user funding for that Expansion. Whether that Expansion proceeds into development or not will depend on business matters such as the outcome of the applicable feasibility study, the project receiving pre-approval and the preparedness of Access Seekers to enter access agreements.

Under this proposal Aurizon Network would have the right to fund, and, if all other pre-conditions to project commitment are met, the obligation, to invest in the Expansion on regulatory terms. The retention of this right

³² Sections 119(4B) and (5) of the QCA Act.

ensures consistency with Aurizon Network's proprietary rights over its rail network and is consistent with Aurizon Network's role as a provider of access to its rail network.

Aurizon Network does not volunteer for inclusion within UT5 a provision that permits user funding being available where Aurizon Network has given the required notice of its willingness to fund the relevant Expansion on regulatory terms.

Where Aurizon Network does not elect to invest in any Expansion on regulatory terms, Access Seekers would be free to pursue the user funding option for that Expansion, as is currently the case under UT4.

3.5 Capacity shortfall rectification obligation

3.5.1 Issue

The policy issue discussed in this section is whether Aurizon Network should have an obligation to bear the cost of rectifying a capacity shortfall (**CSR Obligation**) in respect of an Expansion.

3.5.2 Overview

A capacity shortfall arises if and to the extent that an Expansion of a coal system is undertaken and a post-completion capacity assessment demonstrates that the Expansion has resulted in less capacity on that coal system than is required to meet all of the access rights granted on the basis of the Expansion undertaken.

Aurizon Network proposes in UT5 that it should have no CSR Obligation in respect of any Expansion. Such an obligation would be inconsistent with:

- > the QCA's powers under the QCA Act, as it creates an access undertaking obligation requiring Aurizon Network to bear the cost (in whole or part) of "extending" the rail network; and
- > the proposed UT5 Expansion process and contracting model adopted in UT5.

On the basis of its own assessment and the QCA's own statements in the public domain, Aurizon Network considers that the QCA would be acting beyond its powers if the QCA refused to approve UT5 on the grounds that it should include a CSR Obligation.

3.5.3 UT4 treatment

Calculating the Capacity Shortfall and Aurizon Network Shortfall (AN Shortfall)

Aurizon Network is obliged to calculate the Capacity Change arising from an Expansion and to determine whether a Capacity Shortfall has arisen in relation to that Expansion.

Where:

- > the scope and standard of work for an Expansion is altered or determined by unanimous agreement of Conditional Access Holders or through dispute resolution under clause 11.1 of UT4;
- > the Expansion is constructed in accordance with that scope and standard; and
- > the Expansion results in a Capacity Shortfall,

Aurizon Network is required to calculate the Capacity Shortfall that would have arisen if the scope and standard of work previously proposed by Aurizon Network had been constructed – i.e. the AN Shortfall.³³

Where there is default or negligence

Aurizon Network is obliged to "rectify the implications of":

- > the relevant Shortfall Expansion if the Capacity Shortfall was caused wholly by a default by, or negligent act or omission of, Aurizon Network; or

³³ Clause 8.9.2(c) of UT4

- > that part of the relevant Shortfall Expansion relating to an AN Shortfall where the Capacity Shortfall included an AN Shortfall and the Capacity Shortfall (other than the AN Shortfall) was not otherwise caused by a default by, or negligent act or omission of, Aurizon Network.

For the purpose of those provisions, UT4 provides that an AN Shortfall is deemed to have been caused by the default or negligence of Aurizon Network.³⁴ There is no qualification to that deeming provision.

When Aurizon Network funds an Expansion

Where Aurizon Network funded the original Expansion, it is required to “rectify” the Shortfall Expansion.

Where Aurizon Network funded part of the original Expansion, Aurizon Network is required to “rectify” the proportion of the Shortfall Expansion in proportion to its funding of the original Expansion (even if the other funders do not do likewise).

Election to fund non-AN Shortfall element of Shortfall Expansion

Each of the above rectification scenarios appears to be subject to the election of Affected Access Holders to fund an Expansion to address the difference between the Capacity Shortfall and the Aurizon Network Shortfall.³⁵

3.5.4 Aurizon Network’s assessment of the UT4 treatment

As part of a pragmatic approach to resolving UT4, Aurizon Network accepted a CSR Obligation, as it considered it unlikely there would be any major expansion projects that triggered the CSR Obligation prior to the scheduled expiry of UT4. Notwithstanding this acceptance, Aurizon Network considers that this obligation is outside of the QCA’s power to require and furthermore inconsistent with the UT4 Expansion Process and the access contract commercial model in UT4.

AN Shortfall scenario

The implementation of the UT4 Expansion Process for a proposed Expansion will provide Access Seekers with information about the trade-off between:

- > the expected capital cost of the Expansion’s scope, and
- > the certainty that this scope will enable the required quantum of access rights to be made available from the coal system(s) to be upgraded by the Expansion.

This trade-off (the ‘Scope/Certainty Trade-off’) arises because Access Seekers want the expected capital cost of the project scope to be as low as possible (minimising access charges subsequently payable by those Access Seekers), but also want a high level of certainty over the availability of the required access rights (requiring adequate project scope and its associated capital cost).

As noted in the UT4 Final Decision, the Expansion Process should “allow those parties considering funding the expansion to make informed decisions regarding the expansion option they wish to take through to execution.”³⁶ This flexibility, which is available to Access Seekers other than potential project funders under UT5, is entirely appropriate as it is by no means self-evident that an Access Seeker will always want a very high degree of certainty that the required quantum of access rights will be available, given the expected capital cost of the project scope required to achieve that certainty.

For example, if Project Scope A (\$500 million) is expected to provide a moderately high level of certainty that the required access rights would be available, and Project Scope B (\$900 million) is needed to provide a very high level

³⁴ Clause 8.9.4(a)(ii)(A) of UT4

³⁵ Clause 8.9.4(a) of UT4

³⁶ See Final Decision, Volume 2, p. 226

of certainty, then the Access Seeker(s) involved may well consider that Project Scope A should be adopted instead of Project Scope B.

Aurizon Network's role in the consideration of the Scope/Certainty Trade-off should be to provide Access Seekers with options and quality information about the implications of these options so they can choose the best option to fit their business needs. Aurizon Network should not have a vested interest in advocating any option (and in particular an option that would entail additional scope), to ensure that the Access Seekers are given as much flexibility as possible to exercise their business judgement over the optimal Scope/Certainty Trade-off.

During the UT4 Expansion Process Access Seekers are free to obtain expert independent advice to inform their decisions about the Scope/Certainty Trade-off (or indeed any other aspect of the studies conducted by Aurizon Network).

The flexibility available to access customers over the Scope/Certainty Trade-off is supported by the access contract commercial model adopted in UT4. Under that model Aurizon Network is obliged to make available to the Expansion's Access Seeker(s) the contracted train paths, subject to the critical proviso of the compression mechanism. The compression mechanism operates to reduce the Expansion Access Seeker's access rights if, and to the extent that, following the Expansion's completion, the coal systems upgraded by the Expansion assets are unable to provide all of the contracted access rights.³⁷ This compression mechanism does not affect existing Access Holders as their access rights are not compressed by it. Effectively, under that access contract commercial model, the risk that an Expansion's scope will turn out to be inadequate to provide the contracted access rights is allocated to the Expansion's Access Seeker.

If Aurizon Network were to bear a CSR Obligation, it would have an understandable and wholly legitimate business interest during the Expansion Process in minimising the risk that it could subsequently be required to bear the cost of rectifying a capacity shortfall identified after project completion. In this circumstance the commercially prudent course of action for Aurizon Network would be to propose an 'ample scope' development option to Access Seekers, even though such an option may not fit their business needs (as illustrated by the example above of Project Scopes A and B). The existence of the CSR Obligation works against Aurizon Network meeting access seekers' needs. In fact, Aurizon will be incentivised to provide a single Expansion proposal designed to maximise the likelihood of providing sufficient capacity to avoid the risk of a Capacity Shortfall, with the result that disputes about the scope of the Expansion will arise.

In negotiating a project development agreement Aurizon Network would have a commercial incentive to propose an 'ample scope' option in order to establish an 'imposed scope' benchmark, effectively minimising its CSR Obligation, compared to proposing a 'lean scope' option where its CSR Obligation is increased. Aurizon Network therefore considers that under this scenario the CSR Obligation would create perverse incentives that do not serve:

- > the business interests of Aurizon Network's access customers in managing the optimal Scope/Certainty Trade-off and providing for the most efficient Expansion;
- > the legitimate business interests of Aurizon Network itself;
- > the public interest in having efficient investment in the QCN; or
- > the object of Part 5 of the QCA Act.

Accordingly, the inclusion of the CSR Obligation under this scenario would be contrary to section 138(2)(b) of the QCA Act.

It is also contrary to promoting the object of Part 5 of the QCA Act in that, by providing a commercial incentive for Aurizon Network to propose an 'ample scope' option, it does not promote efficient investment in rail infrastructure.

³⁷ See Standard Access Agreement – coal, clause 9

However, in addition to the above matters:

- > An AN Shortfall is an entirely hypothetical, desktop assessment of likely capacity which is compared to a Capacity Shortfall that is based on an actual delivered Expansion in an actual operating rail network. Aside from this, an AN Shortfall may be determined based on a scope and/or standard of works proposed by Aurizon Network that was based on entirely different facts and circumstances – the scope of the actual Expansion being able to take into account facts and circumstances that only subsequently became known. The process under UT4 results in an ‘apples and oranges’ comparison under which Aurizon Network would likely be significantly disadvantaged.
- > UT4 deems an AN Shortfall to have arisen due to Aurizon Network’s default or negligent acts or omissions. The obligation effectively penalises Aurizon Network for having done nothing wrong where well-resourced and sophisticated parties have made their own assessment of scope and standard but without taking full responsibility for that decision.

Default or negligence

UT4 creates an obligation on Aurizon Network to “rectify the implications” of a Shortfall Expansion where the Capacity Shortfall was wholly caused by Aurizon Network’s default or negligent acts or omissions. It is outside of the QCA’s powers to ascribe remedies for default (presumably breach of contract) or negligent acts or omissions (presumably negligence). These matters are dealt with by the law of contract and law of negligence. The QCA is effectively usurping judicial powers to address contractual and tortious risks by creating a statutory obligation in place of common law rights and obligations. The approach in UT4 removes Aurizon Network’s ability to manage risks through appropriate contractual provisions negotiated with sophisticated counterparties.

Aurizon Network funded scenario

Under this scenario Aurizon Network would be obliged to fund the entire capacity shortfall even if:

- > the access customers had required a ‘lean scope’ option to be adopted in the project development agreement contrary to Aurizon Network’s proposal; or
- > a ‘lean scope’ option were to be imposed by Aurizon Network under the UT4 dispute resolution process.

The obligation exists provided that the affected customers do not elect at their discretion to fund an Expansion to remedy the non-AN Shortfall element of the capacity shortfall.³⁸

This scenario creates a commercially perverse outcome that is contrary to sound risk allocation practice. Under UT4, the party that bears the financial consequences of an imprudently modest scope for an Expansion is the party that proposed a prudent scope for that Expansion, but was overruled by the decision of an access customer or a determination under the dispute resolution process.

This risk allocation would discourage Aurizon Network from investing in an Expansion unless it had an ‘ample’ scope that would ensure a very high level of certainty of access availability. Aurizon Network does not understand why UT4 adopts a mechanism that would discourage Aurizon Network from investing in an Expansion. Aurizon Network also considers that the inclusion of this mechanism would be contrary to the objective of Part 5 of the QCA Act, and would not result in Aurizon Network’s legitimate business interests being protected, which would be contrary to section 138(2)(b) of the QCA Act.

Partially funded scenario

UT4 also provides for the circumstance where Aurizon Network has partly funded an Expansion and a Capacity Shortfall arises. In that case:

³⁸ See clause 8.9.4(a), clause 8.9.4(a)(i)(A) and clause 8.9.3(e)(ii) of UT4

- > Aurizon Network has an obligation to rectify the proportion of the Shortfall Expansion in proportion to its funding of the original Expansion. No provision is made for the parties to negotiate or enter into agreements. Aurizon Network simply has an obligation to rectify the relevant proportion of the Shortfall Expansion.
- > The Conditional Access Holder who (or whose Customers) provided funding for the original Expansion must rectify the remainder of the Shortfall Expansion “if they require it”, and if they do require it Aurizon Network and the Conditional Access Holders (or their Customers) must promptly enter into User Funding Agreements “on the same terms”.

So, Aurizon Network is compelled to fund a Shortfall Expansion even though the Conditional Access Holders may not decide to fund their part. Aside from the inequality of this, it also potentially results in practical difficulties due to the fact that the relevant Shortfall Expansion may be relatively minor which may increase the cost of the rectification substantially or ultimately require Aurizon Network to fund capacity in excess of what is necessary to satisfy the relevant obligation.

Compelling Aurizon Network to bear the cost of a Shortfall Expansion

As discussed further below, to the extent that the Capacity Shortfall exists and UT4 seeks to set out obligations on Aurizon Network for the funding of Shortfall Expansions (as outlined above) those obligations were and remain outside the QCA’s powers to impose on Aurizon Network.

Basis for the preferred approach

Aurizon Network notes that there is a useful precedent in the UT4 regulatory treatment of Capacity Deficits. In simple terms, a Capacity Deficit arises for a coal system if and to the extent that an annual capacity assessment demonstrates that the aggregate Access Rights for that coal system exceeds that system’s Capacity. By contrast, a capacity shortfall is a measure of the degree to which a completed Expansion has not provided the quantum of Capacity expected from that Expansion upon commitment.

In the context of a capacity deficit the QCA has “*focussed on promoting finding solutions [sic] to address a capacity deficit, rather than specifying the funding arrangements for doing so.*”³⁹ Aurizon Network endorses this approach, and considers it should be applied on a similar basis to any Capacity Shortfall.

3.5.5 Previous QCA considerations of the matter

QCA acknowledgement of boundaries under the QCA Act

Aurizon Network notes that at various times the QCA has conceded that it does not have the legal power to compel Aurizon Network to fund an Expansion.

As part of its UT4 Final Decision the QCA noted the response of two stakeholders to the UT4 CDD capacity deficit provisions (the CDD included the capacity deficit treatment now incorporated in UT4). The stakeholders’ position was that that Aurizon Network should fund any capacity deficit.⁴⁰ In making its UT4 Final Decision the QCA disagreed with this position, stating:

“[...] 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.”⁴¹

³⁹ See UT4 Final Decision, Volume II, p. 57

⁴⁰ See UT4 Final Decision, Volume II, p. 56

⁴¹ See UT4, Final Decision, Volume II, p. 57

Aurizon Network has reached a similar position and considers that the boundaries of the QCA's remit under the QCA Act prevent the QCA from requiring Aurizon Network to fund an Expansion including one necessary due to a Capacity Shortfall or due to a capacity deficit, or indeed for any other reason. Capacity Shortfalls are appropriately a matter for negotiations between the contracting parties.

QCA withdrawal of intent under UT4 to impose a 'voluntary' funding commitment

During the UT4 regulatory process the QCA effectively withdrew its proposed decision to not approve the associated DAU on the grounds that it failed to include a 'voluntary' funding commitment. More specifically, in the UT4 Interim Draft Decision the QCA stated:

*"Our Draft Decision is to refuse to approve Aurizon Network's 2014 DAU proposal in respect to commercial terms for funding an expansion. Instead, we consider it appropriate for Aurizon Network to amend the 2014 DAU as follows in the manner we have indicated in our proposed draft so that Aurizon Network makes a voluntary funding commitment."*⁴²

However the QCA did not include this decision in the UT4 CDD, with the following explanation provided:

*"In our initial draft decision, we acknowledged that the QCA Act would need to be amended to facilitate our preferred position. We acknowledge that we may not have the power to require Aurizon Network to provide a voluntary funding obligation, and this was the reason that we made a recommendation in this respect rather than a decision. It therefore remains a matter at Aurizon Network's discretion and we have removed the initial draft decision."*⁴³

In respect of the 'voluntary' funding obligation, the UT4 Final Decision provided no further discussion of stakeholders' comments or any QCA analysis, and did not include a final decision on this matter.⁴⁴

Aurizon Network agrees with the QCA's statement that it is at Aurizon Network's discretion as to whether it provides a voluntary funding obligation.

QCA submission to the Productivity Commission

In July 2013, the QCA responded to the Productivity Commission's Draft Report on the National Access Regime.⁴⁵ In its submission the QCA stated that it may:

*"direct a facility owner to pay some, or all of the costs, of extending its facility if the requirement is consistent with an access undertaking that has been voluntarily submitted to the Authority. This [...] only applies to access undertakings provided voluntarily to the Authority. This means that it is at the discretion of the Access Provider to decide whether to include a funding commitment of this nature in its access undertaking."*⁴⁶

Aurizon Network agrees with the QCA that it is at Aurizon Network's discretion as to whether it provides a funding commitment in its access undertaking.

⁴² See UT4 Initial Draft Decision, Volume II, Draft Decision 12.10, p. 269.

⁴³ See UT4 CDD, Volume II, p. 165

⁴⁴ See UT4 FD, Volume II, p. 214

⁴⁵ See <http://www.pc.gov.au/inquiries/completed/access-regime/submissions/submissions-test2/submission-counter/subdr057-access-regime.pdf>

⁴⁶ See QCA submission to Productivity Commission inquiry on National Access Regime, p. 1

3.5.6 Proposed UT5 treatment

In UT5 Aurizon Network has adopted the QCA's approach on "finding solutions" to the capacity shortfall issue. In the event of any capacity shortfall, the affected access customers and Aurizon Network should negotiate in good faith:

- > options for the rectification of that capacity shortfall; and
- > if the parties agree that the best option is one or more Expansions, the funding party and funding agreement terms for each Expansion.

Any dispute over which party should fund such an Expansion, and in what proportion, should only be determined under the UT5 dispute resolution process if all parties agree to that dispute being resolved under that process.

This treatment closely follows the UT4 treatment of a capacity deficit.⁴⁷ In accordance with this approach, Aurizon Network does not volunteer to assume a CSR Obligation under UT5.

Aurizon Network considers that the absence of a CSR Obligation in UT5 will be beneficial for access customers. In respect of AN Shortfall scenarios, Aurizon Network will be free to work collaboratively with access customers to develop an agreed Expansion scope that best meets those customers' particular business circumstances. In respect of Aurizon Network funding scenarios, Aurizon Network will not be discouraged from investment due to a perverse risk allocation. Should access customers for a particular transaction seek Aurizon Network to assume a CSR Obligation, then Aurizon Network would be prepared to negotiate on a commercial basis with those parties in respect of the inclusion of such an obligation in project development documentation.

The QCA would be acting beyond its powers if the QCA refused to approve this UT5 submission on the grounds that it should include a CSR Obligation.

⁴⁷ See clause 7A.4.3, in particular clause 7A4.3(d), of UT4

3.6 Supply chain coordination

3.6.1 Issue

This policy matter addresses the requirement for Aurizon Network to participate in supply chain coordination and adopt operational changes identified by Supply Chain Groups.

3.6.2 Overview

Under Part 7A of UT4 Aurizon Network must both participate in Supply Chain Groups and, provided its incremental costs are recoverable, adopt operational changes determined by those groups that could increase capacity.

Although Aurizon Network has worked and will continue to work collaboratively with Supply Chain Groups, it considers that:

- > issues of workability and fairness arise where Aurizon Network is obliged to adopt operational changes determined by a Supply Chain Group if the interests of that Supply Chain Group and other users, or of two competing Supply Chain Groups, diverge; and
- > the QCA Act does not empower the QCA to:
 - mandate Aurizon Network’s participation in such groups; or
 - require Aurizon Network to comply with business directions from third parties.

Under UT5, Aurizon Network’s involvement in supply chains is a voluntary component of the Access Undertaking. Aurizon Network is willing to commit to participation in Supply Chain Groups where it is reasonable to do so. Consistent with UT4, Aurizon Network will continue to assist Supply Chain Groups, where its costs are recoverable under the undertaking, by:

- > participating in the development and review of Supply Chain Group master plans; and
- > reviewing options for the development of Capacity being investigated by the Supply Chain Group and upon request, investigating operational changes that could release Capacity in the relevant Coal System,

but only where it has capacity to do so and in respect of reasonable requests.

However, Aurizon Network will not be obliged to implement operational changes suggested by a Supply Chain Group. Instead, where it chooses not to do so, it will, in the interests of transparency, provide its reasons for not doing so.

3.6.3 Obligation to participate in Supply Chain Groups

UT4 treatment

In response to stakeholder calls for a more collaborative and transparent coal supply chain, Aurizon Network volunteered in UT4 a position of participation in Supply Chain Groups on a reasonable endeavours basis. The Final Decision expanded on Aurizon Network’s voluntary position, creating a strict obligation compelling Aurizon Network to participate in each Supply Chain Group (i.e. not to just use reasonable endeavours to do so).

The explanation for this aspect of the Final Decision was that a reasonable endeavours obligation would result in Aurizon Network playing a limited or peripheral role in supply chain coordination. Mandating participation was deemed to be necessary to ensure efficient operation of the CQCN.

Aurizon Network's assessment of UT4 treatment

Mandatory participation in Supply Chain Groups is not necessary to ensure the objective of the efficient operation of the rail network. The Final Decision in UT4 has gone beyond the QCA's power by imposing a strict obligation compelling Aurizon Network to participate in each Supply Chain Group.

The appropriate scope of an access undertaking is to set out the terms upon which access is provided to the declared service.⁴⁸ The declared service is the use of rail transport infrastructure for providing transportation by rail.⁴⁹ A clause that requires Aurizon Network to participate in Supply Chain Groups, is not a clause which relates to the terms upon which access is provided to that service.

The obligation as drafted in UT4 is inflexible and does not give Aurizon Network the option to not participate in Supply Chain Groups which are not representative of the relevant supply chain, nor to limit its participation to where it is reasonable to do so (e.g. to only participate in those meetings where it is efficient or feasible to do so).

In any event, mandatory participation is unnecessary, as the Undertaking already provides avenues for Supply Chain Groups to participate in instigating change to the operation of the rail network. The efficient operation of the Central Queensland rail network is ensured through other instruments, including the System Operating Parameters, Network Management Principles, and System Rules. The Undertaking already requires Aurizon Network to consult Supply Chain Groups during the development of, and change to, these instruments. In addition, Supply Chain Group members such as Access Holders and Customers are also consulted in their own right. There is an established governance framework within the undertaking for the review of such changes to ensure that any changes made are the right decisions for the CQCN and for all of our customers.

Proposed UT5 Treatment

Aurizon Network's UT5 contains a position similar to UT3. This involves a change to Aurizon Network's obligation to participate in Supply Chain Groups, so that it need only participate where it is reasonable to do so.

Aurizon Network acknowledges industry concerns around achieving effective coordination. Aurizon Network has been a vital player in integrating planning activities across the CQCN to date (and has not had a limited or peripheral role), even though under UT3, Aurizon Network was not compelled to do so and was only obliged to use reasonable endeavours to participate in:

- > Supply Chain Groups and coordinated maintenance activities with other service providers and participants in coal supply chains;⁵⁰ and
- > The development of a Supply Chain Master Plan, where a Supply Chain Group seeks to develop such a plan.⁵¹

Under UT5, Aurizon Network will continue to participate in a Supply Chain Groups, where it is reasonable to do so.

Consistent with UT4, under UT5 where a Supply Chain Group requests Aurizon Network's to do so, Aurizon Network will continue, so long as the incremental costs of doing so are recoverable under the undertaking, to:

- > participate in its development or reviews of the relevant Master Plan;
- > review options for the development of Capacity being investigated by the Supply Chain Group and advise of impacts on the network and its operation; and
- > investigate operational changes that could increase Capacity in the relevant Coal System, including by conducting a review of the relevant System Operating Parameters,

However, under UT5 it will do so only where it has capacity to do so and in respect of reasonable requests.

⁴⁸ See definition of "access undertaking" in Schedule 2, Dictionary of the QCA Act 1997

⁴⁹ Section 250(1)(a), QCA Act 1997.

⁵⁰ Clause 11.1.1 of UT3

⁵¹ Clause 11.1.2 of UT3

Aurizon Network has also adjusted the definition of Supply Chain Group to ensure it captures only groups which have been established as a supply chain coordination group *and* which have the support of sufficient participants in a relevant Supply Chain to effectively perform that function. (By contrast the UT4 definition used the word “or” in place of the italicised “and”). This will ensure that Aurizon Network is only obliged to participate in legitimate Supply Chain Groups, which do not have sufficient user support to achieve a supply chain coordination function.

Under UT3, Aurizon Network has participated in and been an integral player in the majority of Supply Chain Groups. The change from our obligation under UT4 to participate where it is reasonable to do so will not impact how Aurizon Network presently engages with the supply chain.

3.6.4 Obligation to implement operational changes

UT4 treatment

Part 7A of UT4 requires that Aurizon Network adopt operational changes determined by each Supply Chain Group that could increase capacity in the relevant supply chain, but only to the extent that operational changes do not adversely affect the Network Management Principles, System Operating Parameters or System Rules, or result in the rail infrastructure being operated in a manner inconsistent with the Safeworking Procedures and Safety Standards. By including this drafting, the QCA has enabled a Supply Chain Group to determine changes required to the CQCN. Such change may benefit an individual supply chain, but may not be efficient for the CQCN as a whole or broader supply chains in the same system.

Aurizon Network’s assessment of the UT4 treatment

Capacity creation is dealt with specifically under Part 8 of the Undertaking. In accordance with that process, Aurizon Network assesses options for capacity creation to meet demand (including operating changes which might be suggested by Supply Chain Groups) in the context of demand for access rights from Access Seekers. Stakeholders are provided detailed information on the options analysis. If stakeholders do not agree with the option selected by Aurizon Network for capacity creation, the selection can be determined through dispute resolution. Part 8 also deals with the appropriate allocation of the capacity created between stakeholders.

It is anomalous to also include a partial capacity creation mechanism in Part 7A which:

- > does not integrate with Part 8;
- > can be enforced by one limited group of stakeholders (with no consultation with others);
- > fails to adequately consider all options for capacity creation or select the appropriate option; and
- > is mandated whether or not there are any Access Seekers and whether or not any capacity needs to be created in order for access rights to be granted to Access Seekers – i.e. it is independent from, and sits outside, negotiations for access.

Aurizon Network considers that the imposition on it of an obligation to make operational changes as required by Supply Chain Groups would be beyond the QCA’s power. An Access Undertaking is a written undertaking that sets out details of the terms upon which an Access Provider grants access to the service.⁵² The QCA Act does not provide for, and is not intended to permit, the QCA to give power to third party groups to instruct Aurizon Network on how to operate its business. The QCA is not empowered under the QCA Act to remove from Aurizon Network its business direction in regards the operation and management of the CQCN and the conduct of its business in favour of directions of third parties – which is the practical effect of the UT4 provisions.

⁵² See definition of “access undertaking” in Schedule 2, Dictionary of the QCA Act 1997

In any event, other processes within UT4 exist to manage and regulate the expansion of the network where Access Seekers are seeking access rights and, as a result, capacity needs to be created. The obligation to implement supply chain initiated operational changes in Part 7A conflicts with those processes and their intended outcomes.

- > Providing Supply Chain Groups with the ability to impose changes with a view to potentially increasing capacity bypasses the Expansion Process provided by Part 8 of the Undertaking.
- > There is no requirement that Supply Chain Group-initiated operational changes must be the most prudent means of capacity expansion. By contrast Part 8 provides that the merits of options are to be considered as part of a rigorous process and allows dispute resolution where parties cannot agree on the resulting project's scope. The Supply Chain Group's operational changes potentially arise entirely independently of negotiations for access and the analysis of the needs of Access Seekers for additional Capacity.
- > There is no requirement in Part 7A to assess whether the demand for increasing capacity is prudent in accordance with the Access Process detailed in Part 4 of the Undertaking, or whether there is sufficient demand overall. Part 7A of UT4 also fails to take into account the capacity allocation provisions of Part 7 and the capacity creation provisions of Part 8.

Clause 7A.3(d) of UT4 enables one Supply Chain Group to affect operational changes on the part of the rail network on which its members operate. A Supply Chain Group will not necessarily include every stakeholder using that part of the rail network. There is no protection for stakeholders outside of that Supply Chain Group in terms of further costs or inefficiencies resulting from a supply chain requirement to implement an operational change. An operational change may entail increased operating cost to meet the operational requirements of one particular group represented by a Supply Chain Group. This operational change may not be reflective of the interests of the broader user group, who may as a result fund part of the Supply Chain Group's capacity increase (through socialised access tariffs). As examples:

- > One Supply Chain Group may develop an operational change to reduce maintenance closures across the system, with the intention of increasing capacity on that system. However, the operational change sought may be:
 - specific to that supply chain;
 - due to another element of that supply chain operating inefficiently; or
 - incompatible with the operation of the network as a whole.
- > Increased costs involved in facilitating fewer closures (for increased plant or labour) would be shared across the system once those costs were approved into the MAR. The result would be that the system would pay for costs that were not necessarily required for the CQCN to operate and run efficiently.

Clause 7A.3(c) of the Undertaking requires Aurizon Network to act in a way that facilitates an appropriate balance between all elements of supply chains (in respect of which Access forms a part) to seek to maximise the performance of those supply chains.

There is potential for multiple Supply Chain Groups to be formed in the CQCN (many of which may coexist in the one system or share the same physical track sections) and to be in direct competition to achieve maximum performance for their own individual supply chain. Notwithstanding Aurizon Network may not have influence or jurisdiction over certain aspects of the supply chain (for example, port, mine and above rail operations), a proposal by one supply chain may directly impact another's performance. If this were to occur, Aurizon Network cannot be enforced to make changes in favour of one supply chain without considering the balance between supply chains and our general obligations on differentiation under Part 2.

In conclusion, as is standard practice for management of rail networks, one entity alone should be responsible for making decisions about rail network operation. That entity is Aurizon Network, the rail network's accredited rail infrastructure manager. Aurizon Network considers that the multiple decision-maker approach adopted by the QCA in UT4 is inconsistent with the object of Part 5 of the QCA Act, since the empowerment of multiple decision-makers to make operational decisions is contrary to the promotion of economically efficient operation of the CQCN.

Proposed UT5 treatment

The UT4 drafting is outside the regulatory scope of the declared service and scope of an access undertaking which can be compelled under the QCA Act. It does not adequately provide for alignment with other principles of the Undertaking, or establish a suitable mechanism to protect the interests of Aurizon Network and other users. To address this, in UT5, Aurizon Network proposes drafting which:

- > obliges it to participate in Supply Chain Groups where it is reasonable to do so.
- > obliges it, acting reasonably, where it has the capacity to do so and where the request is reasonable, to:
 - participate in the develop or review of the Supply Chain Group’s master plan
 - review options for the development of Capacity being investigated by the Supply Chain and advise of network and operational impacts
 - investigate operational changes that could increase Capacity by conducting a review of System Operating Parameters under clause 7A.5, so long as its incremental costs of doing so are recoverable under the undertaking;
- > removes the provisions requiring Aurizon Network to implement operational changes identified by each Supply Chain Group but requires that where Aurizon Network decides not to implement such changes, it provides the Supply Chain Group with its reasons for not implementing the change.
- > adjusts the definition of Supply Chain Group to ensure it captures only groups which have been established as a supply chain coordination group *and* which have the support of sufficient participants in a relevant Supply Chain to effectively perform that function. (By contrast the UT4 definition used the word “or” in place of the italicised “and”). The intent is to ensure that only legitimate Supply Chain Groups are able to benefit from the provisions.

Aurizon Network is committed to cooperating with its customers and Supply Chain Groups on a voluntary basis. This has been demonstrated through participation in such groups to date. In terms of capacity enhancements and the ability to seek operational changes, Access Seekers, Access Holders and customers have the inherent protection of the Undertaking through both the Access Process detailed in Part 4, and the Expansion Process (as required) in Part 8.

Aurizon Network will continue to assist Supply Chain Groups in identifying and assessing operational changes that could release capacity. In the interests of transparency, if Aurizon Network chooses not to implement such changes, Aurizon Network will have an obligation to inform the relevant Supply Chain Group of its reasons.

We consider these changes from the UT4 position will not impact on the operational effectiveness of Supply Chain Groups, and will bring the Undertaking back into closer alignment with the statutory scope of the regulatory regime. It will also remove the ability for changes to be forced by one stakeholder to the detriment of others.

3.7 Dispute resolution process

3.7.1 Introduction

The purpose of Part 11 of UT5 is to provide for an effective and enhanced dispute resolution process which governs access disputes.

The QCA's dispute resolution powers under the QCA Act are effectively limited to the arbitration of access disputes. The QCA Act gives no general power to the QCA to arbitrate claims that an Access Provider is in breach of an access undertaking or the QCA Act. Instead, the QCA Act sets out specific remedies for the QCA or another person in relation to failures to comply with an approved access undertaking.

Aurizon Network has volunteered a dispute resolution process in previous access undertakings. In UT4, the QCA required material amendments to that process expanding on both the process that Aurizon Network was volunteering and the QCA's powers under the QCA Act.

Dispute resolution under the QCA Act for access disputes must form the framework for any proposed dispute resolution process. UT5 cannot be inconsistent with the dispute resolution powers of the QCA and the dispute resolution requirements under the QCA Act. Aurizon Network cannot invest the QCA with powers it does not have under the QCA Act and the QCA cannot invest itself with any such powers.

However, Aurizon Network can and does propose to volunteer preliminary steps as part of the dispute resolution process which are designed to enhance the prospects of commercial resolution before proceeding to an access dispute in accordance with the QCA Act.

In addition, Aurizon Network submits that the QCA cannot make an access determination which would require Aurizon Network to act in a manner inconsistent with its safety obligations under law.

Key areas of the dispute resolution process that Aurizon Network is seeking to address as part of UT5 include:

1. the range of parties that have the right to commence the dispute resolution process;
2. the scope of the dispute process;
3. the expert resolution process;
4. disputes that are not access disputes; and
5. disputes relating to compliance with safety obligations under law.

Each of these five key areas is discussed in terms of the treatment of the matter under UT4, Aurizon Network's issues with that treatment, and our UT5 proposal to appropriately address the matter.

Other minor variations from the UT4 position have been specifically identified as part of UT5, which forms part of this Submission.

Dispute resolution powers

The QCA is empowered under the QCA Act to determine "access disputes". These are disputes to which Division 5, Part 5 of the QCA Act applies.

Division 5, Part 5 of the QCA Act applies in relation to a dispute about access to a service only if a notice of the dispute has been given to the QCA by an Access Provider (that is, Aurizon Network) or Access Seeker under

section 112 of the QCA Act. However, an Access Provider or Access Seeker may give a notice under section 112 only if:

- > they have not agreed to deal with the dispute otherwise than by arbitration under the QCA Act;
- > the Access Provider and Access Seeker cannot agree on an aspect of access to a declared service; and
- > there is no access agreement between the Access Provider and Access Seeker relating to the access or increased access sought by the Access Seeker.

The requirements that apply to the QCA's determination of access disputes (including limitations on the QCA's determination powers) are prescribed by Division 5, Part 5 of the QCA Act. The QCA cannot alter or ignore those requirements.

It is possible for the QCA to arbitrate disputes under access agreements (but not other agreements) – only if the parties to the access agreement agree. However, the QCA cannot require the parties to agree or indirectly achieve the same outcome by requiring provisions in an access agreement that would have that effect.

The QCA also has no jurisdiction to hear disputes in relation to a breach of an approved access undertaking. The QCA Act sets out clear remedies for the enforcement of an approved access undertaking which involve an application to a court, not the QCA.

In summary, the QCA:

- > cannot vest itself with powers to determine disputes – the QCA's powers to determine disputes are set out under, and are limited to the ambit of, 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 grant a right to any person other than an Access Seeker or Access Provider to commence an access dispute.

3.7.2 Range of parties that have the right to commence the dispute resolution process UT4 treatment

Under UT4 there is a broad range of parties to whom the dispute resolution process applies:

- > Prospective Access Seekers, Access Seekers and Railway Operators have a general right to raise a dispute under Part 11;
- > Access Seekers, proposed Pre-feasibility Funders and proposed Feasibility Funders (each of which must be either an Access Seeker or a Customer) and proposed Expansion Funders may raise a dispute in respect of matters which arise under Part 8 of UT4;
- > parties to a Rail Connection Agreement, none of which is necessarily an Access Seeker, have the right to raise a dispute under Part 11; and
- > any party, regardless of its identity, status, nature or motivation, can raise a dispute about:
 - the “operation of, or anything required to be done or not done by Aurizon Network under” UT4;⁵³ or
 - “any matter expressly required by this Undertaking to be resolved in accordance with this Part 11”.⁵⁴

⁵³ See clause 11.1.1(a)(ii) of UT4

⁵⁴ See clause 11.1.1(a)(iii) of UT4

In addition, UT4 provides that when negotiations over access (whether with an Access Seeker, a Customer or a Railway Operator) are being conducted and there is a dispute between Aurizon Network and:

- > the Access Seeker, the Train Operator; or
- > the Train Operator, the Access Seeker,

must be invited by Aurizon Network to participate in that dispute.⁵⁵

As a related but distinct issue, a proposed Expansion Funder (which may not be an Access Seeker, a Customer or a Train Operator) has negotiation rights in respect of a User Funding Agreement.⁵⁶ Such an Expansion Funder arguably has a right to commence an arbitration under the QCA's approved UT4 position.

Aurizon Network's assessment of the UT4 treatment and Proposal for UT5

Parties who may commence a dispute

The dispute resolution process that the QCA required for Part 11 of UT4 is beyond the QCA's powers under the QCA Act. The QCA's process involves parties commencing disputes who, under the QCA Act, cannot commence an access dispute, and further, those parties may commence a dispute about matters that are not access disputes for the purpose of the QCA Act.

Aside from being outside of the QCA's power to require, it is also detrimental to Aurizon Network and other coal supply chain participants as it potentially provides third parties with the ability to raise disputes to frustrate the process of providing Access or to seek to gain a particular competitive advantage. The QCA's approach in UT4 facilitates gaming of the regulatory regime.

The QCA's departure from the limits of the statutory dispute resolution process under the QCA Act is not justified or permitted by the QCA Act.

The UT4 dispute resolution process could be misused by coal supply chain participants in order to favour their own commercial interests and delay the development of competitors' projects. An example of this would be a dispute in relation to a decision on the selection of expansion study funders or the scope of expansion studies.

The QCA has a duty to have regard to the interests of Access Seekers under s.138(2)(e) of the QCA Act. In the exercise of that duty the QCA must have regard to the risk that the dispute resolution process may be gamed.

Aurizon Network's obligation to negotiate in good faith under the QCA Act is in respect of its negotiations with Access Seekers. The QCA Act does not require Aurizon Network to negotiate with proposed Expansion Funders who are not Access Seekers. It follows that the QCA does not have authority to establish a dispute resolution process for such disputes which enables such proposed Expansion Funders to commence an access dispute. Aurizon Network does not volunteer to enable such proposed Expansion Funders to commence an access dispute as part of UT5.

Consequently, Aurizon Network proposes that the only disputes that the dispute resolution process can apply to are disputes between 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

⁵⁵ See clause 11.1.1(e) of UT4

⁵⁶ See clause 8.8.1(a) of UT4

> in all other respects relating to the negotiation of access, an Access Seeker or a Prospective Access Seeker.

Aurizon Network notes that its reference to a “Customer” above is provided on a voluntary basis and cannot be compelled by the QCA. Likewise, the reference to a “Train Operator” has only been included in respect the negotiation of a Standard Train Operations Deed on a voluntary basis.

Notice of information relating to a dispute and frivolous disputes

The QCA has sought under UT4 to include a requirement to be kept regularly informed of a dispute, and to be provided with copies of all subsequent notices and formal correspondence in relation to a dispute so that it can quickly identify frivolous claims.⁵⁷

The inclusion of such requirements in UT4 is problematic, as such notices and correspondence could include settlement proposals, ‘without prejudice’ offers and other legally privileged information. Providing such documents, as required by the QCA under UT4 may constitute a waiver of a party’s legal professional or other privilege or have the effect of incriminating a person. Aurizon Network cannot be obliged to provide such documentation to the QCA and cannot see any justification under the QCA Act for this requirement.

Indeed, the provision of this material to the QCA as currently required in UT4 could prejudice the QCA’s ability to arbitrate an access dispute. As the potential arbiter of an access dispute, the QCA should not have copies of settlement proposals and other matters that are likely to prejudice its ability to act impartially in considering the matter on its merits.

If any party to a dispute considers that it constitutes a frivolous claim, that party is free to raise its concern with the QCA. The QCA has the right under s122 of the QCA Act not to start an arbitration, or to end an arbitration at any time, if it considers that:

- > the giving of a dispute notice was vexatious;
- > the subject matter of the dispute is trivial, misconceived or lacking in substance; or
- > the party who gave the notice has not engaged in negotiations for an access agreement in good faith.

It is not necessary for the QCA to be kept regularly informed of a dispute, and to be provided with copies of all subsequent notices and formal correspondence in relation to a dispute, for the purposes of s122 of the QCA Act.

Joining of parties

It is neither necessary nor beneficial for Aurizon Network to be required to join the Train Operator or the Access Seeker (as applicable) to a dispute under Part 11 if the outcome or consequences of the dispute would not be relevant to that joined party.

In any case, Aurizon Network proposes to volunteer a change from the position in UT4 such that the invitation to the Train Operator or the Access Seeker to join the dispute is not mandatory. Instead the proposed UT5 drafting provides that either Aurizon Network or the other party to the original dispute (each an Inviting Party) may invite the Train Operator or the Access Seeker as applicable (each an Invited Party) to participate in the dispute if the Inviting Party is of the reasonable opinion that the dispute, or the outcome or consequences of the dispute, may be relevant to the Invited Party.

Negotiation rights of a proposed Expansion Funder

Aurizon Network does not volunteer to permit a proposed Expansion Funder, who is neither an Access Seeker nor an Access Seeker’s Customer, to have negotiation rights in respect of a User Funding Agreement. The negotiation of the User Funding Agreement is more appropriately a matter between the Access Seeker or its Customer and

⁵⁷ See QCA First Final Decision on UT4 at pp207-208

Aurizon Network. As a consequence, such a proposed Expansion Funder will not have a right to commence a dispute under UT5.

3.7.3 Scope of dispute resolution process

UT4 treatment

The broad scope of the dispute resolution process which the QCA required for UT4 is another example of matters which are beyond the QCA's powers under the QCA Act. That process:

- > extends to the "operation of, or anything required to be done or not done by Aurizon Network under"⁵⁸ UT4 (other than a decision by Aurizon Network that it will not fund an Expansion⁵⁹ or a decision by Aurizon Network not to vary the terms of a Standard Agreement)⁶⁰;
- > extends to matters unrelated to the negotiation of access, by prescribing that any matter expressly required by the Undertaking to be resolved under Part 11 must be resolved under Part 11⁶¹; and
- > gives the QCA powers to determine those disputes and effectively impose remedies through that determination.

Aurizon Network's assessment of the UT4 treatment and Proposal for UT5

The QCA has broadened the scope for disputes by allowing a dispute to be raised about any of Aurizon Network's obligations under the Undertaking, or any matter expressly required by the Undertaking to be resolved in accordance with Part 11. This is inappropriate. The effect of doing so is, for example, that the QCA has vested itself with a power to determine disputes in relation to compliance with the Undertaking in general, which it does not have the power to do under the QCA Act.

It is not justified or permitted for the QCA to extend the scope of the dispute resolution process to address claims that Aurizon Network is in breach of the Undertaking. The QCA Act sets out specific remedies for the QCA and other persons in relation to failures to comply with an approved access undertaking. These include enforcement orders⁶², such as orders requiring compliance with the terms of an approved access undertaking or payment of, compensation, or any other order that the court considers appropriate.

If it is alleged that Aurizon Network is in breach of the Undertaking the remedy provided by Parliament is that the affected party/parties have a right either:

- > to make a complaint to the QCA - the QCA has the power to investigate that complaint and decide whether to commence legal proceedings as contemplated by the QCA Act; or
- > to itself commence legal proceedings as contemplated by the QCA Act.

The QCA cannot vest itself with the court's jurisdiction to determine matters and provided remedies in respect of non-compliance with an approved access undertaking.

Aurizon Network considers that the current scope of the dispute resolution process is too broad and must be made consistent with the QCA Act. It is not appropriate to expand the scope of disputes to matters which go beyond access disputes that are capable of arbitration by the QCA under the QCA Act.

⁵⁸ See clause 11.1.1(a)(ii) of UT4

⁵⁹ See clause 8.2.2(a) of UT4

⁶⁰ See clause 11.1.1(b) of UT4

⁶¹ See clause 11.1.1(a)(iii) of UT4

⁶² See ss151 -158A of the QCA Act

3.7.4 Expert resolution

UT4 treatment

Under the UT4 dispute resolution process, if the QCA is making a determination in respect of a dispute for the purposes of Division 5, Part 5 of the QCA Act, that determination must occur subject to, and in accordance with, Division 5, Part 5 of the QCA Act.

Division 5, Part 5 of the QCA Act places various limitations on the QCA in respect of the determinations that it can lawfully make for access disputes. However, under UT4, those same limitations are not imposed on an expert where the matter under dispute is referred to expert determination.

Under UT4 a dispute may be referred to an expert if the parties agree to do so. Once that agreement is reached, the expert is appointed by agreement between the parties to the dispute or, if the parties cannot agree, the QCA has given itself the power to determine who the expert should be.

Aurizon Network's assessment of the UT4 treatment and Proposal for UT5

Application of Division 5, Part 5 of the QCA Act

Any expert who is appointed in relation to the determination of a dispute should be required to make a determination in accordance with Division 5, Part 5 of the QCA Act. That is, the expert should be subject to the same limitations and requirements as would apply to the QCA under Division 5, Part 5 of the QCA Act.

This would ensure that whether it is an expert or the QCA who is determining the dispute, each would be subject to the same constraints when making a determination.

Appointment of expert

The QCA's functions and powers under the QCA Act do not extend to vesting itself with the ability to nominate an expert. The QCA has previously indicated that it feels it is appropriate for it to have the power to appoint an expert in order to make the process workable.⁶³ However, it has not explained in its various UT4 decisions why the process initially proposed by Aurizon Network under UT4 (whereby the expert should be selected by a recognised independent nominating authority rather than the QCA) and which is being proposed by Aurizon Network again under UT5, is unworkable.

Having regard to s138(2) of the QCA Act, it is clearly in the legitimate business interests of both Aurizon Network and the parties who have a right to raise a dispute, to have certainty about how the expert nomination process works and have confidence in the expertise and independence of the person nominated to act as expert.

Indeed, as the expert dispute resolution process only applies where the parties to the dispute agree that it applies, logic and practical experience dictate that the parties would only agree to go to expert determination if they can agree on the expert.

In any event, if circumstances arise where the QCA does appoint an expert, and where it also has the power to decide whether the expert's decision is binding or not on the parties, there is a risk that the expert resolution process exposes the QCA of claims of apprehended bias. This is an undesirable outcome for both Aurizon Network and the other party/parties to the dispute as well as for the QCA. For example, the QCA may be required to determine whether there has been a manifest error in the expert's decision. If the QCA nominated that expert, then it would have a perceived conflict of interest in considering whether that expert has made a manifest error in its decision, because any such determination could reflect adversely on the QCA's nomination of that expert. The QCA's perceived conflict of interest could unreasonably prejudice the ability of a party to the dispute to remedy what is a manifest error in the expert's decision.

⁶³ See QCA Final Decision on the 2014DAU at pp220

For these reasons, where the parties to a dispute cannot agree on the expert, the expert should be selected not by the QCA but rather by a recognised independent nominating authority such as the President of the Institute of Chartered Accountants in Australia (for financial matters), the President of the Resolution Institute in Australia (for technical matters) or the President of the Queensland Law Society (for all other matters). This is consistent with the expert resolution provisions which are contained in the Standard Access Agreement.

Alternatively, if the parties cannot agree on an expert, then the parties should be taken to have not agreed to proceed to expert dispute resolution.

3.7.5 Provisions facilitating determination of disputes that are not access disputes

UT4 treatment

The UT4 dispute resolution process contains a complex provision that addresses how the QCA will determine a dispute that does not fall under the provisions of Division 5, Part 5 of the QCA Act.

Aurizon Network's assessment of the UT4 treatment and Proposal for UT5

As the QCA only has power to resolve disputes to which Division 5, Part 5 of the QCA Act applies, provisions that purport to permit the QCA to determine disputes in circumstances where Division 5, Part 5 of the QCA Act does not apply are beyond power and have therefore not been included in UT5 and cannot be required by the QCA for UT5.

3.7.6 Disputes impacting on safety

UT4 treatment

As observed above, the QCA sought in UT4 to vest itself with very broad dispute resolution powers, including powers that extend beyond Division 5, Part 5 of the QCA Act. Given the breadth of issues which may be disputed and resolutions that the QCA may seek to impose, the QCA may exercise its dispute resolution powers in ways that impact on Aurizon Network's Safety Management System (SMS) and its legislated safety duties and obligations.

Under UT4 there is little specific treatment of this issue. However, under UT4 the QCA is required:

- > to seek the advice of the Safety Regulator on any aspects of a dispute that a party or the QCA considers to be a safety related matter; and
- > to not make a determination that is inconsistent with advice that it receives from the Safety Regulator to the extent that the advice relates to any aspect of safety.

The QCA is also required to provide a copy of any advice received from the Safety Regulator to the parties to the dispute. This dovetails with related provisions under section 132 of the *Transport (Rail Safety) Act 2010* (Qld) (TRSA).

The QCA, when acting in its statutory capacity to arbitrate access disputes, should be required to determine those disputes (including in respect of the scope and/or standard of an Expansion) in a manner that is consistent with all relevant laws. The QCA should not make a determination that is inconsistent with a relevant law. In that respect, the QCA should not determine an access dispute in a manner that is inconsistent with any general safety duties, obligations or requirements under applicable rail, occupational or electrical safety legislation (including Aurizon Network's obligations to comply with its regulator approved SMS) (**Statutory Safety Obligations**).

Aurizon Network's commitment to 'zero harm' and compliance with its Statutory Safety Obligations is a vital part of its approach to business. The omission from UT4 of an express acknowledgement that a determination of an access dispute must not be inconsistent with Statutory Safety Obligations gives rise to a perception that perhaps an access determination can be inconsistent with a Statutory Safety Obligation.

Aurizon Network's assessment of the UT4 treatment and Proposal for UT5

As discussed in more detail as part of the Maintenance component of Aurizon Network's Revenue Proposal accompanying this submission, Aurizon Network is a 'rail transport operator' as defined in the TRSA.

Aurizon Network's business in providing the declared service is comprehensively regulated in respect of health and safety matters. Aurizon Network's principal safety duties and obligations arise under the TRSA which is subject to oversight by a dedicated rail safety regulator. However, Aurizon Network is also subject to various other health and safety requirements – for example, under the *Work Health and Safety Act 2011* (Qld) and the *Electrical Safety Act 2002* (Qld).

Under the TRSA Aurizon Network as a 'rail transport operator' must "ensure, so far as is reasonably practicable, rail safety is not affected by the carrying out of its prescribed railway operations" (the 'Key TRSA Obligation').⁶⁴ 'Prescribed railway operations' are defined in the TRSA so that they extend to substantially all of Aurizon Network's activities to construct, operate, maintain, repair and modify rail infrastructure.⁶⁵

Aurizon Network is also statutorily obliged to have a SMS and to comply with it at all times. The SMS provides in detail for the safe design, construction, testing, commissioning and operation of the railway managed by Aurizon Network. The SMS is approved by the rail safety regulator established under the TRSA. Aurizon Network commits an offence if it fails to comply with its SMS.

Aurizon Network discharges its Key TRSA Obligation by, among other things, applying its SMS to every aspect of its 'prescribed railway operations'. Although some of these decisions are straightforward, others call for the exercise of the skills, expertise and experience of Aurizon Network's management and staff, the application of sound judgement and the exercise of good engineering practice in a manner specific to railway operations.

A breach of Aurizon Network's statutory rail safety duty as a 'rail transport operator' may lead to the rail safety regulator deciding to suspend, revoke or impose conditions upon Aurizon Network's accreditation.⁶⁶ As Aurizon Network may only conduct its CQCN access provision business in accordance with the terms of its accreditation, any such measures by the rail safety regulator could bring Aurizon Network's railway network to a temporary or permanent standstill, or could require it to comply with regulator-imposed operational constraints or restrictions.

It would be manifestly against the public interest for Aurizon Network, as the operator of a regulated business to be required to take actions that would or could result in it breaching its Statutory Safety Obligations, and potentially placing at risk the wellbeing of workers, users and the general public. Accordingly, it is clear that any access determination by the QCA will by necessity need to be consistent with Aurizon Network's Statutory Safety Obligations (including compliance with the SMS statutorily applicable to Aurizon Network). This principle is incontrovertible. The approach proposed in UT5 addresses this requirement.

In addition to the provisions in UT4, Aurizon Network proposes that UT5 also acknowledge that, when the QCA is acting in its dispute resolution capacity, an access determination that should not be inconsistent with Statutory Safety Obligations that apply to Aurizon Network.

⁶⁴ See section 24 of TRSA

⁶⁵ See Dictionary of TRSA

⁶⁶ See Section 109(1)(b) of Part 5 of TRSA

3.8 The process for incorporation of SUFA into UT5

3.8.1 Issue

This policy position addresses:

- > how an approved Standard User Funding Agreement (SUFA) template is to be first incorporated into UT5; and
- > the circumstances in which, and the process by which, the initial approved template is to be reviewed and amended during UT5.

Aurizon Network proposes that, three months after the approval date of UT5, a SUFA DAAU be submitted that includes a set of SUFA documents. That DAAU would be subject to consideration by the QCA in accordance with the QCA Act. This provision has been included because it is possible that, although Aurizon Network will submit a SUFA template on 11 January 2017 under UT4, this template is not currently available for inclusion in UT5 and it is conceivable that this template will not have received QCA approval by the expiry date of UT4. If this occurs, a mechanism will be needed to incorporate a SUFA template in UT5.

Aurizon Network also proposes a review and, as necessary, SUFA submission mechanism to apply in respect of the approved SUFA template under UT5. The two trigger events for this mechanism to operate are:

- > closure of a SUFA transaction;
- > unsuccessful negotiations in respect of a SUFA transaction over a sustained period.

3.8.2 UT4 treatment

The QCA made a final decision in relation to SUFA in the context of UT3 on 14 June 2016, more than a month after the QCA's Final Decision on UT4 on 30 April 2016.

The initial SUFA submission

UT4 requires Aurizon Network to submit, within three months of its approval date:

- > a set of proposed SUFA documents based on the template submitted under the UT3 SUFA process and taking into account the QCA's decision in respect of that template; and
- > a DAAU incorporating amendments Aurizon Network considers reasonably necessary to implement SUFA under UT4.⁶⁷

If Aurizon Network does not make this submission by the deadline, or the QCA does not agree with it, UT4 provides that the QCA may commence the process under Division 7, Part 5 of the QCA Act (including sections 139 and 141), to seek and subsequently impose amendments to the SUFA documents in the way that the QCA considers appropriate to enhance their workability.⁶⁸

SUFA review(s) and subsequent submission(s)

UT4 also requires Aurizon Network to conduct a review of the approved SUFA template following:

- > the execution of the first User Funding Agreement;

⁶⁷ See clause 8.8.3(a) of UT4

⁶⁸ See clause 8.8.3(d) of UT4

- > a defined period of unsuccessful negotiations over a user funding transaction; or
- > a request from the QCA.⁶⁹

Following that review Aurizon Network must submit to the QCA either amended documentation in the form of a DAAU or a detailed explanation of why Aurizon Network considers such a DAAU is not required.⁷⁰ If Aurizon Network does not do so on a timely basis, or the QCA does not agree with the contents of Aurizon Network's submission, the QCA may commence the process under Division 7 of Part 5 of the QCA Act in the same manner as set out above.⁷¹

3.8.3 Aurizon Network's assessment of UT4 treatment

The requirement to make a SUFA submission within three months of the UT4 approval date is a pragmatic approach to incorporating SUFA into UT4, and Aurizon Network agrees with it. Aurizon Network also accepts the need for a process for consideration of the SUFA DAAU and a mechanism for the review of the SUFA model in certain circumstances.

In Aurizon Network's view the review mechanism triggers have two shortcomings:

- > there is no need for a notice from the QCA to constitute a trigger event as it would replicate the power already available to the QCA under section 139 of the QCA Act; and
- > a period of unsuccessful negotiations for as short as 40 business days should not constitute a trigger event.

A duration of 40 business days is materially inadequate in the context of negotiations for a complex structured finance transaction of a large Australian infrastructure project. The time period for this SUFA trigger event should be long enough for bona fide negotiations in this setting to have reached a conclusion. The duration is also not consistent with accepted practice. As an example of usual practice, financial closure on the recent Wiggins Island Coal Export Terminal project occurred more than a year after the project sponsor commenced its financing process by engaging its project finance adviser.

Aurizon Network also considers that the UT4 provisions about how the QCA will consider SUFA submissions to be unnecessary, as the QCA Act already addresses this matter.

3.8.4 Proposed UT5 treatment

Aurizon Network proposes a simplified version of the UT4 SUFA incorporation treatment that more directly reflects the provisions of the QCA Act. This treatment will operate irrespective of whether or not SUFA has been formally incorporated into UT4 by the date of approval of UT5.

Aurizon Network will submit a DAAU three months after UT5 approval date. It will attach a full set of SUFA documents and UT5 amendments that Aurizon Network considers reasonably necessary to implement SUFA under UT5.

If the approved form of UT4 has incorporated SUFA prior to the date of approval of UT5, the set of SUFA documents attached to the DAAU will be based on the approved set of SUFA documents under UT4.

If, however, the approved form of UT4 has not incorporated SUFA before UT5 is approved, the SUFA documents will instead be based on the latest set developed and submitted to the QCA for approval under UT4, and taking into account the QCA's decision, if any, in respect of those documents.

⁶⁹ See clause 8.8.3(e) of UT4

⁷⁰ See clause 8.8.3(e) of UT4

⁷¹ See clause 8.8.3(f) of UT4

The proposed form of UT5 will require Aurizon Network to conduct a review of the approved SUFA template following:

- > the execution of the first User Funding Agreement; or
- > 120 business days of unsuccessful negotiations over a user funding transaction.

Aurizon Network would further be required, as necessary, to submit amended documentation in the form of a DAAU or an explanation of why no such amended documentation is required.

Any SUFA DAAU submitted by Aurizon Network as required under UT5 shall be considered by the QCA in accordance with section 142 of the QCA Act. Should Aurizon Network fail to submit a SUFA DAAU as required under UT5, or decline to amend SUFA following a review as required under UT5, then the QCA may act in accordance with the relevant provisions of the QCA Act.

Aurizon Network contends that the QCA would be acting beyond its powers if it did not approve this UT5 submission on the grounds that the QCA required the UT4 position on the incorporation of SUFA to be adopted in UT5.

3.9 The process for capacity review

3.9.1 Issue

Aurizon Network has included provisions in UT5 that address the nature of third party expert verification of Aurizon Network's network capacity.

3.9.2 Overview

UT5 does not include any Baseline Capacity Assessment provisions as the one-off requirement for a Baseline Capacity Assessment will be completed under UT4.

When an audit of a Preliminary Capacity Assessment Report is required by the QCA or Access Holders/Customers, Aurizon Network will appoint an appropriately qualified expert auditor. This expert auditor will audit

- > the Preliminary Capacity Assessment Report,
- > Aurizon Network's modelling process, and
- > the associated modelling,

The audit report will be provided to the QCA and stakeholders.

The expert auditor shall confirm that Aurizon Network has prepared the Preliminary Capacity Assessment Report as required under UT5. If and to the extent that the expert auditor cannot provide such a confirmation, the auditor will specify the relevant issues and make recommendations as to how to address them. In response to the expert auditor's report, Aurizon Network will issue an audit response report to the QCA and stakeholders, setting out Aurizon Network's position on whether each recommendation is reasonable, and if so, how Aurizon Network's modelling process is to be modified in respect of it. Aurizon Network will then amend its Preliminary Capacity Assessment Report in accordance with the audit response.

3.9.3 UT4 treatment

Aurizon Network must prepare at least annually a Capacity Assessment. Under UT4 Access Holders, customers or the QCA can elect that an expert review of any Capacity Assessment is required, and if that election occurs, that Aurizon Network must engage a suitable expert to undertake the review.

Aurizon Network must use reasonable endeavours to amend its Capacity Assessment to take into account any reasonable recommendations made by the expert review.

There are several capacity assessment process options that vary widely in terms of the expert's scope of work, and the associated consultancy fees. UT4 does not, however, specify how the expert is to undertake the review and capacity assessment. For example, UT4 could be read as requiring the expert to make its capacity assessment on the basis of any of the following:

- > a fully independent analysis of capacity from first principles;
- > a selectively independent analysis, using those elements of Aurizon Network's modelling process deemed by the expert as appropriate, with the remainder being constituted by the expert's own capacity analysis; or
- > Aurizon Network's modelling process.

3.9.4 Network's assessment of the UT4 treatment

Aurizon Network considers that the third-party expert verification process should be framed so as to achieve a high level of certainty as to the accuracy of the applicable Capacity Assessment by Aurizon Network.

The UT4 expert capacity review provisions outlined above are imprecise and the scope of the expert’s work is essentially undefined. Some of the plausible interpretations of these provisions would not result in the achievement of a high level of certainty as to the accuracy of the applicable Capacity Assessment by Aurizon Network. Instead they would result in the expert developing an alternative capacity assessment. This would be a poor outcome because Aurizon Network is generally recognised as having expertise in this area, and a more accurate capacity assessment is likely to be achieved by an appropriately qualified third party auditing Aurizon Network’s model (which has been the subject of incremental improvements over many years) rather than an expert auditor putting in place an entirely new model.

In addition, Aurizon Network considers that the adoption in UT5 of the UT4 treatment could during the term of UT5 lead to significant differences of views with stakeholders on what a review should entail. The ambiguity that the provisions create also prevents Aurizon Network from sensibly pricing the cost of assuming this obligation.

It is in all stakeholders’ interests that each Capacity Assessment provides an accurate as possible measure of system capacity. The consequences of capacity being overstated or understated are summarised in the table below.

Table 4 Consequences of overstatement/understatement of capacity

Affected party	Capacity overstated	Capacity understated
Aurizon Network	This could lead to capacity being granted where there was insufficient capacity to support it. In this circumstance Aurizon Network would be in breach of its access agreements as it has contracted capacity that is not available.	This could lead to a Capacity Deficit being incorrectly identified. This apparent Capacity Deficit would have to be considered when Access Seekers request access and unnecessary Expansions may be investigated and delivered.
Existing Access Holders	Unable to obtain the access contracted (where all parties seek to obtain their contracted capacity) Limits the throughput of mines and creates misalignment with other coal chain capacity (for example, above rail and port)	As a result of the apparent Capacity Deficit, unnecessary Expansions may be investigated and delivered, resulting in the RAB, and consequently access charges being higher than necessary.
Access Seekers/New Access Holders	Unable to obtain the access contracted (where all parties seek to obtain their contracted capacity) Limits the throughput of mines and creates misalignment with other coal chain capacity (for example, above rail & port)	Available capacity is underestimated and access requests may not be accepted where there is sufficient capacity available. If the Access Seeker proceeds, it may need to fund unnecessary investigations of an Expansion and to pay access charges that reflect the regulatory return on that unnecessary Expansion. The Access Seeker will also experience delay in obtaining access.

3.9.5 Proposed UT5 treatment

Aurizon Network considers that the primary objective of the third-party expert verification 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 considers that it is good regulatory practice to establish clearly what is required to do under its undertaking, rather than to assume an imprecise obligation that may mean very different things to different parties. In this light, Aurizon Network considers that in UT5 the third-party expert verification process should follow an expert audit model.

Aurizon Network’s modelling process embodies many years of knowledge and experience:

- > of the CQCN and its coal supply chain interfaces;
- > in the design, development, verification, operation and continuous improvement of the CQCN modelling process; and
- > in the application of the CQCN modelling process to make capacity assessments.

No capacity modelling consultancy candidate for the third-party expert verification role has a CQCN modelling process of comparable quality and capability to that of Aurizon Network. It is therefore highly improbable that a modelling process to this standard could be developed by the appointed expert during its assignment in respect of a particular Preliminary Capacity Assessment Report. Aurizon Network considers that its modelling process is the best reference point for the third-party expert verification process. For this reason it is appropriate to frame the third party verification process so that the expert does not develop her or his own assessment of system capacity from first principles, but rather audits Aurizon Network's process, inputs and modelling.

This scope of work for the expert is expected to meet the objective of assessing system capacity as accurately as possible to a greater degree as would apply if a scope of work required or allowed the expert to develop its own assessment of system capacity from first principles. This superior outcome, when compared with an expert's first principles assessment of system capacity, would be achieved with:

- > lower consultancy charges;
- > a lesser time commitment by Aurizon Network and stakeholders;
- > a quicker outcome; and
- > no less transparency and accountability.

Under UT5 each expert audit of the Preliminary Capacity Assessment Report, Aurizon Network's modelling process, and the associated modelling will:

- > confirm that the input parameters in the applicable modelling represent accurately and completely the requirements of existing Access Agreements, all relevant Laws, Access Undertaking (including Network Management Principles), any relevant System Rules and the System Operating Parameters;
- > confirm that those input parameters are correctly applied as part of Aurizon Network's modelling process;
- > confirm that the Preliminary Capacity Assessment Report appropriately and correctly reflects the outcome of modelling that uses those input parameters in accordance with Aurizon Network's modelling process;
- > confirm that the Preliminary Capacity Assessment Report is otherwise complete and accurate; and
- > if, and to the extent that, the expert auditor is unable to provide any such confirmation, specify each applicable issue and make a recommendation (each an 'Audit Recommendation') as to how it should be addressed.

The expert auditor's report will be prepared and made available to the QCA and stakeholders on the same basis as applied for the expert review report under UT4. Within 20 Business Days of the publication of the expert auditor's report, Aurizon Network will publish its audit response. For each Recommendation specified in the expert auditor's report the response will specify:

- > Aurizon Network's view as to whether that Audit Recommendation is reasonable;
- > if the Audit Recommendation is not considered to be reasonable, Aurizon Network's reasons for that view; and
- > if the Audit Recommendation is considered to be reasonable, how Aurizon Network will modify its modelling process to reflect it.

Aurizon Network will then proceed to amend its Preliminary Capacity Assessment Report in respect of each reasonable Audit Recommendation in accordance with Aurizon Network's audit response.

Aurizon Network considers that the application of the expert audit model of third party expert verification of Aurizon Network's capacity assessment process will result in the most accurate assessment of capacity. The application of this model is also expected to result in other benefits as set out above.

3.10 Valuation of the Regulatory Asset Base

Aurizon Network proposes to address two issues in relation to the Schedule E valuation of Regulatory Asset Base (RAB) provisions:

1. the extent of reduction in RAB value required by the QCA
2. the treatment of asset disposals

3.10.1 Extent of reduction in RAB value

UT4 Treatment

Clause 1.2(b) in Schedule E of UT4 provides the QCA with the ability to reduce the value of assets contained in Aurizon Network's RAB if any of three triggers occur. That provision does not detail how the amount of reduction would be determined.

Clause 1.2(b)(i) sets out one of the triggers for a RAB reduction, namely provision of misleading, inadequate or inaccurate information. That clause provides that if

*“the QCA made its decision to approve the relevant capital expenditure into the RAB on the basis of information provided by Aurizon Network that was inaccurate, **inadequate** or misleading to the extent that were the information not inaccurate, **inadequate** or misleading, the QCA's decision would have been different” [Emphasis added].*

Aurizon Network assessment of the UT4 Treatment

Aurizon Network does not propose any substantial change to the operation of the 1.2(b). However it is concerned that:

- > the provision does not identify the quantum of a reduction in the value of assets in the RAB, or specify whether the reduction specifically relates to one of the three triggers. With no guidance or criteria specified, at one extreme the QCA may potentially choose any level of reduction in RAB value (although this would not seem to be the better view, or the intention, of the relevant provisions).
- > it is inappropriate to reduce the RAB on the basis that Aurizon Network has provided “inadequate” information to the QCA in the context of a capital claim. Under UT4, there is detailed guidance on the material that Aurizon Network must submit, and that the QCA must have regard to in approving capital claims. Indeed, the QCA has the ability to request additional information during the course of its assessment of the claim if it considers the material Aurizon Network has provided is “inadequate”. Therefore, having once approved the inclusion of capital expenditure into the RAB (and therefore, having determined that the information before it was “adequate”), it would be inappropriate, and inconsistent with the principle of regulatory certainty, for the QCA to be able to revisit that decision on the basis that it has subsequently decided the material provided to it was “inadequate”. By contrast, Aurizon Network has no issue with such a reduction where Aurizon Network has provided the QCA with information that is misleading or inaccurate.

Proposed UT5 treatment

Aurizon Network considers that UT5 should expressly state that, if one of the three triggers occurs, the QCA may reduce the RAB value to the extent required to allow for that trigger, but not otherwise. For example, a capital project has been approved by the QCA for inclusion in the RAB. Based on inaccurate information provided by Aurizon Network the QCA valued that asset in the RAB at \$10m. If accurate information had been provided the valuation would have been \$8m. The subsequent reduction in the RAB value should be limited to the extent of the impact of the inaccurate information. In this example the limit would be \$2m (current RAB value of \$10m less the ‘accurate’ value of \$8m).

Aurizon Network notes that the QCA is likely to exercise any RAB reduction in accordance with this practice. It is nonetheless Aurizon Network's preference to include this clarification in UT5 to provide certainty to itself and its investors that it would not be penalised for matters that are not solely due to a trigger.

Further Aurizon Network has removed the word "inadequate" from clause 1.2(b)(i), so that the relevant trigger only applies where Aurizon Network has provided information that is misleading or inaccurate.

3.10.2 Asset disposal

UT4 Treatment

Clause 1.1 in Schedule E of UT4 provides that, if Aurizon Network disposes of an asset, the value of that asset recorded in the RAB will be the amount removed from the RAB unless Aurizon Network can demonstrate to the QCA's satisfaction that a lesser amount should be approved for removal (in which case the amount approved by the QCA will be removed from the RAB).

The RAB is not reduced, however, in respect of an asset that is replaced (in whole or in part) by an Expansion or Maintenance Work, and is not disposed of.

Aurizon Network assessment of the UT4 Treatment

Aurizon Network acknowledges that the UT4 treatment for asset disposals is an improvement over the related UT3 treatment in that UT4 provides additional information on the treatment of asset disposals. In particular, UT4 clarifies the treatment of asset disposals by stating the QCA can approve a "less than remaining" RAB value reduction if Aurizon Network can demonstrate to the QCA's satisfaction that less than that amount should be removed from the RAB.

Aurizon Network considers the treatment of asset disposals in the RAB should be 'hard-wired' into UT5, as a case-by-case approval mechanism creates unnecessary regulatory risk and uncertainty.

Consider this example:

- > an Expansion is increasing the axle load of a spur line;
- > the Expansion involves replacing existing culverts with stronger culverts to accommodate the increased axle load;
- > the Expansion costs \$20m (including all costs of removing the existing culverts); and
- > the existing culverts have a RAB value of \$5m and are then disposed of for a net consideration of \$0.2m.

Under UT4, after the Expansion is complete, the RAB value would be \$15m (add \$20m for Expansion project in RAB and remove \$5m for existing culverts from RAB). However, the actual net cost of the Expansion would be \$19.8m (\$20m less \$0.2m for proceeds from the disposal of existing culverts). When comparing the RAB value after the Expansion with the actual cost of the Expansion, it is apparent that Aurizon Network would suffer a loss of \$4.8m (\$15m minus \$19.8m) in net present value terms (without an ad hoc approval by the QCA to not reduce the RAB value, of which there can be no certainty). With a negative NPV, neither Aurizon Network nor any other funder would be able to obtain the governance approvals required to fund the Expansion.

Aurizon Network believes the QCA does not intend for this scenario to eventuate as it does not promote efficient investment and is not in the interests of Access Seekers and the public.

Proposed UT5 treatment

Aurizon Network proposes the treatment of asset disposals be aligned with Aurizon Network's usual course of business for asset disposals. That is, where an asset is disposed as a result of an Expansion or Maintenance Work, the net proceeds (if any) of that disposal will be offset against the cost of that Expansion or Maintenance Work.

The objectives of this proposed amendment are:

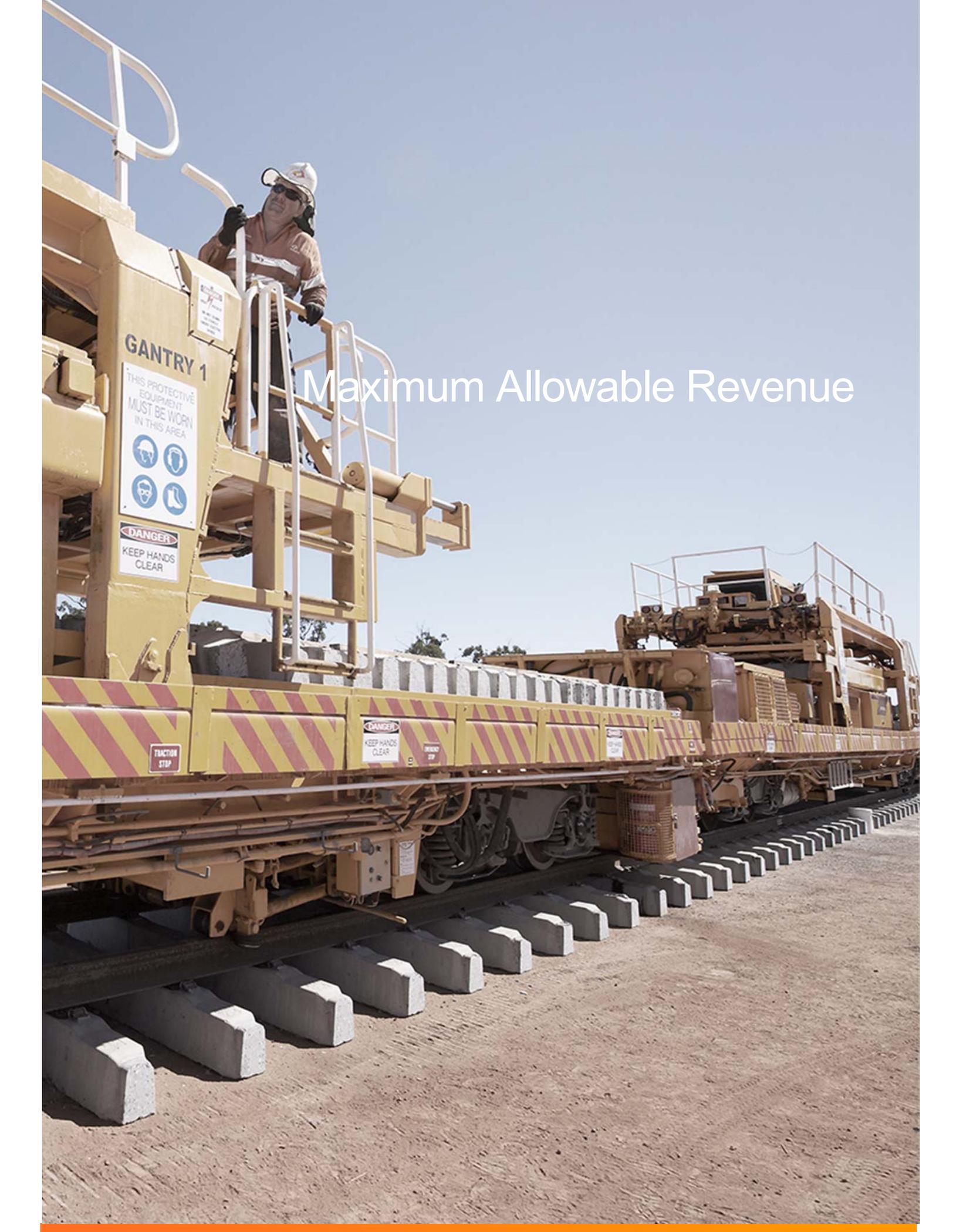
- > to expedite the treatment of asset disposals to ensure the smooth operation of expansion and Maintenance Work plan;
- > to ensure that the financial benefit of any net proceeds resulting from a sale of assets in relation to an Expansion or Maintenance Work will accrue to Aurizon Network's customers; and
- > to ensure that Aurizon Network does not have a financial advantage or disadvantage in terms of the RAB value from a disposal of asset(s) relating to an Expansion or Maintenance Work.

3.11 Summary of proposed drafting changes relative to UT4

Included at Appendix P.1 (stand-alone document) is an explanatory table, which sets out a summary and rationale of each of the drafting changes in our proposed 2017 Draft Access Undertaking (i.e. UT5) relative to the current QCA approved 2016 Access Undertaking (i.e. UT4). These changes:

- > reflect the policy positions described in this submission;
- > correct a small number of minor drafting errors in the approved version of UT4 (e.g. correction of incorrect clause references);
- > include a small number of amendments which, at the conclusion of the UT4 process, Aurizon Network and the QRC agreed should be clarified via a post-approval amendment to UT4⁷² and which for consistency should also be included within UT5; and
- > update tariffs, volume forecasts and Allowable Revenues contained in Schedule F of the undertaking to reflect the UT5 revenue position proposed in this submission.

⁷² See QRC submission dated July 2016, available at: <http://www.qca.org.au/getattachment/086f7710-e824-495a-b8aa-e0fbd869ae10/QRC-submission.aspx>



Maximum Allowable Revenue

Maximum Allowable Revenue – Table of Contents

4.	The UT5 Maximum Allowable Revenue Proposal	102
4.1	Introduction	102
4.2	The MAR build up	102
4.3	The UT5 MAR proposal in summary	103
4.4	Pricing Analysis	105
4.5	UT5 MAR drivers	109
4.6	The impact of transitional tariffs	111
4.7	Approach to Modelling	112
5.	Inflation	114
5.1	Using forecast inflation in the RAB roll-forward	114
5.2	Historical inflation	117
5.3	Methodology to estimate inflation	118
6.	Forecast Volumes	122
6.1	Introduction	122
6.2	Process for forecasting expected volumes	122
6.3	Comparison with UT4 Final Decision volumes	123
7.	The Regulatory Asset Base	126
7.1	Introduction	126
7.2	Growth of the RAB	127
7.3	Major expansions	127
7.4	WIRP Revenue Deferrals	129
7.5	Opening RAB value for UT5	131
7.6	Forecasting UT5 RAB	133
7.7	Reconciliation of UT4 capital carryover account	133
7.8	UT4 Equity Raising Costs	135
8.	Capital Indicator	138
8.1	Investment framework to support capital expenditure prudence	139
8.2	Asset Renewals	139
8.3	Interest during construction	140

9.	Maintenance Costs	143
9.1	Introduction.....	143
9.2	Overview of maintenance expenditure proposal	145
9.3	Maintenance expenditure forecasting methodology	158
9.4	Direct maintenance expenditure	165
9.5	Indirect maintenance costs	189
10.	Operating expenditure	193
10.1	Introduction.....	193
10.2	Overview of operating expenditure proposal.....	196
10.3	Operating expenditure forecasting methodology.....	200
10.4	Direct operating expenditures - System Wide and Regional Costs	207
10.5	Indirect operating expenditures.....	219
10.6	External operating expenditures	241
10.7	Treatment of other efficient costs.....	243
11.	Weighted Average Cost of Capital.....	245
11.1	WACC proposal summary	245
11.2	The commercial and financial market environment.....	247
11.3	The regulatory task.....	257
11.4	Aurizon Network's Proposed WACC for UT5.....	264
11.5	Comments on the QCA's current approach	282
12.	Return of Capital (Depreciation)	303
13.	Reference Tariffs Proposal	305
13.1	Introduction.....	305
13.2	Reference Tariffs for UT5	305
13.3	WIRP Pricing	307
	Appendix R.1 Opening RAB values by System	312
	Appendix R.2 Establishing the required maintenance scope.....	315
	Appendix R.3 Description of CQCN maintenance activities.....	323
	Appendix R.4 Innovative asset management activities.....	333
	Appendix R.5 Description of functional responsibility and activities.....	339
	Appendix R.6 Corporate overheads – responsibilities by functional area.....	345

List of Tables

Table 5 Proposed UT5 MAR compared to UT4 Final Decision, all assets (\$m)	104
Table 6 Proposed UT5 MAR (\$m).....	104
Table 7 Proposed UT5 MAR by System (\$m)	105
Table 8 MAR (\$) per NT by System	106
Table 9 MAR (\$) per NT by System – Variance analysis	107
Table 10 UT5 Approach to modelling.....	112
Table 11 Aurizon Network’s volume forecasts by system	123
Table 12 CQCR UT4 RAB Roll-forward and UT5 opening asset value	132
Table 13 CQCR UT4 RAB Roll-forward UT5 opening asset value – Non Electric.....	132
Table 14 CQCR UT4 RAB Roll-forward UT5 opening asset value –Electric	132
Table 15 Aurizon Network’s approved Capital Indicator for UT4 (\$’000).....	133
Table 16 Aurizon Network’s revised capital expenditure forecast for UT4 (\$’000)	134
Table 17 Variance of Capital Indicator and capital expenditure forecast UT4 (\$’000)	134
Table 18 Aurizon Network’s updated capital carryover account NPV (\$’000, FY2017)	135
Table 19 Aurizon Network’s UT4 Equity Raising Costs relating to UT5 (\$’000)	136
Table 20 Capital Indicator value (\$’000) by System	138
Table 21 Capital Indicator by traction type (\$’000).....	139
Table 22 UT5 maintenance expenditure proposal by year (\$m).....	147
Table 23 Efficiency through innovation	156
Table 24 Methodology applied to UT5 proposal and consistency with UT4 Final Decision	159
Table 25 Costing methodology: Sub-indices and weightings for MCI.....	164
Table 26 Costing methodology: Proposed MCI applied to FY2015 unit rates	164
Table 27 Scope: Ballast undercutting	166
Table 28 Direct Costs: Ballast undercutting	166
Table 29 UT4 mainline ballast undercutting scope.....	168
Table 30 Direct costs: GPR	169
Table 31 Scope: Rail grinding	171
Table 32 Direct Costs: Rail grinding.....	171
Table 33 Scope: Resurfacing.....	174
Table 34 Direct Costs: Resurfacing	174
Table 35 Direct Costs: General Maintenance	176
Table 36 Direct Costs: Signalling	179
Table 37 Direct costs: Other direct maintenance activities.....	182
Table 38 Total direct maintenance costs (\$m)	188
Table 39 Indirect maintenance costs: Return on plant	189
Table 40 Indirect maintenance costs: Return on inventory.....	191
Table 41 Proposed indirect maintenance costs (\$m)	191
Table 42 UT5 operating expenditure proposal by year (\$m)	196
Table 43 Comparison of total operating expenditures across regulatory periods (\$m).....	196

Table 44 UT5 Direct Opex: system wide and regional costs (\$m).....	198
Table 45 Indirect opex: risk and insurance costs (\$m).....	199
Table 46 External opex: transmission charges (\$m).....	200
Table 47 Forecast electrical energy charges (\$m).....	200
Table 48 Summary of cost allocations by functional area.....	201
Table 49 Forecast labour cost growth (%).....	205
Table 50 Forecast non-labour cost growth (%).....	206
Table 51 Proposed network control, safe working and operations costs (\$m).....	208
Table 52 Proposed Infrastructure management costs (\$m).....	213
Table 53 Proposed UT5 business management costs (\$m).....	216
Table 54 Proposed UT5 direct operating expenditures (\$000).....	218
Table 55 Corporate function.....	220
Table 56 Allocators of corporate overhead.....	222
Table 57 Analysis of the allocation methods of regulated companies.....	223
Table 58 Corporate costs by function (\$m) (nominal dollars).....	225
Table 59 UT5 and UT4 ERE costs.....	229
Table 60 Corporate costs by system (\$m) (nominal dollars).....	236
Table 61 Annual insurance premiums (\$m).....	237
Table 62 External insurance cover and estimated premiums (\$m).....	238
Table 63 Estimated self-insurance premiums (\$m).....	240
Table 64 Cost per unit of risk.....	240
Table 65 Forecast UT5 transmission and connection costs (\$m).....	242
Table 66 Forecast electrical energy costs (\$m).....	243
Table 68 Aurizon Network's WACC proposal and UT4 Final Decision.....	246
Table 69 Export Metallurgical and Thermal Coal Split by System.....	250
Table 70 Change in DRP for BBB+ coal railway operators – reproduced from CEG report.....	251
Table 71 Downgrades of dedicated coal export infrastructure in Australia.....	252
Table 72 Customer Credit Rating – Moody's.....	254
Table 73 Asset writedowns in the CQCN (\$ million).....	254
Table 74 Change of Mine Ownership from 2014 to 2016.....	255
Table 75 Frontier Economics: estimate of the MRP.....	269
Table 76 QCA MRP estimate based on Frontier's decision-making framework.....	269
Table 77 Brattle Group MRP estimates.....	270
Table 78 RAB fragmentation in the CQCN.....	272
Table 79 BBB+ DRP estimates (as at 30 June 2016).....	276
Table 80 Indicative UT5 return on debt.....	279
Table 81 Proposed UT5 WACC.....	281
Table 82 Recent QCA MRP decisions.....	285
Table 83 Different benchmark metrics applied for Aurizon Network and utilities rated BBB+.....	294
Table 84 NERA analysis: distribution rate 2000-2012 by company type.....	298

Table 85 Depreciation methodologies in different regulatory periods.....	303
Table 86 Proposed depreciation by system for UT5 (\$'000, FY2017).....	303
Table 87 Reference Tariffs by System over UT5.....	306
Table 88 WIRP Blackwater: Comparison of average non-electric access charges (\$/ntk, nominal).....	310
Table 89 WIRP Blackwater: Comparison of average electric access charges (\$/ntk, nominal).....	310
Table 90 Rolleston: Comparison of average non-electric access charges (\$/ntk, nominal).....	311
Table 91 Rolleston: Comparison of average electric access charges (\$/ntk, nominal).....	311

List of Figures

Figure 12 Pricing process for CQCN.....	103
Figure 13 MAR per forecast net tonne – Nominal and Real (FY2015\$) and Capacity.....	106
Figure 14 Growth in Aurizon Network’s RAB- UT1 to UT5 forecast.....	110
Figure 15 Consumer Price Index (%).....	111
Figure 16 Inflation and the current QCA approach.....	115
Figure 17 Inflation and the proposed approach.....	116
Figure 18 Forecast and actual inflation.....	117
Figure 19 CQCN Net tonnes.....	123
Figure 20 Growth in Aurizon Network’s RAB- UT1 to UT5 forecast.....	126
Figure 21 Capital Indicator by major program.....	138
Figure 22 CQCN Asset renewal expenditure profile.....	140
Figure 23 Aurizon Network’s maintenance expenditure categories.....	146
Figure 24 Share of total maintenance costs by activity.....	148
Figure 25 Real maintenance expenditure by product; UT4 allowance vs UT5 proposal.....	149
Figure 26 Real maintenance costs per forecast and contracted net tonne.....	150
Figure 27 Asset management paradigm.....	151
Figure 28 Preventative maintenance optimises asset life with a less intrusive impact on the supply chain.....	153
Figure 29 Legislative and regulatory obligations set the strategic asset management scope.....	154
Figure 30 The growth in RAB.....	155
Figure 31 Maintenance expenditure forecasting methodology.....	160
Figure 32 Application of forecasting methodology to determine UT5 maintenance costs.....	163
Figure 33 Direct maintenance activities.....	165
Figure 34 Ballast undercutting costs by category (\$m).....	167
Figure 35 Derivation of adjusted base costs for ballast undercutting (\$m).....	170
Figure 36 Ballast undercutting costs by category (\$m).....	170
Figure 37 Rail grinding costs by category (\$m).....	171
Figure 38 Derivation of adjusted base costs for rail grinding (\$m).....	173
Figure 39 Rail grinding costs by category (\$m).....	173
Figure 40 Resurfacing costs by category (\$m).....	174
Figure 41 Derivation of adjusted base costs for resurfacing (\$m).....	175

Figure 42 Resurfacing costs by category (\$m).....	176
Figure 43 General maintenance costs by category (\$m).....	177
Figure 44 Derivation of adjusted base costs for general maintenance (\$m).....	178
Figure 45 General maintenance costs by category (\$m).....	179
Figure 46 Signalling costs by category (\$m).....	180
Figure 47 Derivation of adjusted base costs for signalling (\$m).....	181
Figure 48 Signalling costs by category (\$m).....	181
Figure 49 Derivation of adjusted base costs for traction power (\$m).....	184
Figure 50 Traction power costs by category (\$m).....	184
Figure 51 Derivation of adjusted base costs for telecommunications (\$m).....	185
Figure 52 Telecommunication costs by category (\$m).....	186
Figure 53 Derivation of adjusted base costs for Maintenance Planning and Support (\$m).....	187
Figure 54 Maintenance Planning and Support costs by category (\$m).....	187
Figure 55 Structures costs by category (\$m).....	188
Figure 56 Indirect costs: return on plant.....	190
Figure 57 Indirect costs: Return on Inventory.....	191
Figure 58 Operating Costs – Transition from UT4 to UT5.....	194
Figure 59 Aurizon Network’s operating expenditure categories.....	196
Figure 60 Operating expenditure transition from UT4 to UT5 by category – Real (\$FY2015m).....	197
Figure 61 Comparing restated business management allowance to UT5 proposed costs.....	198
Figure 62 Aurizon Network’s operating expenditure forecasting methodology.....	203
Figure 63 Application of methodology to determine operating costs for UT5 regulatory period.....	204
Figure 64 Network control, safe working and operations costs by category (\$m).....	208
Figure 65 Non coal movements on the CQCN.....	210
Figure 66 Aurizon Network UT5 network control, safe working and operations costs.....	212
Figure 67 Network control, safe working and operations costs by category (\$m).....	212
Figure 68 Infrastructure management costs by category (\$m).....	213
Figure 69 Aurizon Network infrastructure management costs (\$m).....	214
Figure 70 Infrastructure management costs by category (\$m).....	215
Figure 71 Restated FY2015 business management allowance (\$m).....	216
Figure 72 Aurizon Network business management costs (\$m).....	217
Figure 73 Business management costs by category (\$m).....	218
Figure 74 External insurance and self-insurance premiums (\$m).....	237
Figure 75 UT5 Transmission and connection charges (\$m).....	242
Figure 76 Historical metallurgical and thermal coal price.....	248
Figure 77 Aurizon Network Debt Risk Premium compared to Bloomberg BVAL Benchmark.....	251
Figure 78 Yield on 4 and 10 year Commonwealth Government bonds.....	256
Figure 79 Implied real return on equity.....	261
Figure 80 Implied ROE: independent experts and QCA.....	262
Figure 81 Australian 10 year corporate bond spreads.....	264

Figure 82 QCA estimates of the MRP	286
Figure 83 MRP estimates and corporate bond spreads	287
Figure 84 MRP estimates and earnings yield spreads	288
Figure 85 Definition of distribution rate	297
Figure 86 MAR per forecast net tonne – Nominal and Real (FY2015\$) and Capacity.....	305
Figure 87 Allocation of deferrals	309
Figure 88 Legislative and regulatory obligations set the strategic asset management scope	316

Introduction

4. The UT5 Maximum Allowable Revenue Proposal

4.1 Introduction

Aurizon Network's Revenue Proposal for UT5 is consistent with the pricing principles of the QCA Act. The pricing principles outlined in section 168A(a) state that the price of access to the regulated service provided by Aurizon Network should:

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

In evaluating Aurizon Network's exposure to such regulatory and commercial risks, it is essential that the QCA has full regard to the commercial environment, which includes its counterparties and markets they operate in. Failure to consider this environment exposes Aurizon Network to the regulatory risk of being unable to generate enough revenue to be compensated for providing access to the declared service, which ultimately impedes the promotion of investment in and operation and use of, the service. Aurizon Network has provided detailed commentary on the application of the Legal Framework, including the pricing principles in Chapter 2 of this submission.

This MAR introduction provides an overview of the entire MAR Proposal, highlighting key results and the primary drivers of the overall MAR. The structure of the MAR Proposal mirrors the MAR Building Blocks convention, with separate sections on Aurizon Network's proposed maintenance costs, operating costs, weighted average cost of capital, return of capital costs, volumes and reference tariffs. It also provides Aurizon Network's proposed approach to matters relevant to all of the building blocks, namely the treatment of depreciation and the approach to modelling.

4.2 The MAR build up

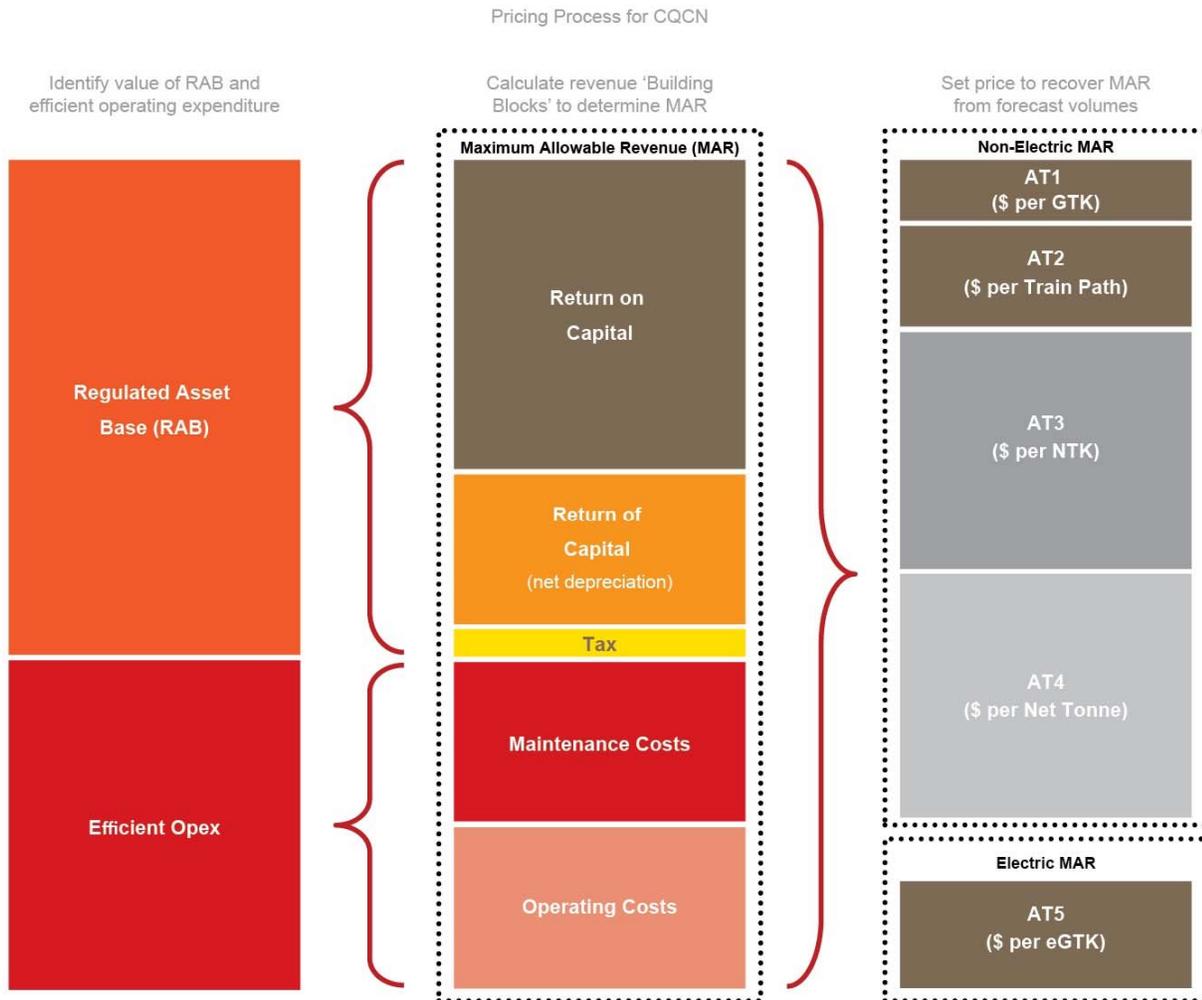
The process through which the price for access to the CQCN is set, starts with Aurizon Network's MAR, which reflects the efficient costs and risks of developing, maintaining and operating a highly reliable rail network with safety as its core value. The MAR is based on:

- > the value of Aurizon Network's RAB;
- > forecasts of capital expenditure;
- > forecasts of efficient operating expenditure (i.e. maintenance and operating costs); and
- > the rate of return that Aurizon Network is allowed to recover based upon current market conditions.

Aurizon Network calculates its MAR for each year of the regulatory period, and for each of its coal systems. Where appropriate, the proportion of MAR relevant to electric infrastructure is also separately identified.

The MAR for each coal system is recovered through a multi-part pricing structure (Reference Tariffs), on the basis of forecasted volumes, which are independently set by the QCA. This process is illustrated in Figure 12 on the following page.

Figure 12 Pricing process for CQCN



4.3 The UT5 MAR proposal in summary

Aurizon Network's MAR proposal for the UT5 regulatory period, prior to the capital carryover adjustment is \$4,838m. By comparison, the MAR approved in the QCA's UT4 Final Decision was \$4,062m. This represents an increase of 19% in nominal terms; equivalent to 12% in real FY2015\$ terms.

The primary UT5 MAR drivers are;

- > a change in inflation methodology that results in a reduction in inflation expectations for the UT5 regulatory period (1.22% compared to 2.5% for UT4);
- > a change in gamma from 0.47 in UT4 to 0.25 affecting the tax building block;
- > the UT5 RAB now includes the majority of the \$921m in actual WIRP capital expenditure of which \$682m was applied during UT4 term; and
- > the majority of the estimated WIRP revenue deferrals of \$235m that was applied in the UT4 final decision will be recovered in UT5.

Table 5 summarises the MAR building blocks for the UT5 regulatory period. A comparison is also made between the value of the proposed UT5 MAR building block and the value of the equivalent building block as approved by the QCA in its UT4 Final Decision. The variance is presented in both nominal and real (FY2015\$) terms.

Table 5 Proposed UT5 MAR compared to UT4 Final Decision, all assets (\$m)

Building Blocks	UT5 proposed	UT4	Nominal Variance	Real FY2015 \$Variance	Rationale
Return on Capital (WACC) ⁷³	1,592	1,526	67	(23)	<ul style="list-style-type: none"> Proposed WACC reduction from 7.17% to 6.78%[^] 4 year return on expansion capex that was commissioned only half way through the UT4 regulatory period; and Cessation of Blackwater WIRP revenue deferrals.
Depreciation (less Inflation)	1,141	771	370	302	<ul style="list-style-type: none"> Change in both the application and inflation setting methodology resulting in a forecast rate of inflation at 1.22% UT4 expansion capital included for the full 4 year UT5 term; and Same depreciation methodology as UT4
Maintenance Cost	921	805	115	61	<ul style="list-style-type: none"> Inflation escalation Additional infrastructure to be maintained compared to UT4 Investment in new, more efficient mechanised plant to replace life-expired machines.
Operating Cost	855	815	40	(9)	<ul style="list-style-type: none"> Overall reduction in the operating costs Methodology consistent with UT4 Final Decision.
Tax (less imputation credits)	328	144	184	164	<ul style="list-style-type: none"> Gamma set at 0.25 in-line with the market value interpretation of gamma.
Total MAR	4,838	4,062	776	495	
Capital Carryover	54	(129)			
Total adjusted MAR	4,892	3,933			

Table 6 summarises the MAR building blocks for each year of the UT5 regulatory period.

Table 6 Proposed UT5 MAR (\$m)

MAR Building Blocks	FY2018	FY2019	FY2020	FY2021	Total UT5
Return on Capital ⁷⁴	409	402	395	386	1,592
Depreciation (less Inflation)	284	281	289	287	1,141
Maintenance Costs	221	225	235	240	921
Operating Costs	206	211	217	221	855
Tax (less imputation credits)	78	81	85	85	328

⁷³ Includes Working Capital Allowance of \$13m over the UT5 Regulatory period consistent with UT4. UT4 allowance was \$12m.

⁷⁴ Includes Working Capital Allowance of \$13m over the UT5 Regulatory period consistent with UT4. UT4 allowance was \$12m.

MAR Building Blocks	FY2018	FY2019	FY2020	FY2021	Total UT5
Total MAR	1,198	1,201	1,220	1,219	4,838
Capital carryover	13	13	14	14	54
Total Adjusted MAR	1,211	1,214	1,233	1,233	4,892

Note: Numbers subject to rounding

Table 7 summarises the MAR for each year of the UT5 regulatory period at a system level.

Table 7 Proposed UT5 MAR by System (\$m)

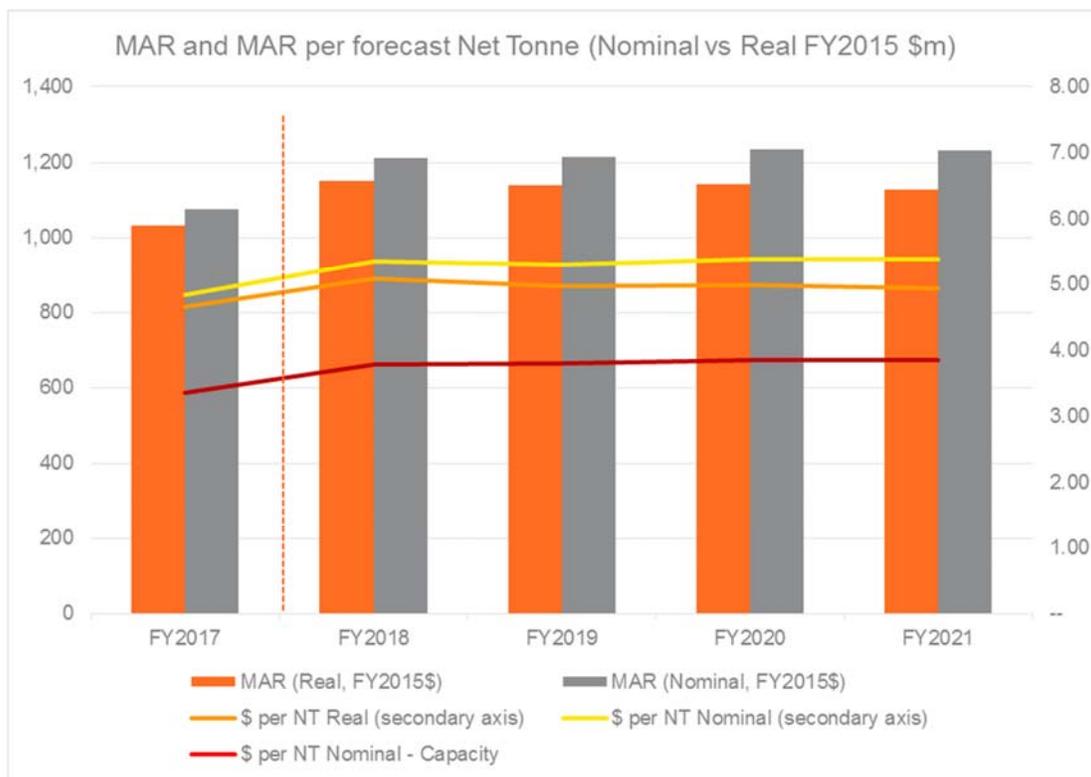
MAR by System	FY2018	FY2019	FY2020	FY2021	Total UT5
Blackwater	544	540	539	542	2,165
GAPE	157	157	153	152	619
Goonyella	430	434	454	449	1,766
Moura	46	47	48	49	191
Newlands	34	37	38	41	150
Total MAR	1,211	1,214	1,233	1,233	4,892

Note: Numbers subject to rounding

4.4 Pricing Analysis

The tariffs increase by 11% from FY2017 (UT4) to FY2018 (UT5) on average across the CQCN, based on forecast volume of 226mtpa. If the FY2018 tariffs were assessed on the system capacity, i.e., 308mtpa, the tariff would fall 26%. The increase in the MAR reflects the requirements of the pricing principles in the QCA Act which ensures that Aurizon Network generates expected revenue in line with its efficient costs and return that is commensurate with its commercial and regulatory risk.

Figure 13 MAR per forecast net tonne – Nominal and Real (FY2015\$) and Capacity



The table below outlines the proposed MAR per forecast net tonne for each year of the UT5 regulatory period, expressed as a unit rate \$ per NT.

Table 8 MAR (\$) per NT by System

MAR (\$) per NT	FY2018	FY2019	FY2020	FY2021	UT5 Average
Blackwater	7.78	7.58	7.57	7.60	7.63
GAPE	9.72	8.96	8.75	8.67	9.03
Goonyella	3.58	3.61	3.77	3.73	3.67
Moura	4.34	4.43	4.54	4.60	4.48
Newlands	3.72	3.97	4.18	4.44	4.08
CQCN Average	5.36	5.30	5.39	5.38	5.36

4.4.1 Variances analysis – UT5 price average compared to FY2017

The table below compares at system level the transition from UT4 by analysing the average unit rate over UT5 compared to FY2017 'Base MAR' (MAR prior to adjusting for under and over recoveries from FY2014 to FY2016). This helps facilitates a more consistent comparison.

Table 9 MAR (\$) per NT by System – Variance analysis

System	Transition from UT4		
	FY2017 Base MAR	Base MAR Average over UT5	Average Price % Increase /(decrease)
Blackwater	6.72	7.63	14%
GAPE	8.66	9.03	4%
Goonyella	3.38	3.67	9%
Moura	3.30	4.48	35%
Newlands	3.76	4.08	9%
CQCN Average	4.81	5.36	11%

Note: Numbers subject to rounding

The price impacts are based on Aurizon Network’s tonnage forecast for UT5 as outlined in Chapter 6. Following the practice of the QCA in previous Access Undertaking decisions, Aurizon Network recognises that the QCA will determine the final System tonnage forecasts with advice from its consultants and having consideration of submissions from all stakeholders.

Blackwater: Average price increase of 14% from FY2017 base. Uplift is attributable to a 19% increase in average MAR and a 5 % increase in average volumes over UT5.

The MAR increase of 19% comprises of;

- > Inflation and tax 54%
- > Capital carryover impact 25%
- > RAB growth reflected in return on and of capital, impact of 4%

WIRP Pricing Summary (details in Chapter 13 WIRP Pricing section)

- > Out of the eight customers who signed up for the 27Mtpa WIRP capacity, four customers Aquila, Bandanna, Cockatoo Coal, Northern Energy are not raiing.
- > In its UT4 Final Decision⁷⁵ the QCA applied a revenue deferral mechanism to address the impact on expanding users, from of the underutilisation of WIRP capacity due to non- raiing customers.
- > Of the \$945m WIRP project UT4 Capital Indicator, the QCA deferred revenue recovery on approximately \$260m of capital expenditure. The capital deferral related to Blackwater customers Aquila and Bandanna and Moura system customer Cockatoo. This resulted in a lower Capital Indicator⁷⁶ for Aurizon Network and, therefore, a lower capital base on which WIRP tariffs were derived. \$682m was added to Aurizon Network’s RAB in FY2016 of UT4 for pricing purposes.
- > Actual WIRP capex is estimated at \$921m, of which approximately half has been approved by the QCA and incorporated in to the RAB upon approval of the FY2015 capex claim. The remainder is under consideration by the QCA as part of the FY2016 capex claim.
- > For UT5, Aurizon Network proposes the cessation of the majority of revenue deferrals associated with WIRP capital expenditure.

⁷⁵ Final Decision Chapter 18 - Reference tariffs for WIRP train services Decision 18.10 – page 249

⁷⁶ CDD Chapter 26 – RAB and Capital expenditure – p.169

- > WIRP train services commenced railings in April 2015. WIRP infrastructure in the Blackwater system is now 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.
- > Based on actual capex, Aurizon Network has calculated a capital deferral of \$235⁷⁷m to be included in the opening balance of the UT5 RABs of railing WIRP pricing groups in the Blackwater system (WIRP Blackwater and Rolleston- see table below). Aurizon Network's proposed allocations of the \$235m is detailed in the WIRP Pricing Section of Chapter 13.
- > The situation (and therefore treatment) for WIRP Moura deferrals is different as it relates to a single user, Cockatoo Coal. Cockatoo Coal was placed into voluntary administration on 16 November 2015 with the mine, Baralaba placed into care and maintenance in February 2016. The voluntary administration process ended in May 2016 following a successful recapitalisation of Cockatoo Coal and implementation of a Deed of Company Arrangement. Baralaba mine continues to be in care and maintenance but Cockatoo Coal is currently progressing its mine development and has announced its intention to restart the mine in 2017. However as there is no certainty on the exact commencement date of railings, Aurizon Network's UT5 proposal continues to defer WIRP capital relating to the Moura system, for the full term of UT5. Aurizon Network solely bears the revenue risk and is not compensated for this risk by WACC. Aurizon Network will however continue to monitor the recovery of this portion of the RAB and engage with the QCA when a viable recovery option is identified.
- > Aurizon Network's approach for determining Reference Tariffs for WIRP Train Services during UT5 is consistent with the methodology approved by the QCA in its UT4 Final Decision. This results in different pricing impacts for the WIRP pricing groups, with a socialised outcome for a majority of WIRP users:

WIRP Pricing groups	WIRP Pricing outcomes	Note
WIRP Blackwater ⁷⁸	Socialised Blackwater Reference Tariff (non-electric and electric) through all four years of UT5	Charges recoverable from these train services are sufficient to meet all incremental costs attributable to them and, by virtue of socialisation, their volumes will make a positive contribution to the common costs of the Blackwater system. This creates a benefit for all users of the Blackwater system.
Existing Blackwater ⁷⁹	Socialised Blackwater Reference Tariff (non-electric and electric) through all four years of UT5	The pricing arrangements applicable to WIRP Train Services are structured in such a way as to ensure that WIRP customers are responsible for meeting the incremental costs of the WIRP expansion. This ensures that existing (i.e. non-WIRP) Blackwater system users will not see a tariff increase as a direct result of this proposal
Rolleston ⁸⁰	System premium from FY2018 to FY2020, and the Blackwater system Reference Tariff in FY2021, for non-electric train services. Socialised Blackwater Reference Tariff for electric train services through all four years of UT5	This outcome is largely driven by the relevant volume forecasts for Rolleston Train Services, which are (initially) insufficient to cover all incremental costs associated with Rolleston Train Services

⁷⁷ Converted to start year terms and includes capital cost and UT4 WACC escalation to compensate Aurizon Network for foregone revenue recovery over deferred UT4 period. This amounts relates to WIRP Blackwater and does not include WIRP Moura

⁷⁸ Customers who have contracted Train Services under WIRP arrangements and are geographically located in the Blackwater system

⁷⁹ Customers geographically located in the Blackwater system, who have not contracted Train Services under WIRP arrangements

⁸⁰ Rolleston Train Services under WIRP arrangements

WIRP Pricing groups	WIRP Pricing outcomes	Note
WIRP Moura ⁸¹	No Tariff determined as capital is proposed to be deferred over UT5	
Existing Moura	Not impacted by WIRP	
WIRP NCL ⁸²	Individual Tariff based on incremental WIRP costs consistent with UT4 approach	

GAPE: Average price increase of 4% from FY2017 base. Uplift is attributable to a 5% increase in average MAR and a 1 % increase in average volumes over UT5.

The MAR increase of 5% primarily driven by inflation and tax. No RAB growth during UT5

Goonyella: Average price increase of 9% from FY2017 base. Uplift is attributable to a 13% increase in average MAR and a 4 % increase in average volumes over UT5.

The MAR increase of 13% comprises of;

- > Inflation and tax 64%
- > Capital carryover impact
- > No material RAB growth

Moura: Average price increase of 35% from FY2017 base. Uplift is attributable to 16% increase in average MAR, exacerbated by a 15% decrease in UT5 tonnes. No WICET tonnes assumed for Moura.

The MAR increase of 16% primarily driven by inflation and tax.

Newlands: Average price increase of 9% from FY2017 base. Uplift is attributable to 11% increase in average MAR, while tonnes increase by 2% over UT5.

The MAR increase of 11% primarily driven by inflation and tax.

Deferrals relating to NAPE continue to be deferred in UT5. Aurizon Network intends to submit a DAAU once the situation regarding the NAPE commencement of railings is clear. The DAAU will include the treatment of pricing of NAPE train services.

4.5 UT5 MAR drivers

Aurizon Network's MAR proposal for the UT5 regulatory period is primarily the result of:

- > a change in inflation methodology that results in a reduction in inflation expectations for the UT5 regulatory period (1.22% compared to 2.5% for UT4);
- > a change in gamma from 0.47 in UT4 to 0.25 affecting the tax building block;
- > The UT5 RAB now includes the majority of the \$921m in actual WIRP capital expenditure of which \$682m was applied during UT4 term; and
- > The majority of the estimated WIRP revenue deferrals of approximately \$235m that was applied in the UT4 Final Decision will be recovered in UT5.

⁸¹ Customers who have contracted Train Services under WIRP arrangements and are geographically located in the Moura system

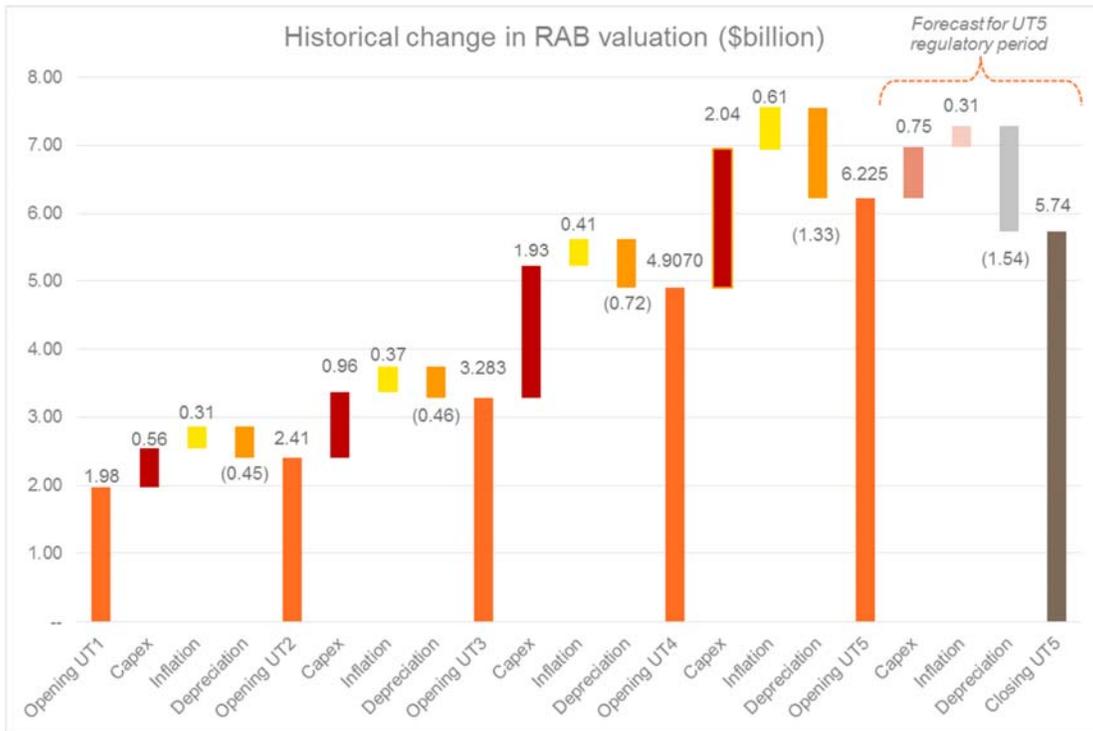
⁸² A customer who has contracted Train Services under WIRP arrangements, originating from the Colton mine to WICET

The growth in the RAB is subject to an annual, ex-post review by the QCA, in which the prudence of Aurizon Network’s capital expenditure is independently verified. The capital that Aurizon Network has invested in the RAB is a significant driver of the MAR, and by extension of the Reference Tariffs.

Aurizon Network’s proposed cost of capital contained in this submission is calculated at 6.78%. We have applied this cost of capital to a significantly larger RAB of \$6,225m, as a result of customer requested expansions during the UT4 period (a 27% increase since the commencement of UT4 and 90% since the commencement of UT3).

Aurizon Network has an ongoing obligation to ensure the safety and reliability of rail infrastructure within the CQCN, which is built to meet the access requirements of Aurizon Networks customers. Figure 14 outlines the Aurizon Network’s forecast Roll-forward RAB⁸³.

Figure 14 Growth in Aurizon Network’s RAB- UT1 to UT5 forecast

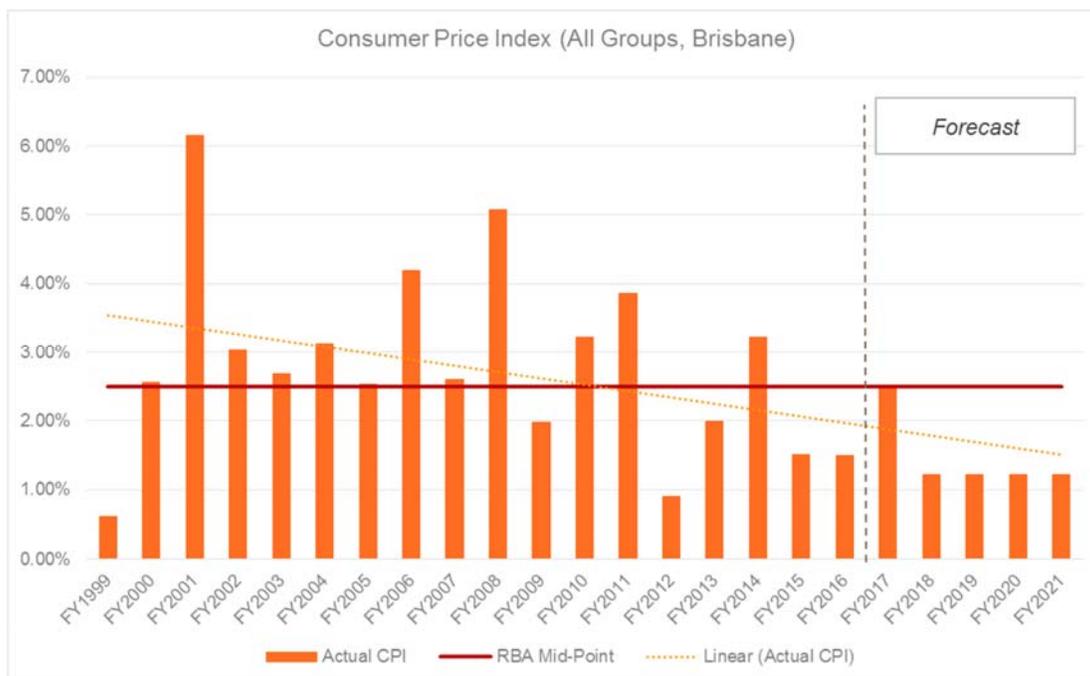


As outlined in further detail in Chapter 5, Aurizon Network has proposed to adjust the methodology to calculate the rate of inflation that is applied across both revenue and the RAB. The historical approach which uses forecast inflation for revenue and actual inflation for the RAB, creates an inconsistency which can result in either an under or over recovery arrangement as a consequence of the difference between actual and forecast inflation. The change in methodology seeks to address this inconsistency between Revenue and RAB.

In addition to changing the methodology on the application of inflation, Aurizon Network has also proposed to alter the way in which forecast inflation is calculated. Historically, the QCA has used the Reserve Bank of Australia’s (RBA) mid-point, 2.5% to calculate forecast inflation. The rate of inflation observed for the majority of the UT4 regulatory period has been well below the bottom end of the RBA target rate of inflation resulting in an over-estimation of the impact of inflation, and Aurizon Network being undercompensated.

⁸³ For clarity this RAB value is not used for pricing purposes. It includes all QCA approved capital expenditure until FY2015 and extrapolates the RAB based on forecast capital expenditure beyond FY2015, to arrive at a Roll-forward UT5 RAB. The \$6,225m includes \$12m in Equity Raising Cost as detailed in 7.8 of this submission and all deferred capex.

Figure 15 Consumer Price Index (%)



Current indicators, including commentary from the RBA itself, suggest that this downward trend will continue for the foreseeable future. As noted by RBA Governor Glenn Stevens in May 2016:

“Inflation has been quite low for some time and recent data were unexpectedly low. While the quarterly data contain some temporary factors, these results, together with ongoing very subdued growth in labour costs and very low cost pressures elsewhere in the world, point to a lower outlook for inflation than previously forecast.”⁸⁴

Due to this issue, Aurizon Network is proposing to use the ‘break-even’ inflation, using the difference between indexed Commonwealth Government Securities (CGS) and nominal CGS. This is outlined further in Chapter 5.

Aurizon Network also proposes a change in gamma from 0.47 in UT4 to 0.25. The tax building block in the MAR build up is presented net of gamma or imputation credits. As outlined in detail in Chapter 11, Gamma is a measure of the value of imputation credits. Tax building block is reduced by the extent to which investors value the imputation credit. As a result, the lower the gamma, the higher the tax allowance. For clarity the method of calculating tax remains unchanged from UT4, which has a standard 30% Corporate Tax rate.

4.6 The impact of transitional tariffs

The delay in having UT4 approved has had a negative impact on both Aurizon Network and its customers in relation to transitional tariffs. The impacts can be summarised as follows:

- > Customers - uncertainty in their forecast access costs and cashflow. Customers also have a reduced ability to forecast liabilities for adjustment charges and/or Take or Pay liabilities under transitional tariffs; and
- > Aurizon Network - revenue and cashflow uncertainty, as well as forecast unpredictability. Unpredictable revenue and cashflows can give rise to perceptions of additional risk, in both equity and debt markets.

⁸⁴ RBA, Statement by Glenn Stevens Governor: Monetary Policy Decision, 2016-10, 3 May 2016.

When an approved undertaking is in place tariffs, system volume forecasts and System Allowable Revenues (SARs) would be approved by June for the following financial year. The delay in approving UT4 has resulted in each year commencing with transitional tariffs in place.

Transitional tariffs result in a ‘true-up’ process between transitional and final approved revenue. Under UT4 FY2014 and FY2015 differences are to be trued-up in FY2017. The true-up has meant higher tariffs in some systems (for example Blackwater) but lower tariffs in other systems (Moura and Newlands) than would have been the case in FY2017 had UT4 not been delayed. This in turn can have the effect of different end customers being impacted from a different cost structure than would otherwise have been the case if an approved undertaking had been in place.

The level of administration, and therefore costs, to manage this complex and time consuming process is a further negative impact of transitional tariffs, impacting all stakeholders.

For UT5, Aurizon Network is seeking to have the MAR and system forecasts approved prior to the commencement of FY2018, and so remove the need for any transitional tariffs and backdating of adjustment charges. The Revenue Proposal, including the setting of tariffs, is primarily based on the recently approved UT4. On this basis, Aurizon Network believes the QCA can approve the tariffs expeditiously.

4.7 Approach to Modelling

Aurizon Network has developed its Revenue Proposal for the UT5 regulatory period using detailed financial models, consistent with those approved by the QCA as part of their UT4 Final Decision. Similarly, Aurizon Network’s approach to modelling is also consistent with the UT4 Final Decision. The key assumptions which underpin the approach to modelling are outlined in Table 10 below:

Table 10 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

Inflation

5. Inflation

As part of the standard regulatory practice applied by the QCA, inflation is applied to the:

- > Maximum Allowable Revenue – as a deduction using forecast inflation based upon the mid-point of the Reserve Bank of Australia’s target range; and
- > Regulated Asset Base – an addition as part of the RAB roll-forward process, using the actual inflation realised throughout the year.

For the purposes of this UT5 Revenue Proposal, Aurizon Network is seeking to adjust the methodology in which inflation is applied to the RAB, and seeking to adjust the inflation forecast methodology to be more reflective of applicable market conditions.

5.1 Using forecast inflation in the RAB roll-forward

5.1.1 Current regulatory framework

The current approach to inflation entails:

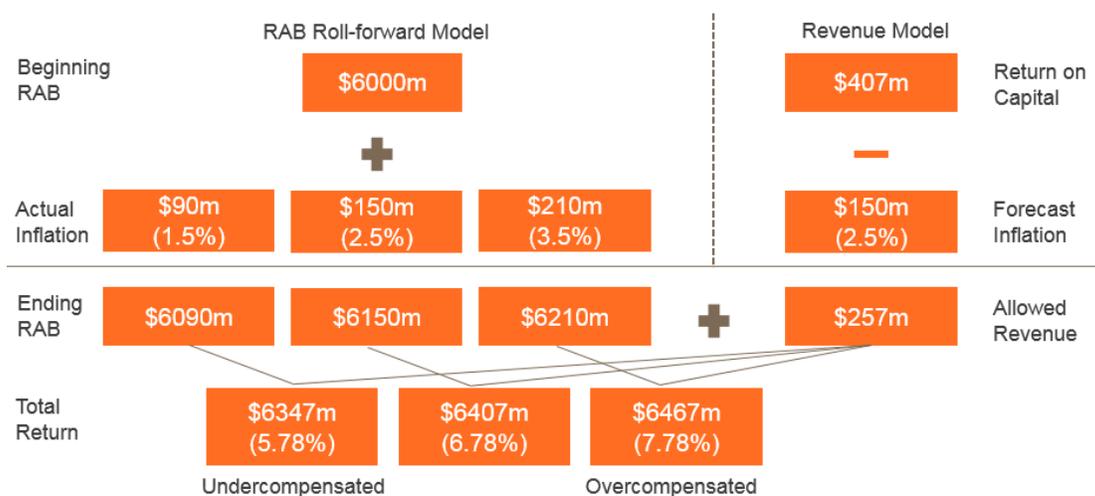
- > adding the actual inflation compensation over the current regulatory period to the opening RAB of the next regulatory period; and
- > deducting the forecast inflation from the revenue allowance for the current regulatory period to avoid double compensation.

The current revenue and RAB roll forward models use different inflation rates, which creates an inconsistency within the regulatory framework. The inconsistency results in Aurizon Network being either over or under compensated as a consequence of the differences between forecast and actual inflation.

In the event that actual inflation is higher than the forecast inflation used, Aurizon Network will benefit from the additional growth applied to the value of the RAB as part of the RAB roll-forward. This is because the amount of inflation reduced from the revenue allowance is less than the amount that is added to the opening RAB for the next regulatory period. On the other hand, if actual inflation is lower than forecast inflation, Aurizon Network will be undercompensated as the revenue deduction is greater due to the application of a higher forecast rate, whilst having to apply the lower inflation rate to the RAB roll-forward.

The figure on the following page illustrates these scenarios.

Figure 16 Inflation and the current QCA approach



1. Assume a one year regulatory period and an opening perpetual RAB of \$6000m (non-depreciating asset);
2. Assume the nominal WACC is set at 6.78% (Aurizon Network UT5 proposal), and forecast inflation is 2.5% (QCA current approach); and
3. Assume actual inflation could be, for example, 1.5%, 2.5% or 3.5%.

In this example, Aurizon Network will achieve a total return of 5.78% when the actual inflation (1.5%) turns out to be lower than the forecast inflation (2.5%).⁸⁵ The return is lower than the 6.78% allowed return in the revenue model. On the other hand, when the actual inflation is 3.5%, investors receive a return of 7.78% which is higher than the allowed 6.78% return.

For UT5, applying an inflation forecast of 2.5% together with actual inflation used in the RAB roll-forward model represents significant downside risk for Aurizon Network. This is because the market has priced in an expectation of inflation of only 1.22%, which means actual inflation will likely be materially below the current QCA 2.5% forecast, and result in a return lower than the regulatory allowed return. The under compensation is magnified by the increase in the value of the RAB since the UT3 regulatory period.

Another important conclusion from the above example is that the current regulatory framework delivers a target real cost of capital. This is achieved through indexing RAB using actual inflation. When actual inflation is high (low), more (less) value is added to the RAB. In this way, the regulatory models are targeting a real cost of capital. However, as discussed in the CEG report accompanying this submission, the current approach is problematic especially for debt which is usually contracted in nominal terms for Aurizon Network.⁸⁶ This means the existing approach of using different inflation rates in regulatory models is not appropriate, at least from the debt investor perspective.

5.1.2 A proposed solution to the inconsistency

Regulators in the US have resolved this issue by removing the indexation of RAB completely.⁸⁷ However, applying this approach would accelerate the revenue profile through the increased depreciation applied to the RAB, which Aurizon Network considers, at least in the current market conditions, is not an approach that is likely to find favour with the QCA. As a consequence of this issue, Aurizon Network has proposed that the inconsistency is best resolved

⁸⁵ 5.78% return is calculated as $(\$6347m - \$6000m) / \$6000m - 1 = 5.78\%$.

⁸⁶ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 9-10.

⁸⁷ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 6.

by using the forecast inflation in the RAB roll-forward model, which would result in it being consistent with the revenue model, therefore removing the inconsistency.

Figure 17 Inflation and the proposed approach

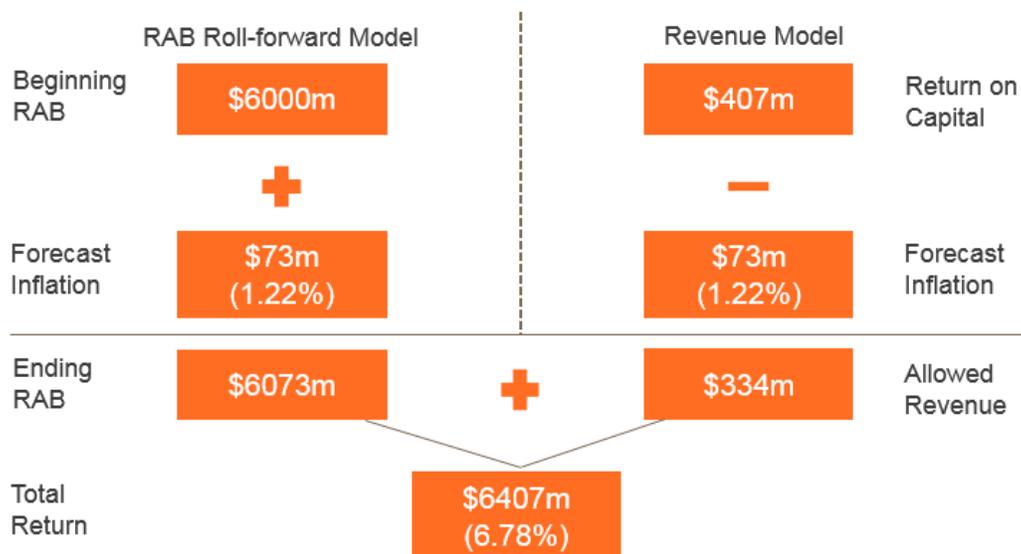


Figure 17 illustrates the proposed change with similar assumptions to those presented in Figure 16, except for adopting an inflation forecast of 1.22% (Aurizon Network UT5 proposal). As shown in Figure 17, if forecast inflation is used to inflate RAB, investors will achieve the same targeted nominal return (6.78%) regardless of the actual inflation. This is consistent with the nominal debt contract in place for Aurizon Network. Moreover, any inflation forecast error will not affect the targeted return as the amount of inflation added to RAB is the same as the amount reduced in the revenue allowance. However, it is still important to have accurate inflation forecast as it affects the timing of cash flows. Having an inflation forecast that is too high will delay the recovery of investment.

Aurizon Network also recognises that equity holders may be targeting a real return, in which case, the equity component of RAB should be escalated with actual inflation.⁸⁸ However, Aurizon Network has proposed to use 100% forecast inflation in the RAB indexation for simplicity.

The use of 100% forecast inflation in the RAB roll-forward model will also promote regulatory certainty around the regulatory reset. This is because the approach of using actual inflation results in uncertainty around the value of the opening RAB for the next undertaking period, as the final year actual inflation is not known at the beginning of the next regulatory period. On the other hand, Aurizon Network and stakeholders will have certainty over the value of the opening RAB, and hence the tariffs, if forecast inflation is used to index the RAB.

Aurizon Network notices that the QCA has rejected the use of forecast inflation in the RAB roll-forward model in the DBCT Final Decision. As discussed above, maintaining the existing approach of using actual inflation in the RAB roll-forward model is inconsistent with nominal debt contracts in place as the regulatory models will be targeting a real return.

In the DBCT Final Decision, the QCA considers that using either forecast inflation or actual inflation in the RAB roll-forward model satisfies the NPV=0 principle.⁸⁹ However, the current approach of using actual inflation will only achieve the NPV=0 principle ex ante when the inflation forecast is unbiased which cannot be proved and is subject to great uncertainty. On the other hand, using forecast inflation does not rely on the same condition to satisfy the

⁸⁸ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 10-11.

⁸⁹ QCA, 2016, DBCT Final Decision, pp. 174.

NPV=0 principle. In this regard, using forecast inflation should be considered superior to the current approach of using actual inflation in the RAB roll-forward model.

The QCA also considers the current approach of using actual inflation in the RAB roll-forward model protects both the regulated entity and users from inflation risk. For example, when inflation is high, users pay a higher price which maintains expenditure in real terms. However, this is not applicable to Aurizon Network as no inflation adjustment is made to return on or of capital during the regulatory period, regardless of whether actual inflation or forecast inflation is used to index the RAB.

Moreover, in the shorter horizon, users plausibly will favour the certainty of nominal expenditure as corporate budget and financial reporting are all in nominal terms. On the other hand, the longer term inflation risk is mitigated by the fact that inflation rate will be reset for every regulatory cycle. As a result, Aurizon Network does not consider inflation risk should be a factor for rejecting the use of forecast inflation in the RAB roll-forward model.

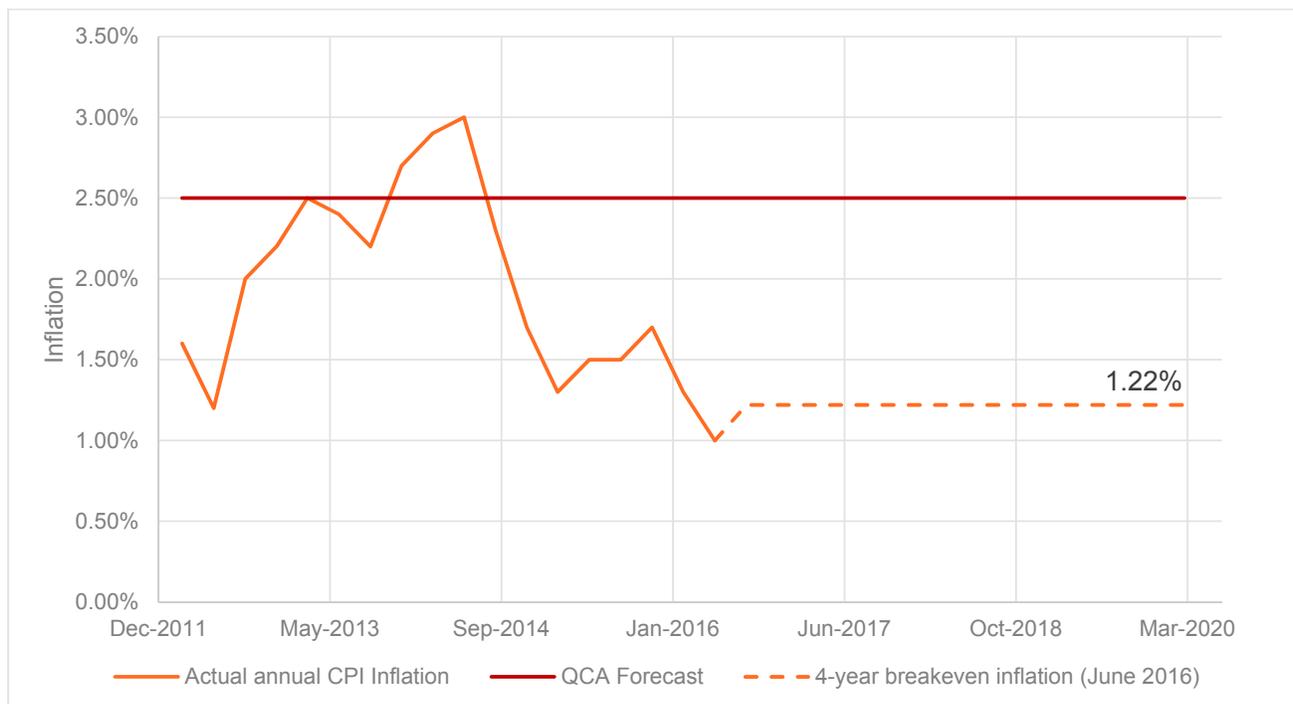
Lastly, the QCA believes the change to forecast inflation will create winners and losers for the upcoming regulatory period. However, the proposed change to forecast inflation in the RAB roll-forward is addressing exactly the QCA's concern that there might be winner or losers in the future, as it eliminates the possibility that Aurizon Network can earn a return higher or lower than the regulated return.

Having considered the QCA's reasons outlined in the DBCT Final Decision, Aurizon Network is of the view that forecast inflation should be used in the RAB roll-forward model.

5.2 Historical inflation

The rate of inflation in the Australian economy has been trending downwards since 2014. As illustrated in Figure 18, the average inflation in FY2015 and FY2016 was around 1.5%, well below the QCA's forecast inflation of 2.5%. In the June quarter 2016, the annual consumer price index (CPI) inflation rate had dropped to 1.0%.

Figure 18 Forecast and actual inflation



Source: Australian Bureau of Statistics and CEG analysis

At least since the 1990's⁹⁰, the RBA has been targeting inflation to be between 2-3%. However, the RBA has outlined recently that it expects that inflation will remain low over the next year or two.⁹¹ Inflation is only expected to increase gradually, and is forecasted to return to 2.0% by the end of 2018.⁹²

In the August 2016 Statement of Monetary Policy (SoMP), the RBA has also noted that “as has been the case for some time, there is considerable uncertainty around the extent to which domestic inflationary pressures will pick up over the next few years”.⁹³

The RBA governor, Phillip Lowe, has also expressed the view that the RBA has a broader objective than keeping inflation in the target range at all times. The RBA has a flexible inflation targeting which allows “temporary deviations of inflation from the medium-term target”.⁹⁴ Therefore, the RAB is not in a position to take every measure available to push inflation higher in the shorter term.

As pointed out by the CEG, the current low interest environment, coupled with low inflation, creates the risk of a ‘low inflation trap’ in that there is a greater probability that actual inflation will be lower than the RBA forecast.⁹⁵

Taking the trend in the recent actual inflation, the commentary from the RAB and the view expressed by Aurizon Network’s consultant CEG, an inflation forecast of 2.5% will very likely overestimate the inflation for UT5.

5.3 Methodology to estimate inflation

To resolve this issue, Aurizon Network is proposing an alternative methodology to calculate the forecast rate of inflation, where the breakeven inflation rate is used. The breakeven rate of inflation is calculated as the difference in yields between inflation indexed Commonwealth Government Securities (CGS) and Nominal CGS. This is termed the ‘breakeven’ inflation rate because that is the rate at which investors expect the same real return from either asset.

Breakeven inflation forecast is a market-based methodology and is consistent with the build-up of cost of capital. Breakeven inflation forecast also has the smoothing effect on tariffs. As shown by CEG, breakeven inflation has a strong positive correlation with the nominal risk-free rate.⁹⁶ This means when the risk-free rate is high (WACC is high assuming others constant), breakeven inflation is likely to be high. As a result, the higher return on capital building block will be partially offset by higher inflation taken out from the depreciation building block, which smooths the tariffs over time.

However, in the DBCT Final Decision, the QCA has rejected the use of breakeven inflation forecast with main concern over the liquidity premium and inflation risk premium.⁹⁷ Instead, the QCA has determined that a better inflation forecast will be the geometric mean of RBA short-term inflation forecasts and the mid-point of RBA inflation target range (RBA forecast method). Aurizon Network disagrees for reasons set out below.

The breakeven inflation forecast is often criticised for the lack of liquidity in the indexed CGS market, which means the real risk-free rate might not have been accurately reflected in the price. However, the liquidity in the indexed

⁹⁰ <http://www.rba.gov.au/speeches/1992/sp-gov-170892.html>

⁹¹ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 12-14.

⁹² RBA, 2016, Statement of Monetary Policy – August 2016, Graph 6.4.

⁹³ RBA, 2016, Statement of Monetary Policy – August 2016.

⁹⁴ RBA, 2016, Inflation and Monetary Policy, assessed from <http://www.rba.gov.au/speeches/2016/sp-gov-2016-10-18.html>.

⁹⁵ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 28-37.

⁹⁶ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 26-28.

⁹⁷ QCA, 2016, DBCT Final Decision, pp. 168-169.

CGS market has improved substantially since 2009, with annual turnover around \$50 billion in 2015.⁹⁸ CEG considers both the indexed and nominal CGS markets are highly liquid. More importantly, when the liquidity is sufficiently deep, investors' valuation of additional liquidity falls to zero quickly.⁹⁹ As a result, Aurizon Network does not consider liquidity premium is a main concern for breakeven inflation forecast.

CEG has also surveyed the academic literature (including Finlay and Wende (2012) as cited by the QCA) on the potential bias in the breakeven inflation forecast related to liquidity premium, inflation risk premium and convexity bias, and concluded that these potential sources of bias are small and more likely to result in an over-estimate of expected inflation than an underestimate.¹⁰⁰

Moreover, if the QCA considers the potential bias in breakeven inflation forecast is material (a proposition Aurizon Network and CEG do not accept), the QCA should directly estimate the real cost of capital from the indexed CGS.¹⁰¹ This is because the potential bias in breakeven inflation forecast implies the nominal CGS yield is a biased proxy for risk-free rate.¹⁰² For example, the QCA has considered the negative real risk-free rate as per DBCT Final Decision could be due to the presence of a negative inflation risk premium on nominal CGS.¹⁰³ However, the QCA has ignored the related implication that using nominal CGS for risk-free rate is downward biased by the same amount. As a result, the QCA should make upward adjustment to risk-free rate or directly estimate the real cost of capital from the indexed CGS. These approaches are similar to using breakeven inflation forecast combined with the QCA's current approach in setting risk-free rate from nominal CGS without adjustment.

On the other hand, the QCA's proposed inflation forecast approach makes a strong assumption that inflation will revert back to 2.5% (mid-point) of the RBA inflation target range beyond the RBA short-term inflation forecast horizon. However, an inflation of 2.5% in later years is not what the RBA has forecasted. As discussed above, RBA has a flexible inflation target and as a result, it is highly uncertain that whether the inflation will revert back to 2.5% in later years. In this regard, breakeven inflation forecast is superior to the RBA forecast method as it is based on the market forecast for all future years.

Moreover, the breakeven inflation forecast offers methodological advantages to the RBA outlook as it is a probability weighted average of all possible outcomes. In the current low inflation environment, the inflation rate tends to be asymmetrically distributed.¹⁰⁴ In this regard, the RBA forecast method will overestimate the inflation. This is evidenced within Figure 3 and 4 in the accompanying CEG report.¹⁰⁵ CEG has further showed that breakeven inflation forecast has lower root mean square error (RMSE) than the RBA short-term inflation forecast.¹⁰⁶

For reasons discussed above, Aurizon Network submits breakeven inflation forecast is the current best approach. Utilising the breakeven inflation forecast, Aurizon Network proposes a rate of 1.22% over the UT5 regulatory period. During June 2016, the annualised four year indexed CGS yield was 0.40%. By contrast, the annualised four year nominal CGS yield was 1.62%, implying a breakeven inflation of 1.22% (applying the Fischer equation).¹⁰⁷

⁹⁸ AOFM, 2015, Annual Report 2014-2015: Part 2 Operations and Performance.

⁹⁹ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, p. 43.

¹⁰⁰ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 38-68.

¹⁰¹ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 69-79.

¹⁰² CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 69.

¹⁰³ QCA, 2016, DBCT Final Decision, p. 170.

¹⁰⁴ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 28-37.

¹⁰⁵ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 15-16.

¹⁰⁶ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, p. 17.

¹⁰⁷ Aurizon Network notices the potential inconsistency of inflation term and risk-free term proposed. To the extent that 10-year breakeven inflation forecast is higher than 4-year, Aurizon Network will receive higher cash flow. However, Aurizon Network is not over-compensated as the same lower 4-year inflation forecast will be used to index RAB. The primary reason for adopting 4-year inflation forecast is to be consistent with the escalation of operating and maintenance expenditure over the next 4 years.

A forecast inflation rate of 2.5% for the UT5 regulatory period (or 1.87% using the QCA's proposed RBA forecast method) implies a negative real return on CGS of -0.86% (or -0.25%). The implication of this is that investors would be willing to pay, in real terms, for the privilege of lending to the Commonwealth Government. More significantly, this return is 1.3% (or 0.7%) lower than what could be earned with certainty by lending to the Commonwealth Government through the indexed CGS.

This would lead to a conclusion that either the Commonwealth Government is simultaneously borrowing, or investors are willing to simultaneously lend to the Commonwealth Government at very different rates. This conclusion confirms that the current process of using the RBA's mid-point or the QCA's proposed RBA forecast method to forecast inflation at a rate of 2.5% or 1.87% is inconsistent with market expectation and an inflation forecast process using CGS is more reflective of the market conditions over the regulatory term (and beyond).

An alternative market based estimation of inflation could be using data on inflation swaps. However, inflation swaps generally overestimate inflation due to premia for credit risk and capital risk being built into the spread. As a result, Aurizon Network does not consider inflation swaps to be an unbiased estimate of inflation.¹⁰⁸

¹⁰⁸ CEG, 2016, Best Estimate of Inflation: Revaluations and Revenue Indexation, pp. 20-25.

Volumes

6. Forecast Volumes

6.1 Introduction

Forecast volumes for each of the CQCN coal systems are a key component in determining the proposed UT5 MAR and Reference Tariffs. The volume forecasts are used for a number of purposes, including:

- > determining the scope of the CQCN maintenance programme that varies in relation to volume;
- > as an input into the calculation of insurance costs;
- > allocating 'system-wide' costs between the coal systems; and
- > converting the MAR into the reference tariffs applicable to coal carrying train services.

Aurizon Network expects a small growth in volume for FY2018 (+1.9%) and FY2019 (+3.2%) relative to the forecasts approved by the QCA for FY2017. Volumes in FY2020 and FY2021 are consistent with FY2019.

Aurizon Network believes that the current market volatility may result in a significant variance to forecast volumes over the UT5 period.

Following the practice of the QCA in previous Access Undertaking decisions, Aurizon Network recognises that the QCA will determine the final System Forecasts with advice from its consultants and having consideration of submissions from all stakeholders.

6.2 Process for forecasting expected volumes

The volume forecasts underpinning Aurizon Network's MAR and Reference Tariff proposal are based on its expectations of future railings in each coal system. Aurizon Network considers the following information when setting volume forecasts for each system:

- > demand outlook for domestic and export coal in the CQCN;
- > volumes contracted;
- > customer information;
- > historical railings; and
- > expected production growth.

Upon consideration of these factors, Aurizon Network prepares forecasts of expected railings between each mine to port (origin and destination) combination. This process is used to determine the aggregate forecasts for each coal system, which are presented in Figure 19 and Table 11 on the next page.

Figure 19 CQCN Net tonnes

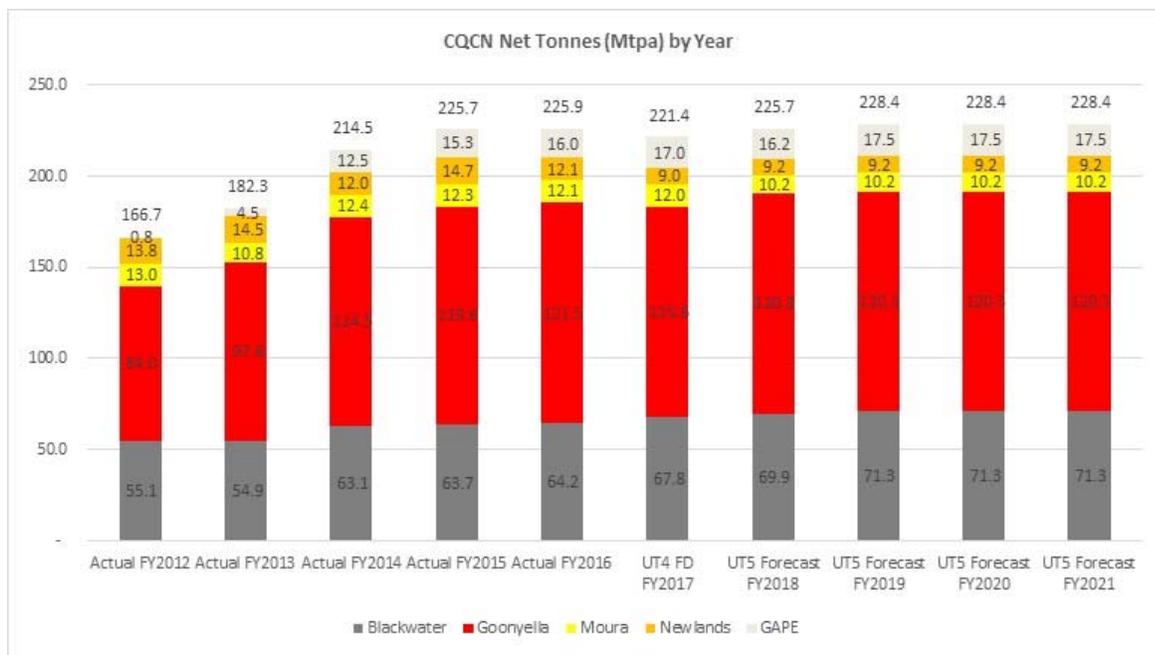


Table 11 Aurizon Network’s volume forecasts by system

System	Proposed volume forecast (million tonnes)					
System	FY2016 Actual	FY2017 QCA FD	FY2018	FY2019	FY2020	FY2021
Blackwater	64.2	67.8	69.9	71.3	71.3	71.3
Goonyella	121.5	115.6	120.3	120.3	120.3	120.3
Moura	12.1	12.0	10.2	10.2	10.2	10.2
Newlands	12.1	9.0	9.2	9.2	9.2	9.2
GAPE	16.0	17.0	16.2	17.5	17.5	17.5
Total	225.9	221.4	225.7	228.4	228.4	228.4

6.3 Comparison with UT4 Final Decision volumes

6.3.1 Blackwater system

- > the Blackwater UT5 system forecast is expected to be above the UT4 Final Decision volumes for FY2017;
- > FY2018 is forecast at 2.1mT and each year of FY2019-2021 is forecast at 3.5mT above the UT4 FY2017 Final Decision volumes; and
- > the 5.7mT FY2018 increase compared to the FY2016 actual is mainly due to the expected ramp-up in services to Wiggins Island Coal Export Terminal (WICET), from the mines currently railing.

It is not clear when the mines not currently railing to WICET will commence railing. The forecast volumes for this submission exclude the mines not currently railing. This will be reviewed as part of the Annual Review of Reference Tariffs process of Aurizon Network’s 2016AU (Schedule F, Section 4) within the UT5 period as new market information is known.

6.3.2 Goonyella system

- > though forecast is flat within the UT5 period, the Goonyella FY2018 system forecast is 4.7mT higher than UT4 FY2017 FD volumes. This increase reflects the actual railings in FY2016 and expected FY2017 railings.

6.3.3 Moura system

- > the FY2018-FY2021 Moura system forecast is 15% (1.8mT) lower than the UT4 Final Decision volumes for FY2017; reflecting current contracted hauls;
- > this forecast assumes contract renewals for the remaining Moura hauls; and
- > the forecast will become clearer once executed contracted volumes are known to cover the UT5 period (expected prior to finalisation of UT5).

No volumes have been included for railings to WICET in the Moura System. UT5 proposal continues to defer WIRP capital relating to Moura system, for the full term of UT5. Aurizon Network solely bears this revenue risk. These tonnes will be reviewed as part of the annual System Forecast reset Annual Review of Reference Tariffs process of Aurizon Network's 2016AU (Schedule F, Section 4) within the UT5 period as new market information is known regarding the mine not currently railing.

Volume forecast for Moura exclude WIRP NCL. Volumes forecast for WIRP NCL have been included in the tariff model for pricing purposes and cost allocations only.

6.3.4 Newlands system

- > the Newlands system forecast is closely aligned with the UT4 Final Decision volumes for FY2017; and
- > volumes in each of FY2018-FY2021 are 0.2mT above the UT4 Final Decision volumes for FY2017.

6.3.5 GAPE system

- > the GAPE system forecast is closely aligned with the UT4 FY2017 Final Decision volumes; and
- > FY2018 is 0.8mT below, and each of the years FY2019-2021 are 0.5mT above the UT4 Final Decision volumes for FY2017.

Regulated Asset Base

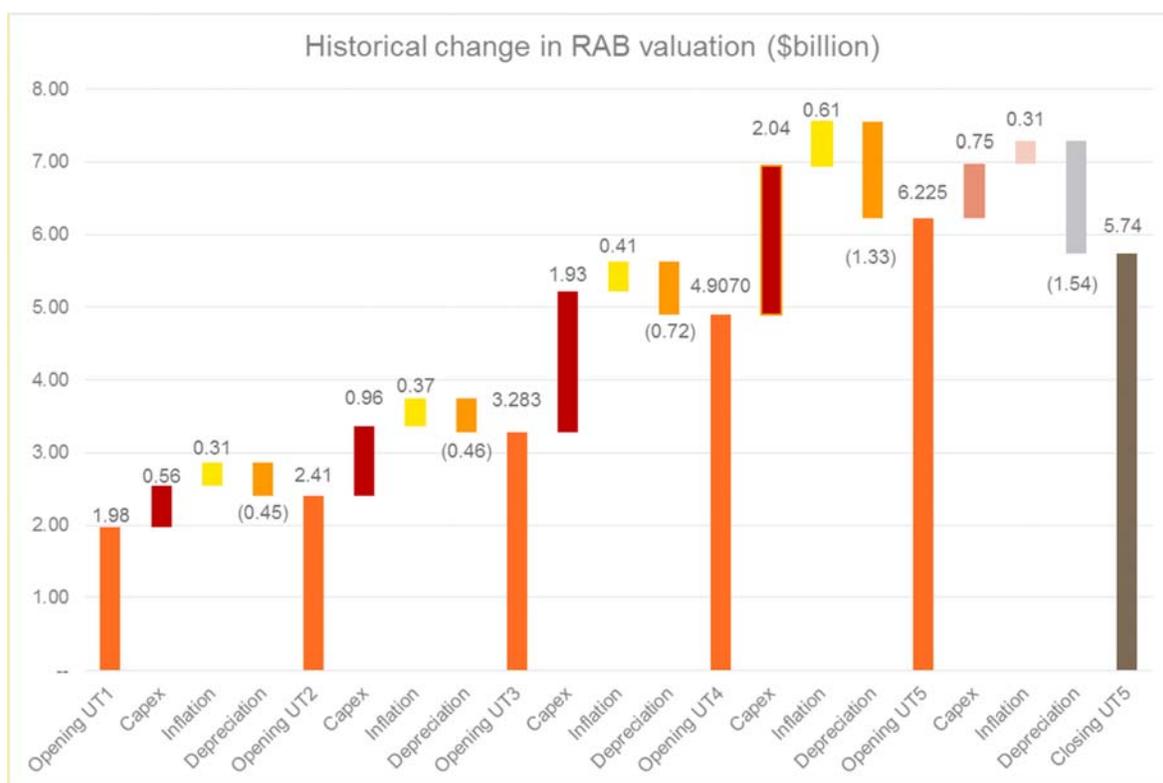
7. The Regulatory Asset Base

7.1 Introduction

The capital that Aurizon Network has invested in the RAB is a significant driver of the MAR, and by extension of the Reference Tariffs. The return on capital represented by the RAB, the depreciation of that capital and the physical extent of the RAB to be maintained represent significant components of the MAR building blocks. It is important, therefore, that the value of the RAB for the UT5 regulatory period be established in a consistent and transparent manner that promotes confidence that prices reflect an efficient cost base.

The graph below depicts the growth of the RAB, and the composition of that growth, from previous regulatory undertaking periods, and a forecast for the UT5 regulatory period. Figure 20 below outlines the Aurizon Network's forecast Roll-forward RAB¹⁰⁹.

Figure 20 Growth in Aurizon Network's RAB- UT1 to UT5 forecast



In determining a RAB value for UT5, Aurizon Network has adopted the same methodology that applied in the determination of the UT4 RAB. The general approach followed in setting the UT5 RAB is:

- > roll forward the UT4 RAB, adjusting for depreciation and inflation;
- > incorporate approved capital expenditure claims up to FY2015 and revised forecast for FY2016 and FY2017 based on known expenditure;
- > include in the opening balance for UT5 a majority of the WIRP capital deferrals; and

¹⁰⁹ For clarity this RAB value is not used for pricing purposes. It includes all QCA approved capital expenditure until FY2015 and extrapolates the RAB based on forecast capital expenditure beyond FY2015, to arrive at a Roll-forward UT5 RAB. The \$6,225m includes \$12m in Equity Raising Cost as detailed in 7.8 of this submission and all deferred capex.

- > incorporate the forecast capital expenditure over the UT5 regulatory period (via the Capital Indicator).

7.2 Growth of the RAB

Aurizon Network's RAB is made up of assets required for the efficient provision of access to the declared service. Originally based on a FY2000 asset valuation, the RAB value is rolled forward each year at CPI escalation, depreciated, and the value of prudent capital investments, approved by the QCA as part of its ex-post annual capital approvals process.

There has been significant growth in the RAB since UT1 as shown in Figure 20. Aurizon Network's proposed cost of capital contained in this submission is calculated at 6.78%. We have applied this cost of capital to a significantly larger RAB of \$6,225m¹¹⁰, as a result of customer requested expansions during the UT4 period (a 27% increase since the commencement of UT4 and 90% increase since the commencement of UT3).

Major expansion projects such as Goonyella to Abbot Point Expansion (GAPE) and the Wiggins Island Rail Project (WIRP), and asset renewals programs have contributed to the significant growth of the RAB. This growth has been driven by customer demand for capacity in response to coal prices.

7.3 Major expansions

7.3.1 History and background

During the regulatory periods of UT3 and UT4 Aurizon Network invested in and constructed two large growth projects – GAPE and WIRP. The request for the additional capacity that these projects provided, originated from customers at times when coal prices were high. The capacity expansion for GAPE and WIRP was aligned with port developments which were to support 33mtpa and 27mtpa respectively. In response to these port developments and customer requirements, Aurizon Network:

- > studied expansions to create matching capacity increases in the below rail network;
- > engaged with a wide group of potential customers; and
- > selected expansions and customers to match the final coal system expansion.

The following discussion provides further detail on the background on the GAPE and WIRP investments.

Goonyella to Abbot Point Expansion

The GAPE project was identified by the coal industry to the Federal Government's Export and Infrastructure Taskforce in 2005. The concept was further developed through Queensland Rail's Network Asset Management Plans in 2006, the Coal Rail Infrastructure Management Plans of (2006, 2007 and 2009) and the Queensland Co-ordinator Generals' Rail-plan 2030 issued in 2010. On 10 July 2007, a letter representing the majority of users of the Goonyella Coal Chain was sent to the QCA describing the coal users' support for early works.

Initial Response for Proposal (RFP) for GAPE indicated capacity requests in excess of 90mtpa. In 2009, as a result of the Global Financial Crisis, work stopped on the project and the project was subsequently re-scoped to 33mtpa. On 19 November 2009, a presentation to the users incorporating the revised scope, forecast cost and risk was given by Aurizon Network.

All throughout this project, Aurizon Network engaged with key stakeholders. This engagement resulted in a Commercial Deed and access agreements between the relevant User Group and Aurizon Network being executed in

¹¹⁰ For clarity this RAB value is not used for pricing purposes. It includes all QCA approved capital expenditure until FY2015 and extrapolates the RAB based on forecast capital expenditure beyond FY2015, to arrive at a Roll-forward UT5 RAB. The \$6,225m includes \$12m in Equity Raising Cost as detailed in 7.8 of this submission and all deferred capex.

early 2010. Under the capital expenditure approval process contained in Schedule A of the 2010 Undertaking, GAPE capital expenditure was approved by the QCA and incorporated into the RAB in FY2012. The GAPE infrastructure facilitates the increased capacity to 50mtpa from 17mtpa to Abbot Point Coal Terminal.

Wiggins Island Rail Project

Aurizon Network commenced discussions with proponents for the Wiggins Island Coal Export Terminal (“WICET”), as early as 2008 when the WICET was being developed by Gladstone Ports Corporation. This was later transferred to the Wiggins Island Coal Export Terminal Pty Ltd (a company owned by the WIRP customers).

In April 2010 as the development of WICET progressed, Aurizon Network engaged with end customers (miners) who were seeking capacity at the proposed port and required access to rail capacity in the Central Queensland Coal Region (CQCR). The culmination of these discussions were the WIRP arrangements, which were executed in September 2011.

Notwithstanding these discussions and concurrent with them, in December 2010 the Gladstone Coal Exporters Executive (GCEE)¹¹¹ wrote to Aurizon Network, requesting that it:

“...recommence the duplication programme for the remaining single line sections of the rail line between Rocklands and Blackwater, as a matter of utmost urgency and continue that programme in a structured manner, until all duplications are complete.”

This request from the GCEE indicated a strong view that the duplications were prudent and that the investment should be funded under a socialised pricing arrangement consistent with the pricing principles in the 2010AU. The Blackwater duplications received regulatory pre-approval from the QCA as part of the 2008 Coal Rail Infrastructure Master Plan. Initial RFP for WIRP indicated capacity requests in excess of 100mtpa.

The project resulted in a range of work across the Blackwater system, Moura system and North Coast Line. Aurizon Network commenced construction of WIRP Stage 1 in April 2012 to align with Stage 1 of WICET. All segments of WIRP Stage 1 Network expansion works are now complete to allow the operation of Train Services supporting WICET Stage 1 with a throughput capacity of 27mtpa.

Aurizon Network’s FY2015 capital expenditure claim contained a partial claim for WIRP, comprising a number of these segments costing approximately \$460m (versus UT4 Capital Indicator for WIRP of approximately \$945 million). In May 2016 the QCA approved Aurizon Network’s FY2015 capital expenditure claim and in September 2016 Aurizon Network’s proposed RAB Roll-forward incorporating the WIRP capital expenditure was also approved by the QCA. The rest of the WIRP capital expenditure will be progressed via the FY2016 capital expenditure approvals process, which is underway with the QCA.

In July 2016, Glencore made a submission to the QCA on Aurizon Network’s Amended 2014DAU, specifically on the WIRP access conditions and WIRP fee. Glencore in its submission requested the QCA reopen and review the WIRP access conditions and WIRP fee arrangements (that were already approved by the QCA during UT3) as part of UT4, as Glencore argued that no approval of the imposition of such access conditions has been given for the UT4 regulatory period.

The QCA’s UT4 Final Decision did not accept Glencore’s positions. The QCA called out the fact that, it was clear that both Aurizon Network and WIRP users, including Glencore, had agreed that the WIRP fee would extend beyond the expiry of UT3 and that the QCA had been requested to approve, and had in fact approved, a long dated arrangement that extended well beyond the UT3 period. The QCA rejected Glencore’s argument that the WIRP fee revenue should be included in System Allowable Revenue and that the amounts should be deducted from the reference tariff applicable to WIRP Users.

¹¹¹ GCEE, letter to Lance Hockridge, 14 December. 2010

7.3.2 Expansions – status today

As outlined in Aurizon Network's UT5 submission introduction, Aurizon Network invested and customers signed up to expansion projects such as GAPE and WIRP at times when coal prices were high. The Australian mining sector saw coal prices peak at times, which correlates to the execution of GAPE and WIRP deeds.

Customers contracted volumes for expansion projects such as GAPE and WIRP. On the back of this demand, Aurizon Network constructed the infrastructure to deliver this contracted capacity. As the coal price has declined in recent years, many miners made commercial decisions (in their own interests) to delay ramp-up and to put mines into care and maintenance. Such factors are outside Aurizon Network's control. The current market environment is addressed in Chapter 1 of this submission.

During the UT4 regulatory period, the QCA imposed revenue deferrals on Aurizon Network where customers made independent commercial decisions (in their own business interests) not to make use of the access rights they had contracted.

By imposing such deferrals, the QCA has effectively deemed that Aurizon Network should be solely responsible for risks that are both outside of its control and which it has limited opportunities to mitigate against. In the context of major expansions, such risks are exacerbated by the fragmentation of the RAB, which restricts the protections provided by the revenue cap.

The QCA's decision to impose revenue deferrals has prevented Aurizon Network from recovering capital it has expended on the network on major projects that were approved by users, which increases exposure to stranding risk for example in the Moura system and NAPE. It also has a significant impact on Aurizon Network's future incentives to invest.

7.4 WIRP Revenue Deferrals

7.4.1 QCA decision to defer WIRP revenue

Out of the eight customers who signed up for the 27Mtpa WIRP capacity, four customers Aquila, Bandanna, Cockatoo Coal, Northern Energy are not railing.

In its WIRP Draft Decision¹¹² the QCA suggested the need for a revenue deferral mechanism to address the impact on expanding users of the underutilisation of WIRP capacity over the remainder of the UT4 period. The QCA's CDD¹¹³ and UT4 Final Decision¹¹⁴ then required Aurizon Network to defer revenue associated with WIRP train services that were not expected to rail for the remainder of the UT4 regulatory period.

Of the \$945m WIRP project UT4 Capital Indicator, the QCA deferred revenue recovery on approximately \$260m of capital expenditure. The capital deferral related to Blackwater customers Aquila and Bandanna and Moura system customer Cockatoo. This resulted in a lower Capital Indicator¹¹⁵ for Aurizon Network and, therefore, a lower capital base on which WIRP tariffs were derived. \$682m was added to Aurizon Network's RAB in FY2016 of UT4 for pricing purposes.

Revenue deferrals created additional regulatory uncertainty for both Aurizon Network and Network's investors, and is inconsistent with the pricing principles in section 168A(a) of the QCA Act. The risks associated with revenue

¹¹² *WIRP Draft Decision* - Chapter 6 Pricing Arrangements For WIRP Train Services, p.56

¹¹³ CDD Chapter 18 – Reference tariffs for WIRP train services Decision 18.10, p.203

¹¹⁴ Final Decision Chapter 18 - Reference tariffs for WIRP train services Decision 18.10, p.249

¹¹⁵ CDD Chapter 26 – RAB and Capital expenditure – p.169

deferral are contrary to the legitimate business interests of Aurizon Network and network investors, who are penalised for risks that are entirely outside of their control and not contemplated at the time of making the investment decision. Further, the WIRP projects were constructed by Aurizon Network at the request of customers.

The QCA stated that the revenue deferrals ensure that Aurizon Network recovers the return on and of WIRP infrastructure over the estimated economic life of the asset in a net present value neutral manner¹¹⁶. The QCA's principle of the deferrals being neutral in net present value terms is underpinned by the incorrect assumption of certainty. This principle assumes that the recovery of costs is guaranteed and/or that all users within the system will remain until all economic costs are recovered. It does not consider the associated volume and asset stranding risk.

7.4.2 Reinstating WIRP revenue in UT5

In responding to the QCA's CDD and Final Decision in relation to the revenue deferrals, Aurizon Network has consistently disagreed with the QCA's decision to defer revenue, and has been particularly concerned that no sunset date on the deferrals has been committed to. Aurizon Network affirmed in its response to the CDD¹¹⁷ that, on 1 July 2017, the WIRP revenue deferrals will cease to apply. The affected capital expenditure will be included in the MAR and Reference Tariffs from this date onwards.

The QCA's UT4 Final Decision did not explicitly provide for a sunset date for the deferral but did state that:

*"we would consider the continued applicability of this capital deferral mechanism as part of our UT5 approval process. Amongst other factors, we will consider whether non-railing WIRP users over UT4 will be expected to rail over UT5, and whether increased volume ramp-up for other WIRP Blackwater customers can absorb these costs without increasing the existing Blackwater system reference tariff".*¹¹⁸

The Aurizon Network WIRP pricing proposal for UT5 thereby incorporates a majority of the WIRP deferrals. Aurizon Network's proposal for WIRP (details in Chapter 13 WIRP Pricing section)

WIRP train services commenced railings in April 2015, with WIRP infrastructure in the Blackwater system 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.

Actual WIRP capex is estimated at \$921m, of which a half has been approved by the QCA and incorporated in to the RAB upon approval of the FY2015 capex claim. The remainder is under consideration by the QCA via the FY2016 capex claim.

Based on actual capex, Aurizon Network has calculated a capital deferral of \$235¹¹⁹m to be included in the opening balance of the UT5 RABs of railing WIRP user groups in the Blackwater system (WIRP Blackwater and Rolleston). Aurizon Network's proposed allocations of the \$235m is detailed in the WIRP Pricing Section of Chapter 13.

The situation (and therefore treatment) for WIRP Moura deferrals is different as it relates to a single user, Cockatoo Coal. Cockatoo Coal was placed into voluntary administration on 16 November 2015 with the mine, Baralaba placed into care and maintenance in February 2016. The voluntary administration process ended May 2016 following a successful recapitalisation of Cockatoo Coal and implementation of a Deed of Company Arrangement. Baralaba mine continues to be in care and maintenance but Cockatoo Coal is currently progressing its mine development and has announced its intention to restart the mine in 2017.

¹¹⁶ FD –Chapter 18 Reference tariffs for WIRP train services, page 240

¹¹⁷ Aurizon Network's response to CDD, Chapter 18 – Reference Tariffs for WIRP Train Services, page 251

¹¹⁸ FD –Chapter 18 Reference tariffs for WIRP train services, page 244

¹¹⁹ Converted to start year terms and includes capital cost and UT4 WACC escalation to compensate Aurizon Network for foregone revenue recovery over deferred period. This amounts relates to WIRP Blackwater and does not include WIRP Moura.

However as there is no certainty on the exact commencement date of railings, Aurizon Network's UT5 proposal continues to defer WIRP capital relating to Moura system, for the full term of UT5. Aurizon Network solely bears the revenue risk and is not compensated for this risk by WACC. Aurizon Network will however continue to monitor the recovery of this portion of the RAB and engage with the QCA when a viable recovery option is identified.

Aurizon Network's approach for determining Reference Tariffs for WIRP Train Services during UT5 is consistent with the methodology approved by the QCA in its UT4 Final Decision. This results in different pricing impacts for the WIRP user groups. Refer Chapter 13 WIRP Pricing section for detailed calculations on pricing impacts.

7.5 Opening RAB value for UT5

The UT4 RAB has been rolled forward in accordance with clause 1.1 of Schedule E of the 2016AU. It includes:

- > for the first two years of UT4 (FY2014 and FY2015), capital expenditure as approved by the QCA;
- > for FY2016, the value of capital expenditure submitted to and currently under consideration by the QCA; and
- > an updated forecast of capital expenditure for FY2017.

The resulting Opening Asset Value for the UT5 regulatory period is \$5,952m. This is the RAB value used for pricing purposes. A key component of the proposed UT5 opening RAB is the inclusion of a majority of deferred WIRP revenue. For clarity the majority of the difference between the \$5,952m opening RAB for pricing and the \$6,225 Roll-forward RAB is the deferred capital relating to WIRP Moura and NAPE.

7.5.1 UT4 roll-forward process

The Opening Asset Value for UT5 is based on the UT4 forecast asset value, which is rolled forward on an annual basis in accordance with clause 1.1 of Schedule E of the 2016AU.

In accordance with clause 1.3 of Schedule E of the 2016AU, Aurizon Network submits an annual RAB Roll-forward to the QCA for approval following the approval of its capital expenditure for that year. In arriving at the UT5 opening RAB, only the FY2014 and FY2015 capex claims have been approved by the QCA, while FY2016 and FY2017 are forecasts.

Tables 12 to 14 details Aurizon Network's opening RAB balance for UT5. Appendix R.1 provides opening RAB's at a system level.

Treatment of revenue deferrals in UT5

- > deferrals relating to WIRP Blackwater have been included in the opening balances of UT5. The WIRP Blackwater deferral has then been allocated among raiiling WIRP Blackwater users;
- > deferrals relating to WIRP Moura (relating to WIRP infrastructure in Moura system) will continue to be deferred as it is uncertain whether Cockatoo Coal (single user of the infrastructure) will rail over the UT5 regulatory period;
- > a proportion of the WIRP balloon loop costs was allocated to WIRP Moura as part of the WIRP capital allocations in accordance with the UT4 Final Decision. This proportion of the WIRP Moura deferral has been re-allocated among all WIRP users in the Blackwater system; and
- > deferrals relating to NAPE continue to be deferred in UT5. Aurizon Network intends to submit a DAAU once the situation regarding the NAPE commencement of railings is clear. The DAAU will include the treatment of pricing of NAPE train services.

The following outlines the method followed in arriving at the opening UT5 RAB:

Parameter	Method
CPI indexation	The UT4 RAB is rolled-forward each year and escalated in line with actual inflation - FY2014: 3.22%, FY2015: 1.51% FY2016: 1.49% For FY2017 year, the RAB has been rolled forward using a forecast inflation of 2.5%, which is the midpoint of the Reserve Bank's target range for inflation and Aurizon Network's inflation forecast for UT4
Depreciation	Consistent with the approach applied in the QCA's UT4 Final Decision > Assets commissioned prior to FY2010 – Straight line based on QCA endorsed lives > Assets commissions from FY2010 onwards - 20 year rolling life
Capital expenditure	Actual capital expenditure for the first two years of UT4 (FY2014 and FY2015) approved by the QCA and a forecast of capital expenditure for FY2016 and FY2017 are included. The FY2016 and FY2017 capex claims are subject to prudence assessments as part of the capital claim process

Table 12 CQCR UT4 RAB Roll-forward and UT5 opening asset value

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening asset value	4,646,420	4,817,853	5,088,724	5,687,549	5,951,775
Capital expenditure	302,903	151,330	735,787	254,212	
Inflation	159,344	75,148	86,771	148,544	
Depreciation	(290,118)	(301,985)	(358,333)	(374,063)	
Closing asset value	4,818,549	4,742,347	5,552,949	5,716,242	

Note: Variance between opening and closing RAB's

- FY2015 difference- relates to disposals approved under FY2014 RAB Roll-forward submission

- FY2016 difference- relates to the inclusion of WIRP capex (excluding deferrals) for pricing purposes in FY2016 consistent with UT4, while part of the capex was incurred in FY2015

- FY2017 difference- relates to Byerwen GAPE incorporated to the RAB for pricing. Consistent with UT4

- FY2018 difference – relates to WIRP deferrals incorporated to UT5 opening RAB

Table 13 CQCR UT4 RAB Roll-forward UT5 opening asset value – Non Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening asset value	4,122,992	4,307,745	4,593,098	5,000,149	5,264,099
Capital expenditure	282,538	146,824	491,453	241,170	
Inflation	141,837	67,366	75,748	131,033	
Depreciation	(239,622)	(250,784)	(294,750)	(322,877)	
Closing asset value	4,307,745	4,271,151	4,865,549	5,049,475	

Table 14 CQCR UT4 RAB Roll-forward UT5 opening asset value –Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	523,428	510,108	495,626	687,400	687,676
Capital expenditure	20,365	4,507	244,333	13,042	
Inflationary gain	17,507	7,782	11,024	17,511	
Depreciation	(50,496)	(51,201)	(63,583)	(51,186)	
Closing asset value	510,803	471,196	687,400	666,767	

Treatment of FY2015 RAB Roll-forward submission

Following approval of the FY2015 capital expenditure claim, Aurizon Network submitted its FY2015 RAB Roll-forward submission to the QCA on 30 June 2016, in compliance with clause 9.3.2 in the 2010AU. This RAB Roll-forward was approved by the QCA on 9 September 2016. Aurizon Network makes note that the assumptions underpinning the FY2015 RAB Roll-forward submission would be updated to align with the UT5 RAB proposal, prior to achieving a final undertaking outcome for UT5.

7.6 Forecasting UT5 RAB

The following parameters are applied in forecasting the RAB across UT5:

Parameter	Method
CPI indexation	A CPI of 1.22%, forecast in accordance with the UT5 inflation proposal in Chapter 5
Depreciation	20 year rolling life - approach consistent with UT4 Final Decision
Capital expenditure	Aurizon Network is submitting a UT5 Capital Indicator of approximately \$778m over the UT5 regulatory period

7.7 Reconciliation of UT4 capital carryover account

The balance within the capital expenditure carryover account has been calculated consistent with UT4 methodology and in accordance with clause 5 of Schedule E of the 2016AU.

The tables below compares the approved capital Indicator over the UT4 period against the FY2014 and FY2015 approved capex and FY2016 and FY2017 revised forecasts.

The forecast capital expenditure for FY2016 and FY2017 remain outstanding at this point in time. FY2016 claim is currently under review by the QCA. Aurizon Network believes the FY2016 claim will be approved prior to finalising UT5 and will update these figures accordingly. For the FY2017 forecast Aurion Network will update the existing numbers by the best available forecast prior to achieving a final undertaking outcome for UT5.

Table 15 Aurizon Network's approved Capital Indicator for UT4 (\$'000)

	FY2014 Forecast	FY2015 Forecast	FY2016 Forecast	FY2017 Forecast	Total Forecast
Non-Electric					
Blackwater	100,557	52,950	767,541	77,341	998,389
Goonyella	165,271	54,172	131,502	67,897	418,842
Moura	3,689	2,062	12,176	7,614	25,541
Newlands	7,361	1,690	10,048	5,325	24,425
GAPE	5,659	25,860	--	--	31,519
Total Non-Electric	282,538	136,733	921,266	158,178	1,498,716
Electric					
Blackwater	5,114	1,256	208,872	1,949	217,191
Goonyella	15,250	8,805	2,763	2,277	29,095
Total Electric	20,365	10,060	211,635	4,226	246,286
Total Capital Indicator	302,903	146,793	1,132,901	162,404	1,745,001

Table 16 Aurizon Network's revised capital expenditure forecast for UT4 (\$'000)

	FY2014 Actual Approved	FY2015 Actual Approved	FY2016 Submitted	FY2017 Revised Forecast	Total Forecast
Non-Electric					
Blackwater	100,557	360,743	384,668	█	954,246
Goonyella	165,271	76,897	78,923	█	432,285
Moura	3,689	5,364	15,746	█	37,752
Newlands	7,361	3,720	12,116	█	31,943
GAPE	5,659	511	--	--	6,171
Total Non-Electric	282,538	447,235	491,453	█	1,462,397
Electric					
Blackwater	5,114	23,382	183,590	█	218,438
Goonyella	15,250	3,920	60,743	█	86,604
Total Electric	20,365	27,303	244,333	█	305,043
Total Capital Forecast	302,903	474,538	735,787	█	1,767,439

Note: Deferred capital expenditure during the UT4 period has been excluded from the analysis because Aurizon Network did not earn any revenue (MAR) from this deferred capex, similar to the treatment of deferred capital expenditure in the UT3 capital carryover.

Table 17 Variance of Capital Indicator and capital expenditure forecast UT4 (\$'000)

	FY2014 Actual Approved	FY2015 Actual Approved	FY2016 Submitted	FY2017 Revised Forecast	Total Forecast
Non-Electric					
Blackwater	--	307,793	(382,872)	█	(44,143)
Goonyella	--	22,725	(52,579)	█	13,443
Moura	--	3,303	3,570	█	12,211
Newlands	--	2,030	2,068	█	7,518
GAPE	--	(25,348)	--	--	(25,348)
Total Non-Electric	--	310,503	(429,813)	█	(36,319)
Electric					
Blackwater	--	22,127	(25,282)	█	1,247
Goonyella	--	(4,884)	57,980	█	57,510
Total Electric	--	17,243	32,698	█	58,757
Total Capital Forecast	--	327,745	(397,115)	█	22,438

As shown in Table 17 above, Aurizon Network will overspend against the Capital Indicator for UT4.

The key variations between the Capital Indicator and the UT4 forecast capital expenditure are as follows.

- > as part of the UT4 process, the Capital Indicator for FY2014 was set equal to the QCA's approved capital value. FY2015 to FY2017 in the UT4 Capital Indicator were forecast;
- > the Capital Indicator assumed WIRP capex would be on the FY2016 capital claim, however the amount claimed was part in FY2015 with most of the remainder being included in in FY2016. This resulted in timing differences

- between FY2015 and FY2016. For clarity the deferrals relating to WIRP have been excluded from the capital carryover comparison and included the opening balance of UT5 for pricing purposes ;
- > the FY2017 forecast includes revised capex forecasts relating to the Network Asset Management System (NAMS) project and increased re-railing; and
 - > the variance for the GAPE project in FY2015 relates to Remote Control Signalling (RCS) project included in the capital indicator while RCS was part of the FY2014 claim.

Based on the difference between the approved UT4 Capital Indicator and the actual capital expenditure for UT4 (noting that the last two years' actual expenditure are still subject to approval) the forecast NPV adjustment balance of the Capital Expenditure Carryover Account as at 1 July 2017 is as shown in Table 18 below.

Table 18 Aurizon Network's updated capital carryover account NPV (\$'000, FY2017)

System	Non-Electric	Electric	Total
Blackwater (incl Rolleston & WIRP)	34,373	1,805	36,178
Goonyella	4,007	11,580	15,587
Moura	3,303		3,303
Newlands	1,420		1,420
GAPE (Incl GSE)	(8,810)		(8,810)
Total (excluding escalation)	34,293	13,385	47,678
Total including escalation and in mid-year terms	39,036	15,237	54,273

A total NPV of \$47.7 million is an under recovery related to UT4, that will be smoothed at 1.22% inflation over the UT5 period and converted to mid-year terms to \$54.2 million be recovered through the UT5 Reference Tariffs.

7.8 UT4 Equity Raising Costs

In its UT4 Final Decision the QCA approved the inclusion of prudent and efficient equity-raising costs in the determination of MAR. The Australian Energy Regulator (AER) approach proposed by Aurizon Network as part of its 2016AU, was considered consistent with regulatory practice and QCA determined to make an adjustment at the conclusion of UT4 to account for equity-raising costs¹²⁰.

Adopting the AER methodology, Aurizon Network has calculated an allowance for equity raising costs based on approved capital expenditure for FY2014 and FY2015 capex and revised forecast for FY2016 and FY2017. The forecast capital expenditure for FY2016 and FY2017 remain outstanding at this point in time. FY2016 claim is currently under review by the QCA. Aurizon Network believes the FY2016 claim will be approved prior to finalising UT5 and will update these figures accordingly. For the FY2017 forecast Aurizon Network will update the existing numbers by the best available forecast prior to achieving a final undertaking outcome for UT5.

The total value of the equity raising costs Aurizon Network is seeking to include in the RAB as at 30 June 2017 is \$12.1m. This amount has been proportionally allocated to the individual coal systems' opening UT5 RABs based on a percentage allocation of the capital expenditure incurred during the UT4 regulatory period. For clarity \$12.1m is proposed to be added to the opening UT5 pricing RAB of is \$5,952m.

Equity raising costs have not been allocated to GAPE and WIRP as the cost relating to these new expansion projects for pricing purposes are proposed to be purely incremental in nature.

¹²⁰ QCA's Final Decision, Chapter 25 – Opening Asset Value, page 175

The amounts allocated to each coal system are set out in Table 19 below.

Table 19 Aurizon Network's UT4 Equity Raising Costs relating to UT5 (\$'000)

System	Total
Blackwater	5,789
Goonyella	5,668
Moura	375
Newlands	364
Total	12,196

Capital Indicator

8. Capital Indicator

Aurizon Network is submitting a UT5 Capital Indicator of approximately \$778m over the UT5 regulatory period. The Capital Indicator comprises primarily capital renewal projects (over 90% by cost). The balance of the estimated cost is for post-commissioning projects and other projects not classified as expansion or renewal. The Capital Indicator does not contain any scope or forecast expenditure relating to expansion projects.

Figure 21 illustrates the composition of the UT5 Capital Indicator. The proposed capital indicator by CQCN System is set out in Table 20 and by traction type in Table 21. This section of the Revenue Proposal outlines the investment that Aurizon Network is making in asset renewal and confirms the methodology for the calculation of the Interest During Construction allowance.

Figure 21 Capital Indicator by major program

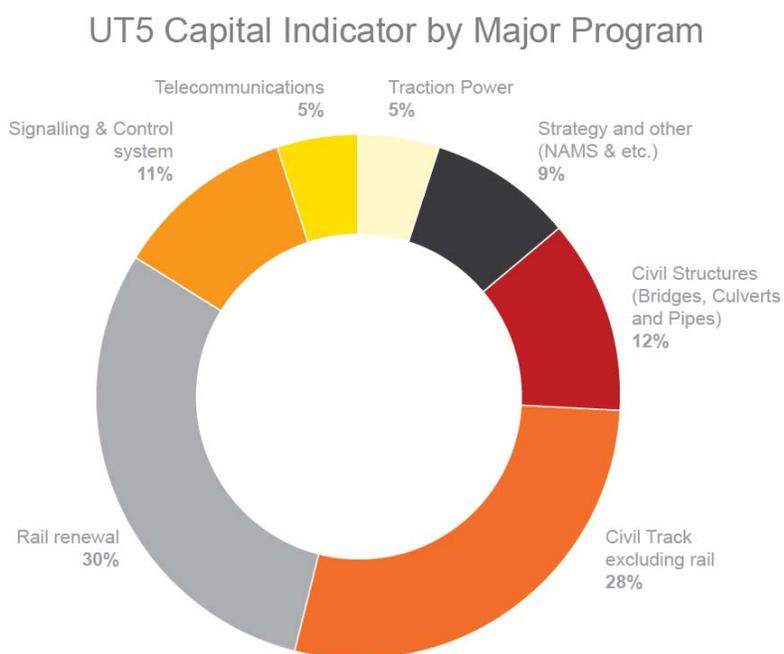


Table 20 Capital Indicator value (\$'000) by System

System	FY2018	FY2019	FY2020	FY2021	Total
Blackwater	86,452	73,563	67,129	69,497	296,641
Goonyella	102,220	88,232	80,699	75,121	346,272
Moura	9,293	7,845	7,114	7,137	31,390
Newlands	26,903	25,681	25,176	26,219	103,977
TOTAL	224,868	195,320	180,118	177,974	778,281

Note: Values are nominal, mid-year dollars and include interest during construction.

Table 21 Capital Indicator by traction type (\$'000)

System	FY2018	FY2019	FY2020	FY2021	Total
Non-Electric	214,157	184,609	169,407	167,263	735,436
Electric	10,771	10,771	10,771	10,771	42,844
TOTAL	224,868	195,320	180,118	177,974	778,281

Note: Values are nominal mid-year dollars and include interest during construction.

8.1 Investment framework to support capital expenditure prudence

Aurizon Network undertakes a rigorous regime in relation to committing capital investments. It is required to comply with the principles in the investment framework provided by Aurizon Holdings.

The purpose of the investment framework is to facilitate sound investment decisions and to ensure:

- > investments have a high degree of success;
- > investment decisions are made on a consistent basis;
- > capital is optimised; and
- > learnings from investments are recorded and improved approaches to manage investment opportunities are realised.

The investment framework aligns with the requirements of the recently approved UT4 in terms of prudence of scope, standard and cost for capital expenditure.

8.2 Asset Renewals

The Asset Renewal Program is a key enabler for Aurizon Network to provide a safe and reliable rail network whilst ensuring the ability of its customers to deliver freight to the contracted destination. Timely renewal of assets is an important element of rail infrastructure management as it means assets do not need to be replaced as often. The outcomes associated with investment in the Capital Asset Renewal Program include:

- > ensures assets are sustained within Civil Engineering Track & Structures Standards (CETS);
- > assists Aurizon Network to meet its obligations to the Rail Regulator by evidencing that the network is being renewed to a condition fit for the movement of rolling stock;
- > sustains the capacity of the network for moving freight by reducing maintenance track closures, speed and overload restrictions applied to assets in poor condition;
- > decreases the risk of derailments and avoids the costs and reputational impacts associated with such events; and
- > ensures or improves the safety of the CQCN.

Aurizon Network's approach for forecasting the scope and cost of asset renewals is the same as approved for UT4. The underlying principles of that approach are:

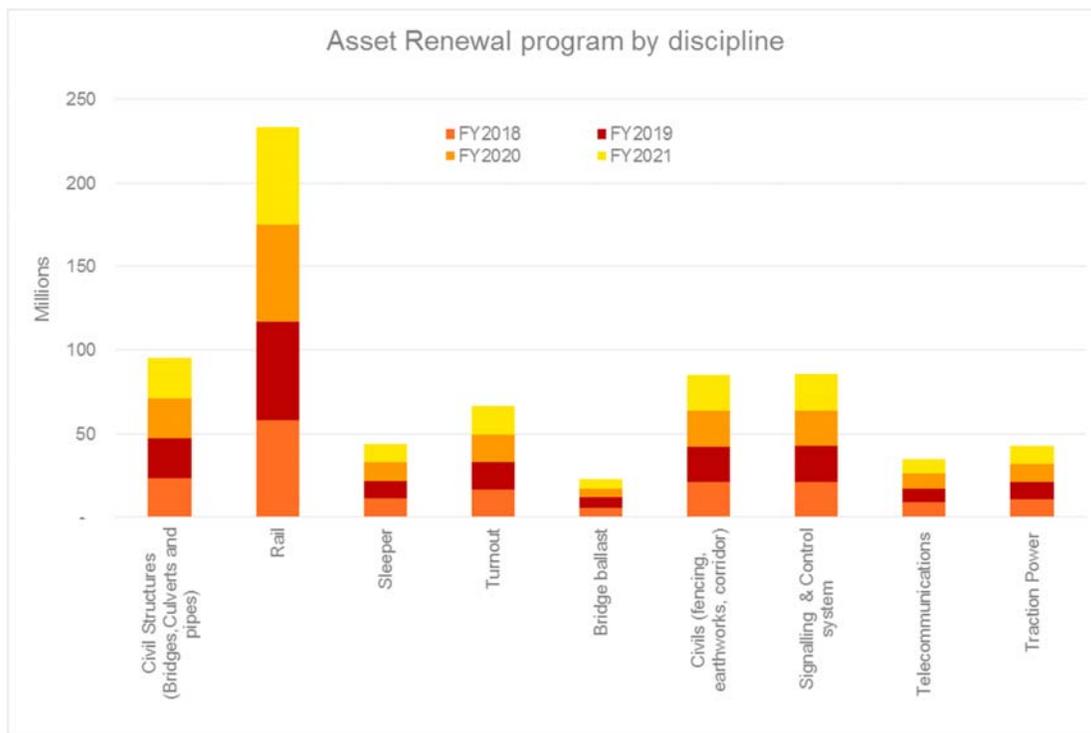
- > pro-active management of assets; and
- > using a steady state average scope that is smoothed across disciplines to balance track possession requirements, resourcing limitations and funding constraints. That is, the scope of renewals that can be achieved in any year is a compromise between the ability to gain access to the track whilst minimising the impacts on Network's customers with the ability to source the specialist resources to perform the works in the locations required at a cost that is prudent and efficient.

Aurizon Network uses its Network Strategic Asset Planning (NSAP) tool to forecast asset renewals and associated expenditure. The tool models multiple factors including:

- > the engineering/useful lives of the assets in the CQCN;
- > Aurizon Network's Civil Engineering Track Standards;
- > Aurizon Network's Asset Maintenance and Renewals Policy (which has the objective of optimising the balance between asset maintenance and asset renewals to achieve the least cost of ownership of assets); and
- > historical and forecast gross tonne kilometres over the CQCN by System section.

Figure 22 provides a breakdown of the annual Asset Renewal expenditure included within the Capital Indicator.

Figure 22 CQCN Asset renewal expenditure profile



The rail renewal project is the largest single component within the annual asset renewal program. During the 1980s and 1990s approximately 4,000 kilometres of rail ¹²¹was laid in the CQCN. Most of the rail installed during this period will require replacement between 2016 and 2040 based on Civil Engineering Track Standards. The extent of this requirement has become clearer in recent years with improved technology, better data capture and enhanced capability to assess rail condition to a much finer degree than was previously possible. Through such analysis, it has become evident that Aurizon Network needs to renew rail within the CQCN at a higher rate than previously envisaged to ensure the network is maintained at the required standard whilst balancing track possession requirements, resourcing limitations and funding constraints as outlined above.

8.3 Interest during construction

An allowance for Interest During Construction (IDC) compensates Aurizon Network for incurring upfront expenditure to deliver capital projects. Aurizon Network only starts to recover capital costs when the associated capital project has been commissioned and approved by the QCA for inclusion in the RAB. For UT5 and the accompanying Revenue Proposal, Aurizon Network has retained the methodology approved as part of the UT4 Final Decision. This methodology uses an S-curve approach to calculate IDC for the purposes of the Capital Indicator.

¹²¹ Note 2 rail kms = 1 track km

8.3.1 S-curve approach

The S-curve approach uses forecast monthly cash flows and multiply them with the applicable interest rates (that is, the WACC for the relevant regulatory period) to calculate IDC.

$$IDC = \sum \{ CAPEX_m * [(1+WACC_m)^{Remaining\ months-1}] \}$$

where:

CAPEX_m =monthly capital expenditure

WACC =annual WACC applicable for the regulatory period where capital expenditure was incurred

WACC_m =monthly WACC calculated using $(1+WACC)^{1/12-1}$

Remaining months =months remaining prior to date of asset being written into RAB

Irrespective of actual commissioning date, assets are assumed to be written into the RAB at mid-year for IDC calculations. IDC is calculated to the mid-point in the year of commissioning. For clarity the UT5 proposed Capital Indicator (including IDC) at mid-year terms is then converted to start of year of commissioning for the calculation of MAR, consistent with UT4 approach to modelling.

To the extent there are cashflows after the mid-year, negative IDC is also calculated from the mid-point of the commissioning year to the end of the financial year. This methodology is consistent with the approach applied in UT4, and was approved by the QCA as part of its UT4 Final Decision.

Maintenance Costs

9. Maintenance Costs

9.1 Introduction

Aurizon Network's maintenance regime emphasizes sustainable, long-term asset management practices, delivered in accordance with standards and processes, which are performed in accordance with global best practice. The regime is focused on a range of outcomes, including:

- > network reliability, allowing customers to contract access with confidence in the network;
- > continual safety improvements;
- > innovating to minimise the impact of maintenance activities on network access;
- > providing the required scope of maintenance activities for an efficient cost;
- > investments in new mechanised plant to improve productivity and unit rates of production; and
- > working with the supply chain to minimise adverse capacity impacts.

Aurizon Network achieves these outcomes by emphasizing the criticality of evidence-based, preventative maintenance activities, which enables it to meet the business requirements of customers by providing the appropriate level of asset availability while minimising whole of life costs for the entire asset life cycle.

Aurizon Network is a capital intensive business with a \$6 billion RAB in rail and supporting infrastructure comprising the CQCN. This asset base includes 2,670 kilometres (kms) of track, of which 1,945 km is electrified, servicing over 40 mines. The scale of Aurizon Network's asset management and maintenance task is inherently linked to the RAB, which has not only increased in size but almost doubled in value since FY2010, the commencement of the UT3 regulatory period; and increased from \$4.9 billion to \$6.2 billion from UT4 to UT5. This reflects the level of investment needed to deliver the required capacity, availability and reliability demanded, and contracted by, coal producers and the wider coal supply chain.

An effective, prudent and efficient maintenance regime is essential for the economically efficient operation of the CQCN, now, and for the future of the network. The maintenance regime is a critical aspect of the overall efficiency of the supply chain competitiveness of Australian coal.

As the accredited Rail Infrastructure Manager of the CQCN, Aurizon Network is obligated, by legislation and standards, to scope and deliver its maintenance program to meet the required standards. This obligation is a critical driver in establishing the efficient maintenance scope presented in this proposal. It is essential that Aurizon Network is provided with an allowance that is at least enough to meet the efficient costs of providing the maintenance activities necessary to comply with its legislative and regulatory obligations.

Consistent with the statutory framework in the QCA Act, Aurizon Network is seeking to recover the efficient costs incurred in maintaining the CQCN in accordance with these legislative and regulatory obligations. This chapter sets out Aurizon Network's proposed maintenance expenditure for the UT5 regulatory period, which reflects the efficient cost of maintaining the CQCN in compliance with these obligations.

The majority of the methodology used to determine maintenance cost for the UT5 regulatory period is consistent with the methodology adopted by the QCA to approve maintenance expenditure for UT4 (refer to section *Maintenance Expenditure Forecasting Methodology, table 24*). While recognising that the QCA must assess the UT5 DAU as a new undertaking, Aurizon Network considers that the QCA must give significant weight to the use of a methodology consistent with that used for the recently approved UT4, particularly in circumstances where there has been no material change to the facts and circumstances relevant to the QCA's consideration of the section 138(2) factors.

9.1.1 Key drivers of UT5 maintenance allowance

Aurizon Network's maintenance expenditure proposal is a function of two core inputs, namely the:

1. **Scope** of maintenance activities required to provide the declared service during the UT5 regulatory period; and
2. **Efficient cost** of delivering the maintenance task.

Maintenance expenditure for the UT5 regulatory period is forecast to increase from \$805 million in UT4 to \$921 million. This increase is driven by three key factors:

- > The inflationary impacts on unit rates across the UT5 regulatory period at the forecast Maintenance Cost Index (MCI) – an impact of approximately \$70 million;
- > Increased scope of maintenance activities due to the aging asset profile and greater quantum of RAB infrastructure; and
- > Recovery of costs associated with new mechanised maintenance assets.

The increase in the size of the CQCN RAB reflects investments required to meet customer demand and which have been undertaken in accordance with the capacity expansion provisions of the undertaking. This increase in the overall size of the network has implications for the maintenance task. The maintenance cost forecast reflects both the scope of the maintenance task, which has increased with the scale of the network, and unit rates. The scope of maintenance activities reflects what is required for Aurizon Network to meet its legislative and regulatory obligations as a Rail Infrastructure Manager.

The inflationary component of forecast maintenance expenditure is an indirect cost driver that is beyond Aurizon Network's control.

9.1.2 Innovative asset management

As noted above, Aurizon Network has not changed its approach towards the maintenance task from UT4. Rather, it is continuing a journey of implementing sustainable, long-term asset management practices, delivered in accordance with regularly audited standards and processes. As part of this process, Aurizon Network has sought continuous improvement in its maintenance practices. We are doing more maintenance activity in less time on track and have invested in equipment to deliver the task in a more efficient way. Some key initiatives in this regard include:

- > the installation of ballast-less track;
- > culvert replacement;
- > rail stressing technique improvements;
- > installation of rubber flangeways on level crossings;
- > consolidation of maintenance depots to reduce overall costs; and
- > initiation of the Possession Alignment and Capacity Evaluation (PACE) model and the Maintenance Access Window (MAW) Planning Process, which combine to reduce the duration and frequency of high impact system shutdowns and facilitate the ability for Aurizon to leverage duplicated segments of the network to perform tasks in single line possessions allowing maintenance and the operation of train services to occur simultaneously.

Over the course of the UT4 regulatory period, Aurizon Network has achieved many outstanding asset maintenance results that have contributed to demonstrable improvements in supply chain performance. Highlights include:

- > a more resilient and reliable below-rail network, which since FY2013 has resulted in:
 - 65% reduction in below rail cancellations;
 - 41% reduction in below rail delays;
- > a reduction in total system 'shuts', with total hours closed declining from 1,360 in FY2014 to 1,010 hours in FY2016. This shows that the required maintenance activities are occurring with less impact on the network in terms of disruptions to operations;
- > performance to plan improvements of up to 5% across all coal systems; and
- > minimising the impact of maintenance activities on the supply chain through the:

- introduction of new work practices such as the innovative culvert renewal process and the use of Unmanned Aerial Vehicles to inspect overhead line equipment, both of which can be completed concurrently with train operations, i.e. without the need for network closures and isolations;
- consolidation and location optimisation of maintenance depots to improve productivity and minimise response times across the network;
- introduction of more effective work practices, which have led to:
 - 21% reduction in rail breaks; and
 - 84% reduction in defective rail welds.

These improvements enhance the reliability of the network and promote the economically efficient operation the CQCN. Improved below rail performance also creates tangible benefits for the entire supply chain, including:

- > operating cost savings (for example, reduced fuel and labour costs) realised through improved performance to plan, reduced below rail delays and increased below rail cycle velocity;
- > the ability for operators and producers to optimise capital expenditure decisions when and where they have confidence in the performance and reliability of the below rail network (for instance, by reducing or deferring rolling stock investments);
- > reduced demurrage costs due to reduced delays in ship loading; and
- > reduced stockpile inventories for mines.

In the remainder of the maintenance costs section Aurizon Network provides a discussion of:

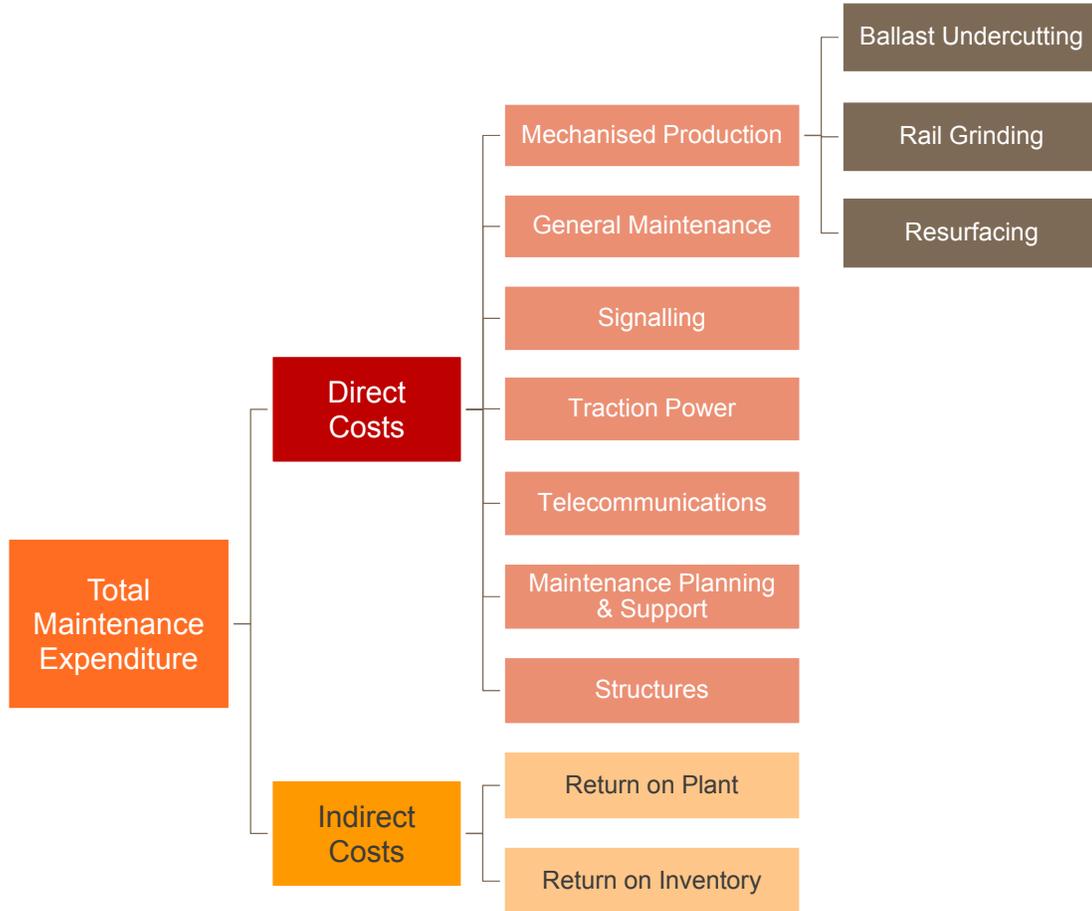
- > its maintenance expenditure proposal for the UT5 regulatory period;
- > the types of maintenance activities performed and their purpose;
- > the proposed scope of maintenance activity for the UT5 regulatory period;
- > the way in which Aurizon Network developed and prioritised the scope;
- > the efficient cost of delivering that scope; and
- > how the maintenance scope is inherently a function of the RAB and Aurizon Network's legislative obligations.

9.2 Overview of maintenance expenditure proposal

Aurizon Network's maintenance expenditure proposal for the UT5 regulatory period is materially consistent with the methodologies and cost base approved by the QCA in its UT4 Final Decision in October 2016. While not agreeing with all elements of the QCA's decision, Aurizon Network accepted it to achieve regulatory certainty.

Aurizon Network's maintenance expenditure is categorised into direct and indirect maintenance expenditures, as illustrated in Figure 23. The maintenance expenditure proposal that follows is presented in the same structure, which is also consistent with UT4.

Figure 23 Aurizon Network’s maintenance expenditure categories



Direct costs relate to those maintenance activities that are essential for ensuring the safety and reliability of the CQCN. Some 96% of the costs associated with delivering the maintenance scope for the UT5 regulatory period are direct costs, which for each maintenance discipline includes (but is not limited to):

- > internal labour;
- > related party service agreement, benchmarked against competitive market prices, e.g. rail grinding;
- > externally procured resources such as consumables and fuel;
- > externally procured services, for example accommodation; and
- > depreciation of maintenance assets such as plant and trucks.

The remaining 4% of the maintenance expenditure proposal relates to indirect costs; in this instance, the return Aurizon Network is required to recover on its investments in mechanised production assets and inventory held for maintenance purposes.

9.2.1 Total maintenance expenditure proposal

Aurizon Network’s maintenance expenditure proposal is presented in the table on the following page for each year of the UT5 regulatory period.

Table 22 UT5 maintenance expenditure proposal by year (\$m)

Maintenance activity (\$m)	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
Total – Real (\$FY2015)	208.8	209.5	214.2	215.0	847.5

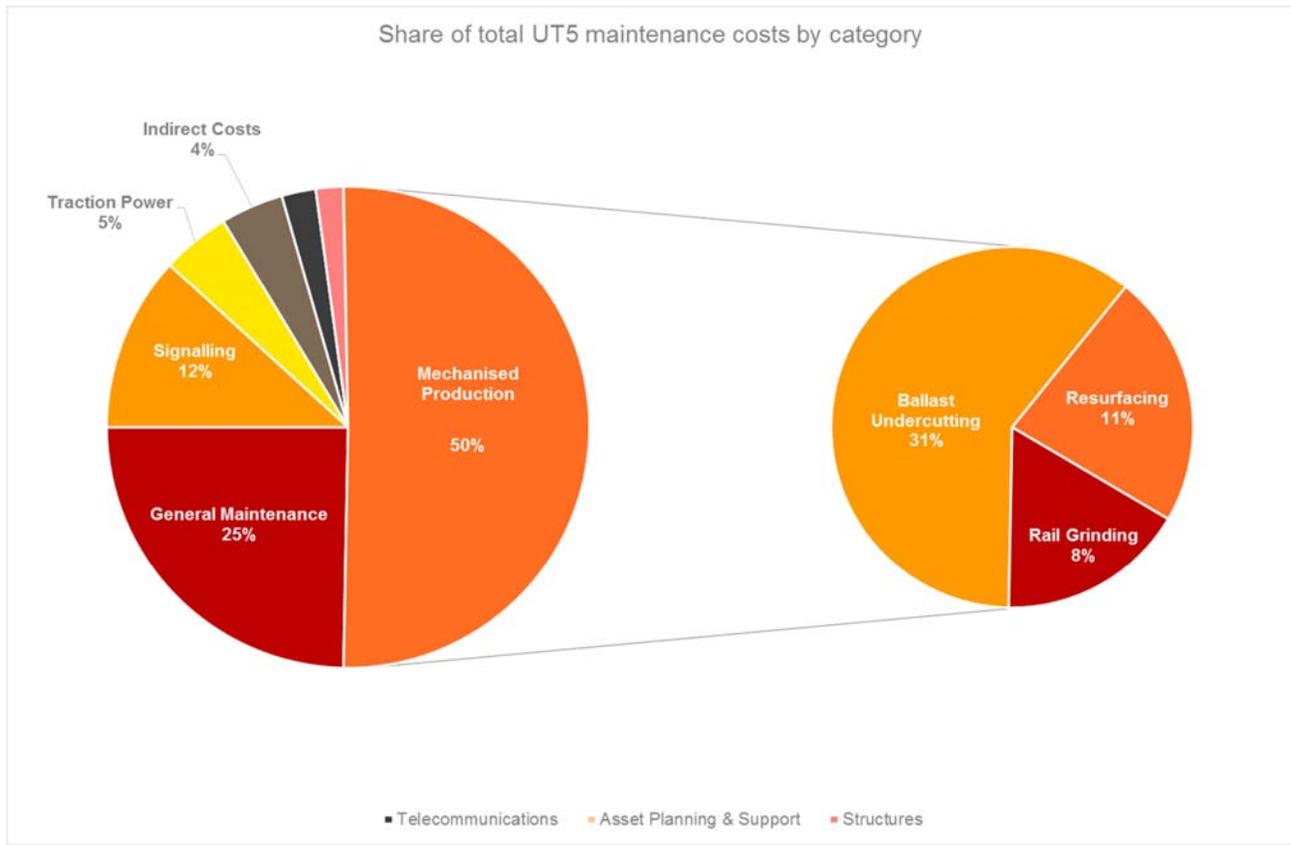
In aggregate, the maintenance expenditure proposal for the UT5 regulatory period is:

- > approximately 19%¹²² higher, in nominal terms, than the maintenance expenditures approved for UT4; or
- > 12% higher in real terms (\$FY2015).

Each activity’s contribution to total maintenance cost for the UT5 regulatory period is illustrated in the figure on the next page.

¹²² Based on a comparison between the proposed UT5 allowance and the UT4 allowance (net of rail renewal costs) as approved by the QCA in the UT4 Final Decision.

Figure 24 Share of total maintenance costs by activity



Of Aurizon Network’s total proposed maintenance costs for the UT5 regulatory period:

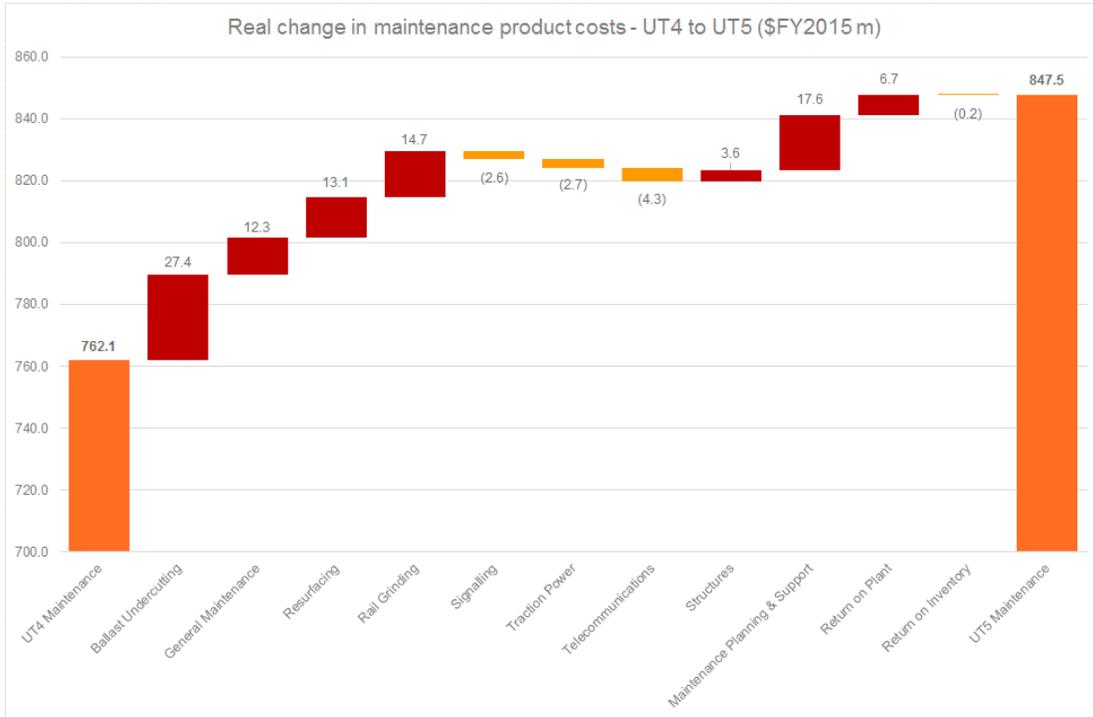
- > 50% relates to mechanised production activities, including ballast undercutting, rail grinding and resurfacing;
- > 37% relates to general maintenance and signalling; and
- > the remaining asset management activities combined contribute only 13%.

The primary driver of the total cost change between the UT4 and UT5 regulatory periods (in nominal terms) is the impact of forecast inflation.

The figure on the following page illustrates the transition from UT4¹²³ to UT5 for each cost category in real terms, i.e. excluding the inflationary impact. This analysis is provided at an activity level to highlight the primary cost drivers between regulatory periods.

¹²³ Re-railing costs, which were part of the UT4 maintenance cost allowance in FY2014 and FY2015 but subsequently capitalised from FY2016 onwards, have been removed to facilitate a consistent comparison.

Figure 25 Real maintenance expenditure by product; UT4 allowance vs UT5 proposal



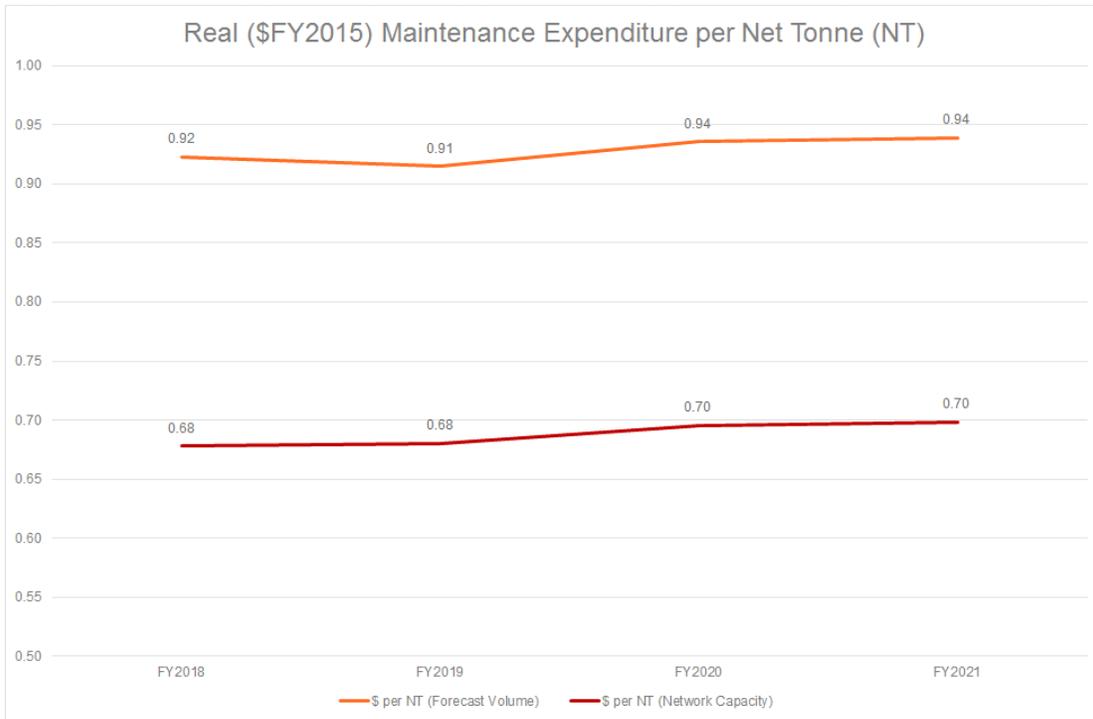
The primary maintenance cost drivers between UT4 and the UT5 regulatory period are:

- > Inflation (\$71m);
- > Ballast Undercutting (\$27.4m);
- > General Maintenance (\$12.3m);
- > Maintenance Planning and Support (\$17.6m)¹²⁴;
- > Rail Grinding (\$14.7m); and
- > Resurfacing (\$13.1m).

Though volume forecasts (expressed in net tonnes) are not the only driver of maintenance costs, they do enable comparison of real maintenance costs on a unit rate basis. The figure on the next page presents the annual change in real maintenance costs on a \$ per net tonne basis over the UT4 and UT5 regulatory periods.

¹²⁴ During UT4 these costs were allocated among the broader maintenance product categories. To enable greater transparency and effective cost management, they have been separately identified in the maintenance cost proposal for UT5.

Figure 26 Real maintenance costs per forecast and contracted net tonne



The CQCN was constructed to deliver the capacity demanded and subsequently contracted by Access Holders. Aurizon Network is required to ensure the safety and reliability of all infrastructure within the RAB and the costs associated with some maintenance activities (e.g. inspections, vegetation management) are not variable with tonnage, i.e. the costs would be incurred regardless of the volumes railed.

As Aurizon Network maintains built capacity, the graph above illustrates the difference in unit price of annual maintenance costs at baseline capacity and for forecast volumes. Given the relatively high proportion of fixed costs, particularly in the mechanised production activities, producers have an opportunity to lower unit costs (and consequently reference tariffs) by railing volumes which are more closely aligned to the capacity of the CQCN.

9.2.2 Aurizon Network’s asset management philosophy

Aurizon Network is required to manage and maintain the network in a manner which caters for the varying requirements of our customers, while meeting its legislative and regulatory obligations. In light of this, the focus for Aurizon Network’s asset maintenance during the UT5 regulatory period is to meet customer demand for a reliable and available network that is capable of providing the capacity it was constructed to deliver.

To provide consistent and reliable access to the service at an efficient level of cost, Aurizon Network has targeted the planning and execution of maintenance activities as a means of achieving productivity and efficiency gains, to reduce below rail delays and cancellations and to improve the performance to plan.

Aurizon Network is also focused on optimising the life of assets, keeping a tension between investment in maintenance and capital, so that assets do not always need to be replaced in entirety, but not allowing the asset to deteriorate so much that constant maintenance is required. Aurizon Network aims to make the right intervention at the right point in time to balance the condition of the asset with the system performance demanded by our customers. Deferring asset maintenance activities, for example, can have long lasting implications on network performance which:

- > accelerates the rate of asset degradation;
- > reduces the optimal life of rail infrastructure;

- > requires additional unplanned, corrective maintenance interventions; and
- > ultimately imposes higher costs on the entire supply chain.

A stable and consistent maintenance regime is essential for maintaining a highly reliable network, which in turn allows coal producers to take advantage of favourable price movements in the spot markets.

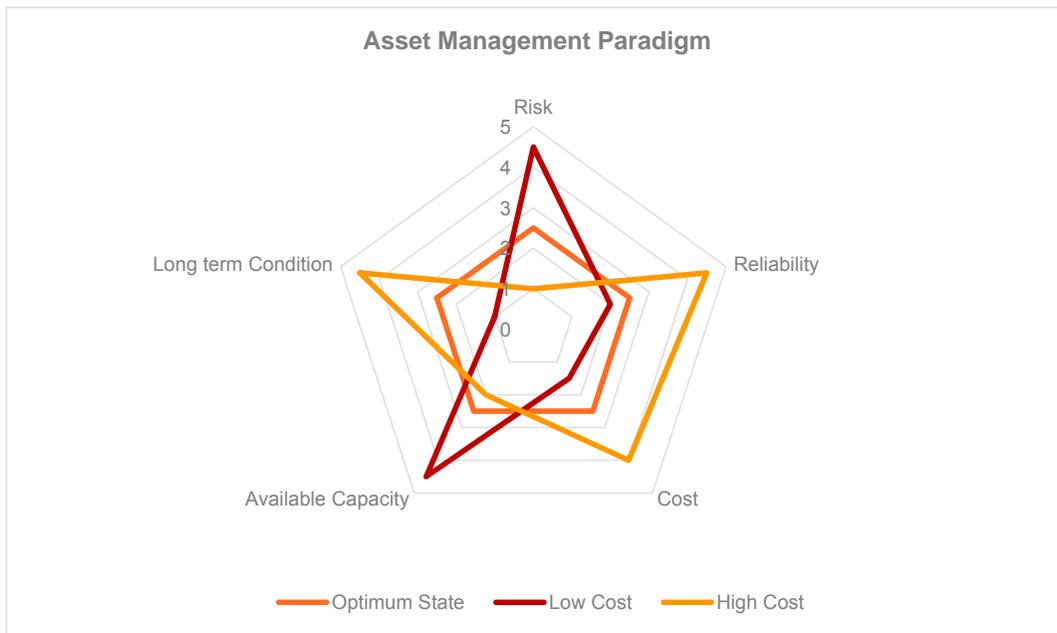
9.2.3 Balanced asset management

Effective asset management is about maintaining an effective balance between several factors including:

- > the cost of delivering the maintenance task;
- > the safety and reliability of the network infrastructure;
- > the number of track possessions required to conduct the works and the associated impact on available network capacity;
- > changes in risk profile; and
- > impact on the long term condition and life of the asset.

These trade-offs are represented graphically in the following diagram.

Figure 27 Asset management paradigm



It is therefore essential, that Aurizon Network effectively balances the maintenance / throughput trade-off. As noted by Moubray¹²⁵;

“A proactive task is worth doing if it reduces the consequences of the associated failure mode to an extent that justifies the direct and indirect costs of doing the task”

¹²⁵ Moubray J. RCM II Reliability – Centred Maintenance. Oxford. Butterworth – Heinemann. 1991, pg. 91.

The Aurizon Network maintenance regime emphasizes sustainable, long-term asset management practices, delivered in accordance with regularly audited standards and processes. The regime is focused on a range of outcomes, including:

- > meeting the business requirements of customers by providing the appropriate level of asset availability while minimising whole of life costs for the entire asset life cycle;
- > continual safety improvements;
- > providing an efficient scope of maintenance activities for an efficient cost;
- > increased plant productivity to improve the delivered scope; and
- > working with the supply chain to minimise adverse capacity impacts.

It achieves these outcomes by emphasizing the criticality of evidence-based, preventative maintenance activities. In doing so, Aurizon Network can optimise the life of the asset by proactively controlling the rate of asset deterioration. The International Heavy Haul Association refers to this as the “magic wear rate”¹²⁶, which:

“[...] represents the optimum level of wear (both natural and artificial) where surface fatigue is safely controlled and component life is long, predictable and well-managed.”¹²⁷

Proactive, preventative maintenance includes both time and usage-based activities, the scope of which is developed in accordance with Aurizon Network’s Safety Management System (SMS) and the prevention and intervention levels specified in Aurizon Network’s Asset Maintenance and Renewals Policy. Due to their predictive nature, Aurizon Network can plan for and schedule preventative maintenance activities in conjunction with the requirements of the supply chain.

As a result, preventative maintenance can be delivered more efficiently and generally has a ‘less-intrusive’ impact on the supply chain, due to its planned and coordinated nature.

Planned maintenance can also best take advantage of Maintenance Access Windows (MAWs) to get more done during planned closures, as well as having a positive effect on the unit rate for the delivered task. A higher proportion of planned maintenance also allows for optimal inventory planning, with the ability to ‘right size’ inventory and manage critical spares.

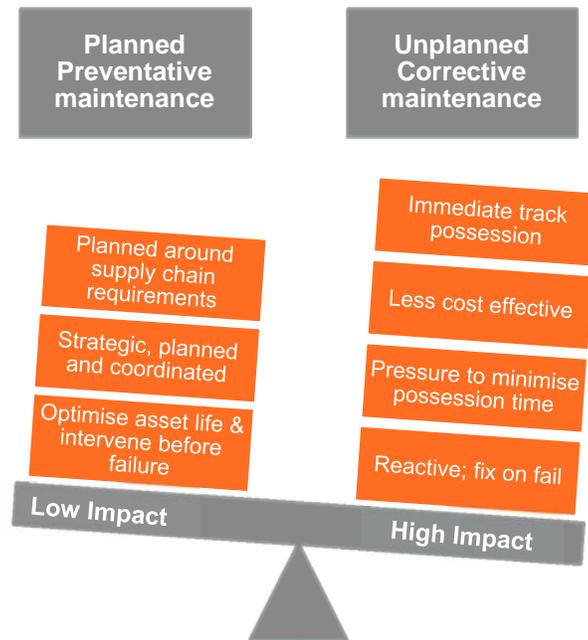
While some preventative maintenance tasks are required irrespective of volume throughput (such as time-based, visual inspections), the forces exerted through the passage of rolling stock and Queensland’s meteorological extremes generate the need for unplanned interventions. Unplanned maintenance includes fix-on-fail incidents that occur during the daily operation of the network. Due to the unpredictable, reactive nature of these events, they are generally scoped based on historical observations. The occurrence of fix-on-fail events can be highly disruptive to network availability and may require immediate track possessions to rectify. They can also result in a greater cost impost on the supply chain.

The key differences between preventative and unplanned maintenance activities are illustrated in the graphic on the next page:

¹²⁶ International Heavy Haul Association, Guidelines to Best Practice for Heavy Haul Railway Operations, Management of the Wheel and Rail Interface, June 2015, pg. 7-2

¹²⁷ Ibid.

Figure 28 Preventative maintenance optimises asset life with a less intrusive impact on the supply chain



Aurizon Network proactively manages the occurrence of fix-on-fail incidents through the effective execution of its preventative maintenance and asset renewal programs, which in turn, promotes cost efficiencies in the delivery of the maintenance programme. The example outlined below illustrates this point.

In March 2015 inspections identified a rail defect (head-web separation) on the Goonyella system Up-Road at the 79.6 – 79.7 kilometre mark. An unplanned possession was required to replace the 108 metre length of rail. The Up-Road was subsequently closed to all traffic to enable re-railing and all traffic was re-directed to the Down-Road where a 30 kilometre per hour speed restriction was imposed. The unplanned nature of this intervention led to:

- > below rail delays of 24 hours and 59 minutes; and
- > cost approximately \$1.4 million to rectify; a unit rate of \$13,194 per metre.

By comparison, Aurizon Network’s strategic rail renewal programme is expected to replace 42 kilometres of rail in the Goonyella system at a cost of \$17.8 million; a unit rate of \$420 per metre. The planned and coordinated delivery of this programme results in substantial unit rate improvements relative to the unplanned intervention, in which Aurizon Network is required to minimise track possession times to restore the network to full operability.

9.2.4 Approach to forecasting Aurizon Network’s efficient costs

Aurizon Network’s maintenance expenditure proposal is a function of two core inputs, namely the:

1. **Scope** of maintenance activities required to provide the declared service during the UT5 regulatory period; and
2. **Efficient cost** of delivering the maintenance task.

Efficient scope

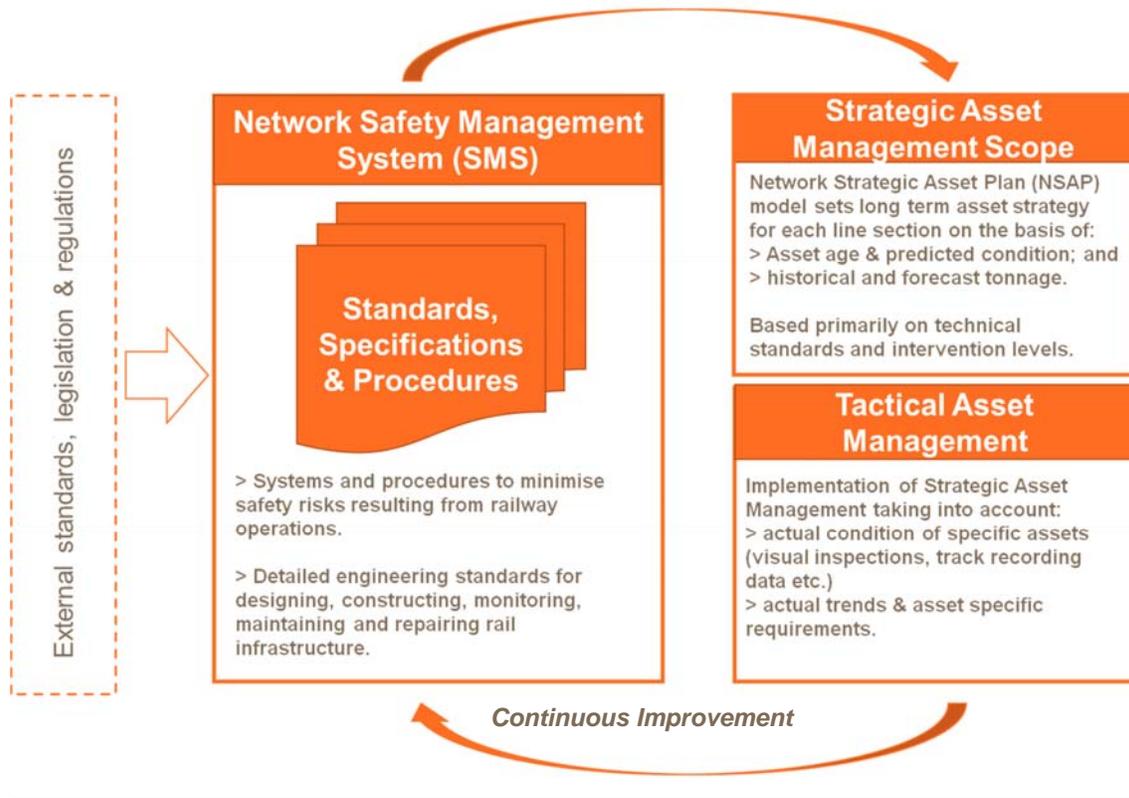
Aurizon Network’s maintenance cost proposal has been developed in accordance with the scope of activities that must be performed during the UT5 regulatory period. This scope build is a ‘bottom up’ process and is informed by Aurizon Network’s:

- > Prudent value of its capital commitments to the CQCN as reflected in the value of its RAB;

- > Safety Management System (SMS), which it must maintain as a condition of its licence to operate the CQCN;
- > Asset Maintenance and Renewal Policy¹²⁸, which details Aurizon Network’s application of the SMS;
- > Network Strategic Asset Plan (NSAP) models; and
- > For mainline ballast undercutting, Ground Penetrating Radar (GPR) data.

The following figure graphically illustrates how external engineering standards and legislative and regulatory obligations are fundamental to the determination of the scope of Aurizon Network’s asset management.

Figure 29 Legislative and regulatory obligations set the strategic asset management scope



For more information about Aurizon Network’s legislative and regulatory obligations, refer to the section *Maintenance Expenditure Forecasting Methodology* below and Appendix 2.

As the quantity of assets¹²⁹ in the RAB increases, so too does the maintenance task required to ensure the safety and reliability of the network infrastructure.

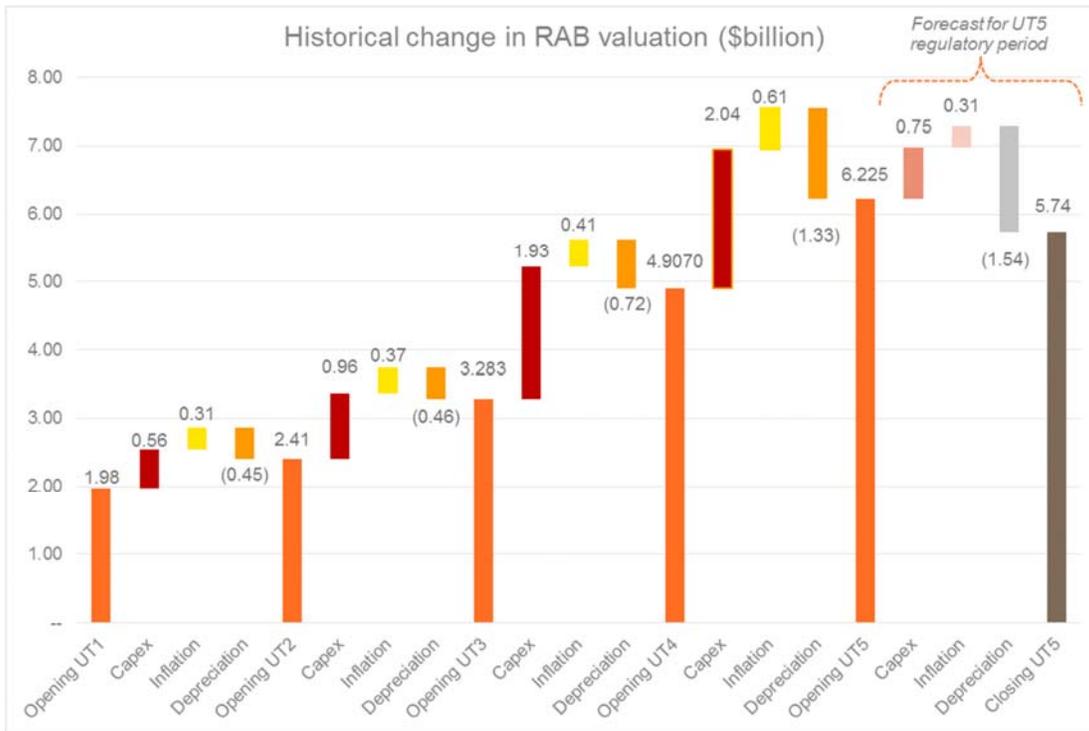
Aurizon Network has made substantial capital investments in the RAB at the request of the coal industry. Essentially, an increase in the RAB means that Aurizon Network is responsible for managing and maintaining more rail infrastructure. As a direct result, the scope of the maintenance task required will also increase.

The change in the RAB valuation since the regulatory period of UT1 is illustrated in the figure on the next page.

¹²⁸ Asset Maintenance and Renewal Policy; AZN.NA.POL.03.6120.001.

¹²⁹ For example, the number of track kilometres, turnouts, bridges, culverts etc.

Figure 30 The growth in RAB



Though relatively new infrastructure, recent additions to the RAB (for example GAPE and WIRP expansions) still require maintenance and so increase the overall size of Aurizon Network’s maintenance task. For example,

- > rail-grinding (which must be completed every 10-20 million gross tonnes depending on curve radii);
- > resurfacing;
- > SMS-mandated inspections; and
- > vegetation management.

These are but a selection of maintenance tasks that are required from an early stage in rail asset life. This is particularly true in the case of WIRP, where infrastructure constructed as part of this programme of works (for example, the seven Blackwater duplications) are fully integrated into the Blackwater mainline and are utilised by both WIRP and non-WIRP train services.

The policies, processes, standards and tools outlined above which have determined the proposed maintenance allowance are developed with reference to clear legislative and regulatory obligations¹³⁰. Aurizon Network must comply with its SMS to retain accreditation as Railway Infrastructure Manager and maintain credibility with shareholders and the participants of the CQCN supply chain. The resulting scope is reviewed and approved by Registered Professional Engineer of Queensland (RPEQ) accredited engineers, who are held accountable, through their accreditation, for the appropriateness of the maintenance task. Aurizon Network is regularly audited to ensure compliance with the Asset Maintenance and Renewal Policy by the Rail Safety Regulator. Furthermore, Aurizon Network reviews its SMS at least annually. Compliance with the SMS is also subject to regular audits by the Rail Safety Regulator. In addition, Aurizon Network implements an extensive internal assurance process, as well as the application of efficiency testing and improvement in third party contractor management.

In developing the maintenance scope, Aurizon Network also has regard to the following:

¹³⁰ For more information, please refer to the “Maintenance forecasting methodology” section on the following page.

- > matters particular to the environment in which management of the network occurs;
- > the objective of maximising throughput and network reliability, including access;
- > the objective of minimising the whole of life cost of the network infrastructure;
- > Aurizon Network’s obligations to maintain the network under access agreements; and
- > the extent to which asset renewals can reduce the expected level of unplanned, fix-on-fail incidents that can occur during daily network operations.

Efficient pricing

Aurizon Network’s maintenance cost proposal has been subject to a rigorous estimation, validation and verification process and the resulting efficient costs have been reviewed in accordance with Aurizon Network’s internal governance processes. The maintenance cost proposal has been developed with reference to:

- > the QCA’s assessment of Aurizon Network’s efficient costs as approved in the UT4 final decision;
- > a ‘bottom-up’ assessment of prudent and efficient costs;
- > benchmarking, where appropriate;
- > comprehensive peer review by depot and asset maintenance managers; and
- > comprehensive peer review by senior management.

Having followed this process Aurizon Network’s maintenance cost proposal for the UT5 regulatory period reflects at least its efficient costs of providing the strategic asset maintenance scope. The maintenance cost proposal also reflects the pricing principles and methodologies approved by the QCA in UT4.

9.2.5 Initiatives for greater productivity in maintenance task

Aurizon Network is challenging itself to “do more with less” and is actively pursuing productivity improvements in the way the CQCN is maintained. Several productivity and efficiency targets have been incorporated into this maintenance cost proposal.

Innovation in maintenance practices is having positive capacity impacts for the supply chain and resulting in more cost effective outcomes; the benefits of which have been incorporated into this maintenance cost proposal. In other words, if Aurizon Network had elected not to pursue such initiatives, the proposed costs for UT5 would be higher.

The following table provides examples of these innovations drive efficiencies.

Table 23 Efficiency through innovation

Initiative	Impact of historical activities	Benefit to supply chain
Cooling Channel Bridge: Installation of ballast-less track	<ul style="list-style-type: none"> > Ballast undercutting required every 18-24 months. > Required system closure - no coal traffic for 2 days to RGTanna coal terminal during this time – affecting c. 72 train movements. 	<ul style="list-style-type: none"> > Maintenance task significantly reduced resulting in savings of up to \$250k per annum. > Minimal impact to coal trains.
Culvert replacement: Re-sleeving end of life metal culverts with resin and fibreglass liner	<ul style="list-style-type: none"> > Significant impact on formation, ballast and rail, which must be cut and removed to replace culvert. > Requires closure – no coal traffic for 36-48 hours. > \$300-\$400k in capital costs. 	<ul style="list-style-type: none"> > Can be completed under live traffic. > Don’t have to cut, remove and replace track. > Up to 30% (\$120k) cheaper per culvert with the same asset performance qualities.
Rail stressing technique improvements	<ul style="list-style-type: none"> > Rail buckles and rail breaks resulting in delays and network outages. 	<ul style="list-style-type: none"> > A more planned approach to track disturbance works which has resulted in a 33% improvement in track buckles.

Initiative	Impact of historical activities	Benefit to supply chain
Level crossing: Installation of rubber flangeways	<ul style="list-style-type: none"> > Accelerated rail wear resulting in increased capital expenditure. > Accelerated wheel wear resulting in additional costs to train operators. > Regular maintenance to remove grease accumulation through contact with bitumen/dirt at level crossings 	<ul style="list-style-type: none"> > Significantly improves the 'travel' of the lubricating grease applied to track in order to minimise wear on rail and rolling stock wheels. > Improved grease travel results in cost savings through reduced intervention to maintain and clean the road surface at level crossings. > Safety improvements at road/rail interface.
Consolidation and relocation of maintenance depots	<ul style="list-style-type: none"> > Multiple sites across the CQCN. 	<ul style="list-style-type: none"> > Timeliness of repairs, which provides greater reliability and certainty to the supply chain for the delivery of their products. > Location of depots strategically positioned to be able to be 'on-site' within two hours. > Consolidation of maintenance depots to centralised locations reduces overall costs.

The capacity related benefits realised from these innovations are factored into future assessments of network capacity, which can determine whether the needs of Access Seekers can be met through the associated operational improvements or whether capital-intensive expansions are required.

The cost savings that these innovations have realised are available for re-investment into additional required maintenance scope. The appropriate scope of the maintenance task is determined by the SMS and regulated by the Rail Safety Regulator and other relevant safety regulators. The efficient costs for delivering this scope is assessed by the QCA as part of its up-front approval of maintenance costs for inclusion within UT5, or its ex-post approval of renewal costs during the course of the undertaking.

Aurizon Network has incorporated several additional cost saving initiatives in its maintenance cost proposal:

- > Aurizon Network has adjusted with labour market expectations and has sought efficient costs for activities and skills. The recent re-negotiation of Aurizon Network's enterprise bargaining agreements sought to remove the premiums paid for skilled personnel, in particular, telecommunications and signalling electricians, and has had the result of labour cost savings of up to ██████████ per annum. This benefit will flow directly to Access Holders through reductions in maintenance costs within the UT5 regulatory period; and
- > investment in new equipment has increased Aurizon Network's mechanised production capability. Higher rates of production have the following benefits:
 - a greater amount of maintenance task scope can be delivered during track possessions;
 - more productive machinery means fewer shifts are required to deliver the scope, reducing the need for double-shifting and realising labour-hire savings; and
 - new modern plant requires less corrective maintenance, realising labour and material cost savings.

9.3 Maintenance expenditure forecasting methodology

This proposal seeks the recovery of at least Aurizon Network's efficient maintenance expenditure incurred in the provision of the declared service. Maintenance expenditure accounts for approximately 20% of MAR and Aurizon Network has been rigorous in ensuring its proposal for the UT5 regulatory period is robust and reflects the efficient costs of maintaining a safe and highly reliable below-rail network.

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.”

In its CDD, the QCA stated that its “[...] role is to assess the efficient operating costs for Aurizon Network to deliver the declared service in the CQC in the context of section 138(2)”.¹³¹ In having approved the maintenance 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.

Consequently, Aurizon Network has used the UT4 maintenance expenditure allowances approved by the QCA as the starting point for developing the forecasts for the UT5 regulatory period. Where appropriate, Aurizon Network has proposed changes to some of the methodologies employed by the QCA. These are highlighted in Table 24 on the next page.

9.3.1 Consistency with UT4 Final Decision

The methodology used to determine the UT5 maintenance cost proposal is fundamentally consistent with the QCA's Final Decision on UT4.

The table on the following page summarises the methodology applied by Aurizon Network to determining the scope and cost for each maintenance product and indicates whether it is consistent with the QCA UT4 Final Decision.

¹³¹ QCA, CDD, Volume 4, pg. 31.

Table 24 Methodology applied to UT5 proposal and consistency with UT4 Final Decision

Maintenance Activity	Scope Methodology	Costing Methodology	Consistent with UT4 Final Decision?
Direct Costs			
Ballast Undercutting			
Mainline	Ground Penetrating Radar (GPR)	\$400,000 per km unit rate; escalated at MCI	Yes
Turnout	NSAP	QCA approved allowance for base year (FY2015), converted to unit rate; escalated at MCI	Scope - No; QCA used GPR. Difference immaterial (41 vs 42 turnouts per annum) Cost - Yes
Rail grinding	NSAP	Externally procured service	Yes
Resurfacing	Scope of preventative maintenance determined by NSAP.	Actual costs incurred during base year (FY2015), have been independently audited with QCA oversight, converted to unit rate and escalated at MCI	Yes
General Maintenance			Yes
Signalling	Scope of corrective maintenance based on historical activity, adjusted by asset managers for current asset condition and upcoming renewal activities		Yes
Telecommunications			Yes
Traction Power			Yes
Structures			Yes
Maintenance Planning and Support	N/A	Based on historical timesheets during UT4	No – allowance not separately provided for in UT4
Indirect Costs			
Return on Plant	Written Down Value	WACC reflects UT5 proposal	Yes
Return on Inventory	Inventory held for maintenance purposes	WACC reflects UT5 proposal	Yes

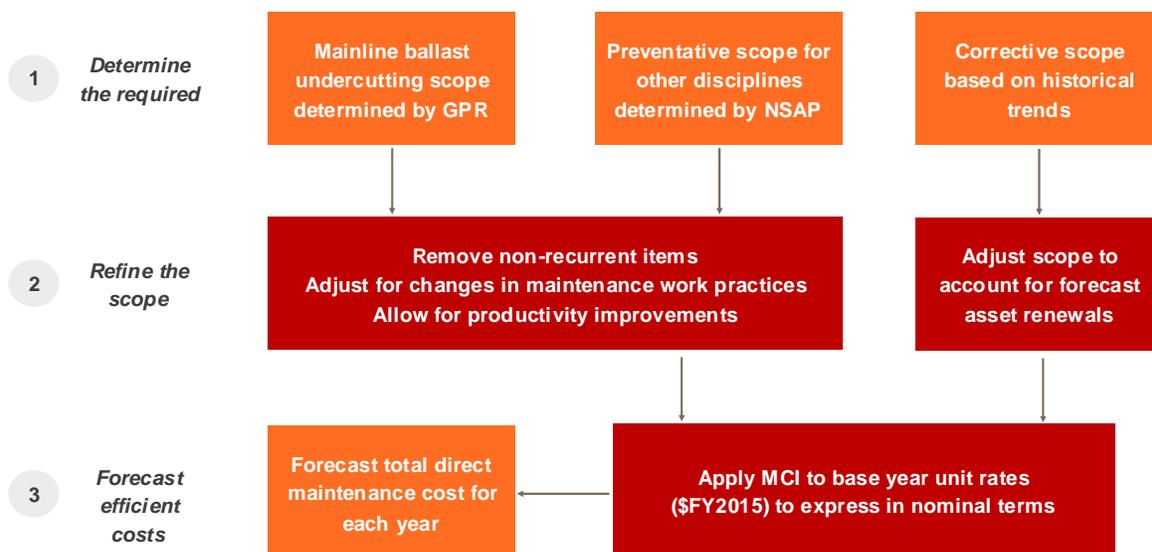
9.3.2 Approach to forecasting Aurizon Network’s efficient costs

Aurizon Network’s maintenance expenditure proposal is a function of two core inputs, namely the:

1. **Scope** of maintenance activities required to provide the declared service during the 2017DAU regulatory period; and
2. **Efficient cost** of delivering the maintenance task.

The graphic on the following page has been produced to illustrate the methodology Aurizon Network has followed to determine its efficient maintenance expenditures. The discussion of each of the maintenance categories in this section is similarly structured.

Figure 31 Maintenance expenditure forecasting methodology



9.3.3 Scope of activities

For each maintenance discipline a ‘bottom up’ assessment was made, having regard to a multitude of factors including:

- > Aurizon Network’s legislative and regulatory obligations based within the SMS and Asset Maintenance and Renewals policy);
- > Aurizon Network’s core value of “ZEROHarm”, which recognises that there is a bottom line, non-negotiable cost of maintaining a safe and reliable network;
- > the physical scale and scope of CQCN infrastructure;
- > the condition of the infrastructure, which differs in age, utilisation and deterioration profiles;
- > the location of the infrastructure, influencing the time and costs associated with procurement and mobilisation;
- > the extent to which renewing the asset instead of maintaining the existing asset can reduce corrective maintenance activities required; and
- > tonnage volume forecasts for the UT5 regulatory period, which account for the extent, depth and intrusiveness of the required maintenance activity.

Legislative and regulatory obligations

The provision of the declared service constitutes “prescribed railway operations” for the purposes of the *Transport (Rail Safety) Act 2010 (Qld)* (TRSA Act). Aurizon Network’s approach towards developing its scope of maintenance activities is underpinned by relevant sections under the TRSA Act and *Transport (Rail Safety) Regulation 2010 (QLD)* (TRSA Regulation).

Aurizon Network has, for the benefit of the QCA, attached at Appendix R.2 to this submission an explanation of some of the relevant provisions of the TRSA Act and TRSA Regulation which Aurizon Network must apply when forming its view on maintenance and generally when undertaking its operations.

In summary, Aurizon Network must be accredited by the Rail Safety Regulator to undertake rail infrastructure manager tasks for the CQCN. Aurizon Network can only undertake such tasks in accordance with a Safety Management System (SMS) which is approved by the Rail Safety Regulator. Aurizon Network’s SMS must include, amongst other things:

- > systems and procedures for eliminating, or reducing, the risks to safety caused by railway operations; and
- > a documented set of engineering standards for monitoring, maintaining and repairing rail infrastructure.

Any contractor performing railway related work on behalf of Aurizon Network must also comply with Aurizon Network's SMS. A failure to do so can constitute an offence for both Aurizon Network and the relevant contractor.

Aurizon Network's SMS is reviewed at least annually by Aurizon Network and is subject to regular audits by the Queensland Rail Safety Regulator. For example, during FY 2015/16 the Rail Safety Regulator undertook audits involving Aurizon Network in relation to emergency management and the transportation of dangerous goods. In practice, this means that Aurizon Network is in constant dialogue with the Rail Safety Regulator in relation to matters that impact upon its safety obligations, including how the rail infrastructure is maintained.

Rail regulation in Queensland is administered under a co-regulatory framework (soon to be a National Regulator), which means that the role of regulation is shared between government and the regulated party. Under the co-regulation model, Aurizon Network is ultimately responsible for, and carries the duty to ensure the safe operation of train services over its railway infrastructure.

Aurizon Network has a legislative duty to ensure safety

Aurizon Network is subject to general and specific safety duties under the TRSA Act and TRSA Regulation. Aurizon Network's SMS in part provides the mechanism to meet its specific safety duties under the TRSA Act, for example, the requirement to create and maintain a set of engineering standards in relation to the maintenance of rail infrastructure as discussed above.

In terms of general safety duties, the TRSA Act requires Aurizon Network to ensure, so far as is reasonably practicable, rail safety is not affected when Aurizon Network carries out prescribed railway operations. This general safety duty requires Aurizon Network to eliminate risks to safety, or if it is not reasonably practicable to do so, reduce risks to safety so far as is reasonably practicable.

The TRSA Act prescribes those matters to which Aurizon Network should have regard to in determining an appropriate course of action in dealing with risks to safety. Those relevant matters include the following:

- > the likelihood of the risk eventuating;
- > the degree of harm that would result if the risk eventuated;
- > what the person concerned knows or ought reasonably to know about the risk and any ways of eliminating or reducing the risk;
- > the availability and suitability of ways to eliminate or reduce the risk; and
- > the cost of eliminating or reducing the risk.

Clearly the relevant matters are extensive and inherently require Aurizon Network to account for numerous qualitative and quantitative considerations when determining how to deal with risks to safety. Importantly, the cost of eliminating or reducing the risk is not the sole consideration. It is merely one factor that needs to be balanced against competing considerations.

It is critical that Aurizon Network gets this balance right. If Aurizon Network does not arrive at an appropriate position to deal with safety risks then there are serious consequences, for instance:

- > the issue of an improvement or prohibition notice on part or all of the network;
- > cancellation of its accreditation; and / or
- > the imposition of significant fines.

In addition, Aurizon Network's officers and directors can be held personally liable and subject to imprisonment or fines if they fail to meet their safety duties.

The TRSA Act is the primary piece of safety legislation that applies to the day to day operations of Aurizon Network. However, Aurizon Network also manages the complex interrelationship between the TRSA Act and other substantive safety legislative obligations which are covered under the *Work Health and Safety Act 2011 (QLD)* (WHS Act) and the *Electrical Safety Act (2002) QLD* (ESA Act). For example, where the TRSA Act imposes a rail safety duty on a person which is concurrent with an electrical safety duty, the TRSA Act will not apply. Given this interrelationship

with the ESA Act, Aurizon Network is required to implement its own standalone processes and procedures to comply with ESA Act requirements.

Alternatively, where the WHS Act and the TRSA Act both impose duties that apply to rail safety work then both must be complied with. To add to the complexity Queensland is soon to replace the TRSA Act and adopt national rail safety laws along with a new National Rail Safety Regulator. This will necessitate a further review of Aurizon Network's compliance with its legislative obligations and introduces a level of additional regulatory uncertainty in the management of its maintenance tasks.

Aurizon Network's engineering decisions

As a result of the above, Aurizon Network's scope of maintenance activities for the UT5 regulatory period is based on engineering judgements via the application of its approved systems and procedures which make up its SMS. In accordance with Aurizon Network's legislative obligations, those engineering judgements seek to eliminate or reduce risks to safety so far as is reasonably practicable, having regard to those matters which it is required to consider.

Aurizon Network does not take decisions around levels of maintenance lightly. Aurizon Network's deliberations directly impact on the safety of the persons that interact with the CQCN, whether that be an Aurizon Network employee or any other third party.

Indeed, all of the decisions that Aurizon Network makes in respect of its estimated maintenance scope constitute professional engineering services under the *Professional Engineers Act 2002* (QLD) (Engineers Act). Section 115 (1) of Engineers Act prohibits anyone other than a practising professional engineer from carrying out professional engineering services.

If the QCA, or its advisors, determine a scope of maintenance that does not align with Aurizon Network's suggested scope, this directly impacts the professional engineering services undertaken by Aurizon Network in the scoping of its maintenance for the separate Systems.

The QCA and its advisors would in effect be discharging professional engineering judgements to arrive at the appropriate scope for maintenance for the CQCN during the UT5 regulatory period. The QCA and its advisors are not, however, subject to the same safety requirements under the TRSA Act and TRSA Regulation as set above.

Figure 88 (provided in Appendix R.2 below) depicts how external engineering standards and legislative and regulatory obligations are fundamental to the determination of the scope of Aurizon Network's asset management.

9.3.4 Establishing the base year of efficient costs

To establish an efficient level of recurrent maintenance expenditure (in real terms) this proposal has been developed with reference to a base year, selected within the current regulatory period. FY2015 has been chosen as the base year as it is the most recent year of audited costs as at the time of preparing this submission.

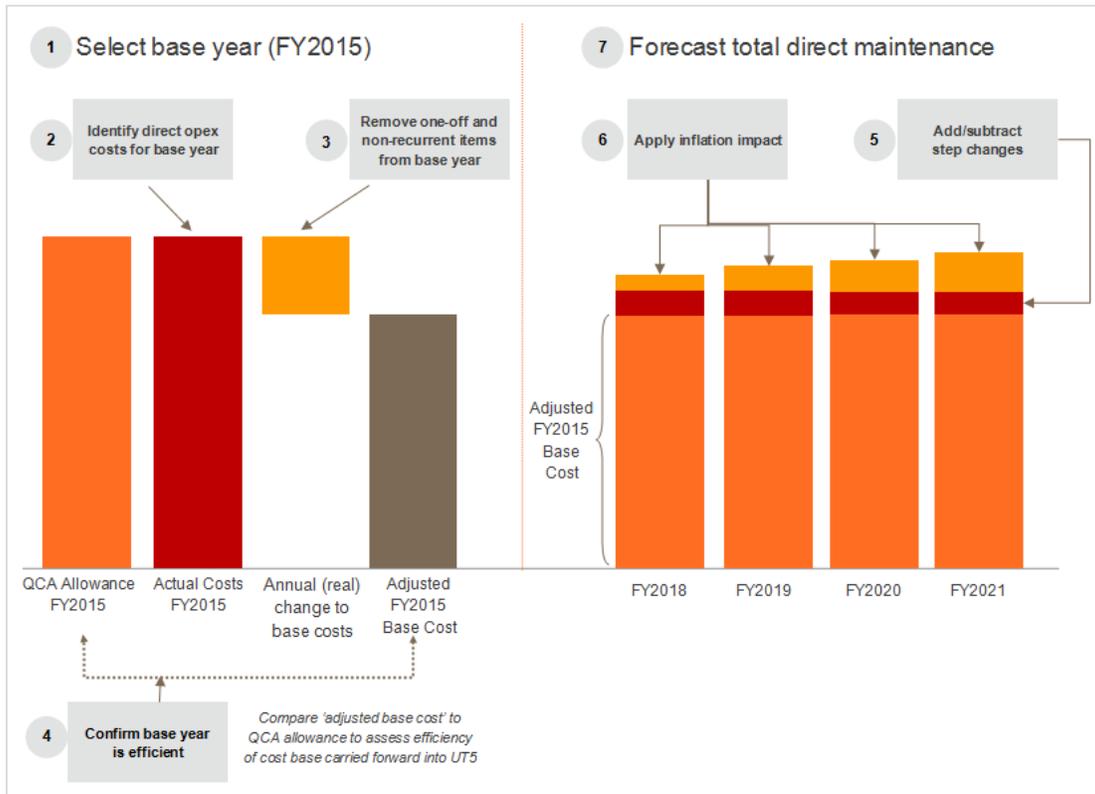
Forecasts of direct maintenance expenditure categories have been made with reference to:

- > identification of efficient maintenance expenditures for FY2015, and methodologies as assessed and approved by the QCA in its UT4 Final Decision;
- > actual costs incurred during FY2015, captured at a cost centre level and independently audited with QCA oversight;
- > disaggregation of total costs into subcategories such as labour, consumables, fuel etc;
- > adjustments to account for 'one-off' or 'non-recurrent' costs (such as the impact of restructures, voluntary redundancies and the impact of cost saving initiatives); and
- > escalation rates consistent with indices approved by the QCA in its UT4 Final Decision¹³².

¹³² For further information, please refer to the Maintenance Cost Index (MCI) section on the next page.

The application of this methodology to each maintenance activity is illustrated in Figure 32.

Figure 32 Application of forecasting methodology to determine UT5 maintenance costs



The resulting cost forecasts were then challenged and reviewed in accordance with Aurizon Network’s internal governance processes, which include:

- > review against maintenance allowances approved by the QCA in the UT4 Final Decision;
- > comprehensive peer review by senior management; and
- > management and executive approval of the allowance/costs.

As a result of the above processes, Aurizon Network’s maintenance expenditure proposal for UT5 and accompanying Revenue Proposal reflects its efficient costs, and is consistent with both the requirements of the QCA Act and Aurizon Network’s Access Undertaking.

9.3.5 Real cost escalation and the Maintenance Cost Index

This maintenance expenditure proposal has been developed with reference to costs incurred during FY2015, the base year. Base year costs are expressed in real terms (\$FY2015) and costs are escalated to determine the MAR and Reference Tariffs for each year of the regulatory period (in nominal terms).

In delivering the maintenance task, Aurizon Network is required to procure a wide range of resources and materials, each of which is subject to different cost drivers. In many instances, Consumer Price Index (CPI) does not appropriately reflect the movement in the prices of maintenance products over time.

Consequently, Aurizon Network, forecasts the inflationary impact on real prices 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. While it has greater explanatory power for changes in Aurizon Network’s underlying input

costs than CPI, it should be noted that it remains a proxy and therefore does not immunise Aurizon Network from the significant business risks associated with the divergence of those underlying costs from the MCI.

The weightings and indices relevant to each cost category are outlined in the table below.

Table 25 Costing methodology: Sub-indices and weightings for MCI

Cost Category	Sub-Index Component	ABS Reference	Weighting
Accommodation	ABS Producer Price Index: > Accommodation (100%)	A4406608F	1.7%
Consumables	ABS Producer Price Indices: > Fabricated Metal (34.8%) > Transport Equipment and Parts (19.6%) > Mining/Construction Machinery Manufacturing (45.6%)	A2305805K A2305907X A2307785X	54.6%
CPI	ABS Consumer Price Index: > All groups; Brisbane (100%)	A2325816R	7.4%
Fuel	Australian Institute of Petroleum: > Diesel Terminal Gate Price; Brisbane (100%)	www.aip.com.au/pricing/tgp.htm	2.9%
Labour	ABS Wage Price Indices: > National Construction (33.3%) > National Mining (33.3%) > Queensland, all industries (33.3%)	A2705076L A2705060V A2704548F	33.4%

The methodology to construct the MCI for the UT5 regulatory period is consistent with the QCA's Final Decision on UT4.

Aurizon Network has applied the same indices approved by the QCA in its UT4 Final Decision. Each index is publicly available from the Australian Bureau of Statistics (ABS), with the exception of the fuel index, which is sourced from the Australian Institute of Petroleum.

Furthermore, Aurizon Network has set conservative annual growth forecasts for each index. The forecast rate of annual growth for labour costs is aligned to the Wage Price Index (WPI)¹³³; all other indices are aligned to the forecast rate of inflation for the UT5 regulatory period, i.e. 1.22%. It should be noted that while forecast rates of inflation are applied when deriving the regulatory maintenance cost allowances, an ex-post reconciliation does take place as part of the annual revenue cap process to account for any variance to observed rates of inflation.

The resulting MCI applied to FY2015 unit rates for this maintenance cost proposal is:

Table 26 Costing methodology: Proposed MCI applied to FY2015 unit rates

	FY2018	FY2019	FY2020	FY2021
MCI	5.3%	7.3%	9.4%	11.5%

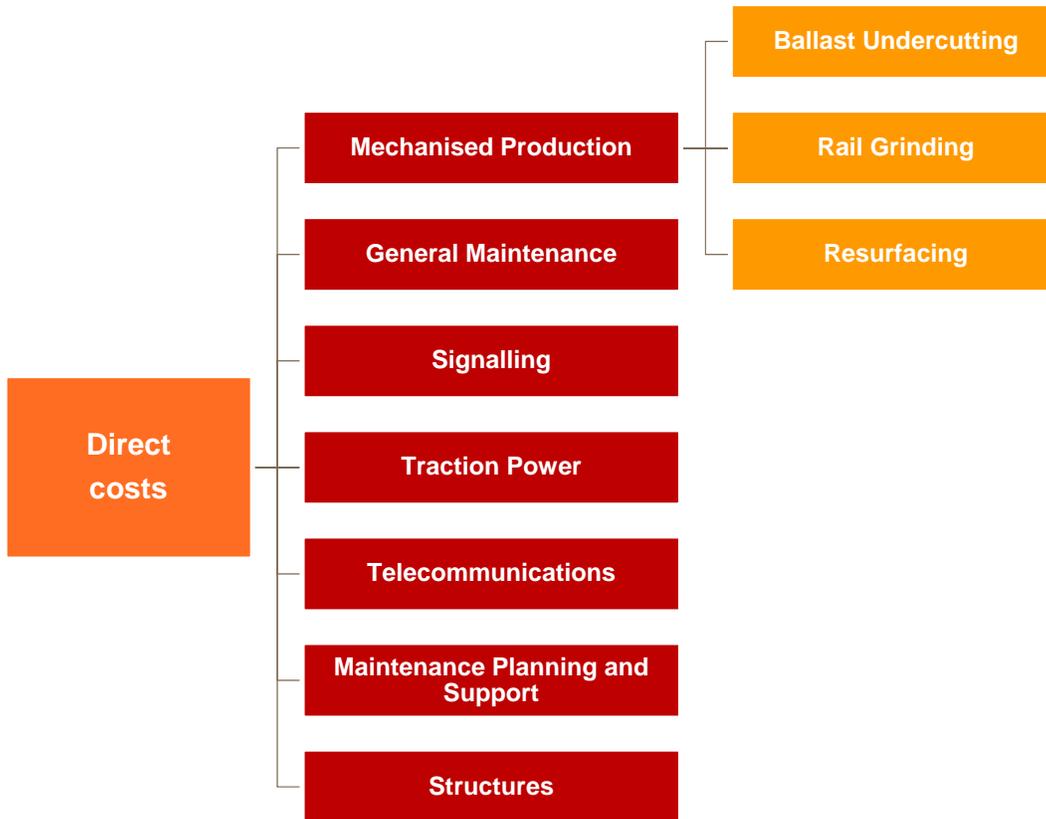
¹³³ Queensland Treasury and Trade, Mid-Year Fiscal and Economic Review 2015-16; as per QCA's Final Decision on 2016AU.

For clarity, MCI is applied to all cost categories within each maintenance activity, with the exception of depreciation, which is escalated at CPI. This approach is also consistent with the QCA's Final Decision on UT4.

9.4 Direct maintenance expenditure

Direct costs relate to those maintenance activities that are essential for ensuring the safety and reliability of the CQCN, which include:

Figure 33 Direct maintenance activities



Some 96% of the costs associated with delivering the maintenance scope for the UT5 regulatory period are direct costs, which for each maintenance discipline includes (but is not limited to):

- > internal labour;
- > externally procured resources such as consumables and fuel;
- > externally procured services, for example accommodation and rail grinding; and
- > depreciation of maintenance assets such as plant and trucks.

This section provides a high level description of each maintenance discipline and discusses relevant factors that have determined Aurizon Network's maintenance cost proposal. The general structure followed sets out:

- > the scope required for each activity (for more detail on matters relevant to the determination of scope for each activity, refer to Appendix R.2);
- > the efficient cost associated with delivering that scope; and
- > relevant productivity/efficiency measures incorporated into the maintenance cost proposal.

Please refer to Appendix R.3 for a more comprehensive description of the maintenance tasks performed.

9.4.1 Mechanised Production

Mechanised production activities account for almost half of Aurizon Network’s maintenance expenditure proposal.

The tasks involved mean that the activities are predominantly preventative in nature and are performed by Aurizon Network’s mechanised plant fleet comprising:

- > the ballast undercutter and multiple spoil wagons;
- > excavator undercutters;
- > multiple tampers and switch tampers (resurfacing machines); and
- > regulators.

The main activities performed by the mechanised plant fleet are:

- > ballast undercutting;
- > rail grinding;
- > track resurfacing; and
- > track regulation.

Due to the capital intensive nature of the mechanised production assets involved and the labour resources required to operate them, a significant proportion of the costs associated with these activities are fixed. Consequently, efficiency gains are realised by:

- > improved coordination between the access requirements of coal traffic and maintenance teams;
- > improvements in fleet reliability; and
- > improvements in the fleet’s productive capability.

Such improvements allow the mechanised plant fleet to maximise production within the allocated access time. This is paramount as access time, if missed, generally cannot be caught up without disruptions that impact on coal services. Furthermore, unit rate improvements can be realised by spreading the high proportion of fixed costs over greater output.

Ballast undercutting

Aurizon Network’s proposed scope and cost for the ballast undercutting program during the UT5 regulatory period is set out in the tables below.

Table 27 Scope: Ballast undercutting

Ballast undercutting scope	FY2018	FY2019	FY2020	FY2021
Mainline scope (km)	140	140	149	149
Turnout scope (km)	42	42	42	42

Table 28 Direct Costs: Ballast undercutting

Ballast Undercutting (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	64.5	67.2	70.8	73.6
Total - Real (\$FY2015)	61.3	62.7	64.9	66.4

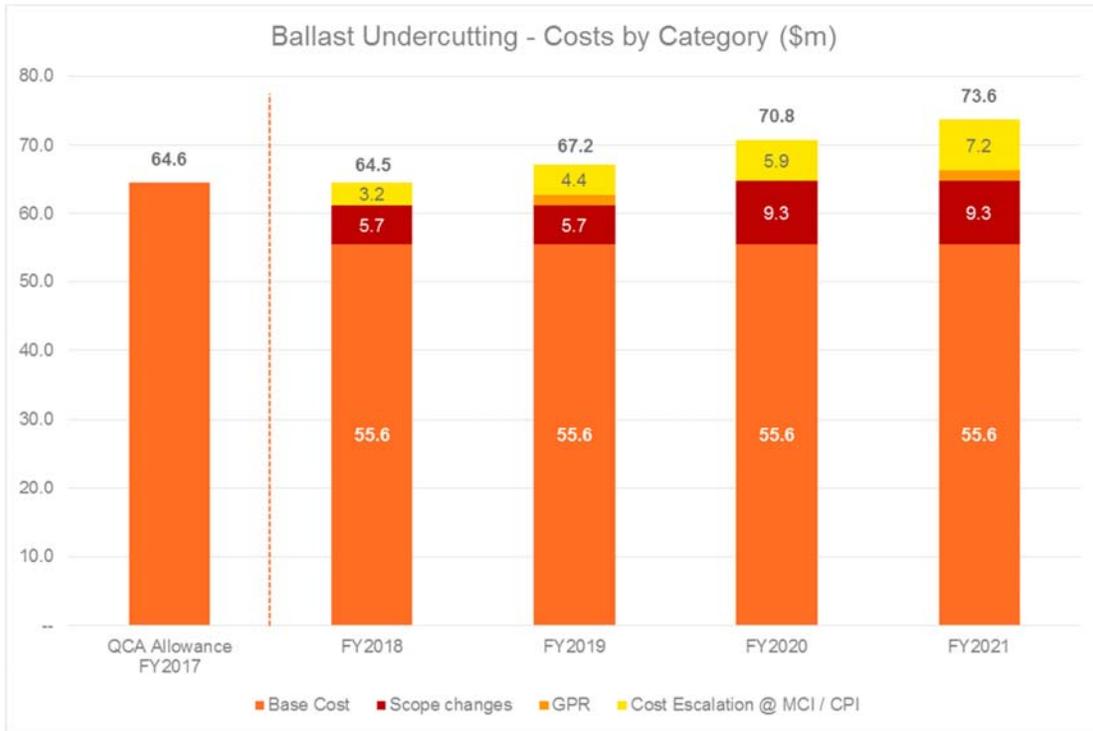
In comparison with the approved UT4 allowance for this activity, this represents an increase of 12% in real terms (\$FY2015); or a 19% increase in nominal terms.

The primary drivers of the change between regulatory periods are the:

- > impact of inflation; and
- > scope alignment with GPR outcomes across all years of the UT5 regulatory period, including a slight uplift of 9km per annum in both FY2020 and FY2021.

The contribution of each of these factors is outlined in the graph below. It should be noted that Aurizon Network’s proposed ballast undercutting costs for the UT5 regulatory period are comparable to the FY2017 efficient costs approved by the QCA in its UT4 Final Decision.

Figure 34 Ballast undercutting costs by category (\$m)



The adjusted cost base

Aurizon Network has developed its maintenance expenditure proposal for ballast undercutting with reference to the QCA’s Final Decision on UT4 and actual costs incurred during FY2015. The cost base was then adjusted as follows.

Amendments to base cost

Mainline ballast undercutting

The QCA’s final decision on UT4 for mainline ballast undercutting applied a unit rate cap of \$400,000 per kilometre (in \$FY2015). As outlined in its response to the QCA’s Consolidated Draft Decision, Aurizon Network believes that the QCA’s unit rate cap failed to account for the costs associated with a number of important operational activities, which would reasonably be required to operate an effective ballast undercutting program.

It should be noted that Aurizon Network’s achievable unit rate is expected to exceed the QCA’s unit rate cap for the duration of the UT5 regulatory period. The introduction of the RM902 will improve Aurizon Network’s ability to drive unit rate improvements, allowing it to achieve and maintain the mainline undercutting unit rate cap as constructed and applied by the QCA. The retention of the QCA’s unit rate cap ultimately means that Aurizon Network will not be adequately compensated for all its efficient costs of providing the ballast undercutting program for the CQCEN.

Nevertheless, in the interests of expediting the approval of the UT5, Aurizon Network is, in this instance, prepared to retain this unit rate for the UT5 regulatory period, subject to applying the appropriate escalation at MCI.

Turnout undercutting

In its UT4 Final Decision the QCA approved an allowance that was reflective of Aurizon Network’s forecast costs. The QCA deemed that the unit rates proposed by Aurizon Network for turnout ballast undercutting were efficient.

To help facilitate the timely assessment of UT5, Aurizon Network has applied the FY2015 turnout undercutting allowance approved by the QCA in the UT4 Final Decision; converted to a unit rate and escalated at the forecast MCI for the UT5 regulatory period. Aurizon Network’s turnout ballast undercutting allowance is materially aligned to the QCA’s final decision on UT4 and, by extension, is reflective of its efficient costs.

Step changes during regulatory period

Maintain consistency with GPR defined scope

GPR measurements indicate that to sustain the current condition of the track, Aurizon Network is required to undercut 140km of ballast cleaning per annum. This scope was validated by the QCA’s consultant (CMT) in its independent review of Aurizon Network’s ballast undercutting proposal for UT4. Despite the recommendation of its consultant, the QCA’s final decision on UT4 approved a sub-optimal mainline ballast undercutting scope. This scope variance is outlined in the table below.

Table 29 UT4 mainline ballast undercutting scope

UT4 Mainline ballast undercutting scope (km)	FY2015	FY2016	FY2017	Total
QCA scope	129	133	140	402
CMT’s GPR scope	140	140	140	420
Variance	(11)	(7)	--	(18)

For FY2018 and FY2019, the mainline ballast undercutting scope has been set at 140km. For FY2020 and FY2021, however, Aurizon Network proposes to ‘catch-up’ on the 18km shortfall by setting a scope of 149km per annum for these two years.

Additional Ground Penetrating Radar (GPR) requirements

Ballast contamination and the rate at which it increases cannot be identified with the naked eye. Mudholes that form after significant rainfall in the CQCN provide visual evidence of the presence of deteriorated ballast. Historically the process for determining scope of required ballast undercutting was a labour intensive manual task that involved testing samples from spots identified by asset engineers.

Since FY2015 Aurizon Network has determined the mainline ballast undercutting scope by analysing and interpreting a vast quantity of objective GPR data. GPR is analogous to an x-ray, whereby Aurizon Network can better understand what’s happening “beneath the skin” at a point in time.

The quantifiable data generated by GPR enables Aurizon Network to track the rate of ballast contamination over time and assess the effectiveness of the ballast undercutting program. With more accurate information, the ballast undercutting program can transition to a more targeted preventative regime that can be proactively managed to minimise the adverse impacts on the supply chain.

The last GPR run was completed in 2014. To support the development of a data driven, evidence-based ballast undercutting program Aurizon Network requires additional GPR data.

Aurizon Network is seeking the QCA’s approval of the costs associated with updating its GPR data as part of this maintenance cost proposal and not through an ex-post process through the revenue cap mechanism. This approach is considered to provide the regulatory certainty required by Aurizon Network and its customers.

Aurizon Network’s proposal for this category is based on the costs associated with the FY2014 GPR run, escalated at the forecast MCI for the UT5 regulatory period.

Table 30 Direct costs: GPR

GPR Costs	FY2018	FY2019	FY2020	FY2021
Total Cost (\$m)	--	1.5	--	1.6

If the updated GPR data indicates that an adjustment to the mainline ballast undercutting scope is necessary, Aurizon Network may propose a subsequent adjustment to the variable component of the mainline ballast undercutting allowance for FY2020 and FY2021.

Productivity Initiatives

Procurement of new machinery

In responding to the QCA’s UT4 MAR Draft Decision, Aurizon Network stated that its current ballast undercutter (the RM900, procured in 2001) is at the end of its 15 year useful life and would be retired in FY2017. Due to the market conditions, which until recently were characterised by extremely low coal prices, and regulatory risk associated with UT4, this date has since been extended to FY2019. Despite this, the ongoing cost and time associated with maintaining the RM900 is not sustainable and puts the delivery of Aurizon Network’s ballast undercutting scope at risk.

Aurizon Network will take delivery of a new high-production ballast undercutting machine (the RM902) in FY2019. The RM902 is expected to be fully commissioned by the commencement of FY2020. When operating in conjunction with the 24 additional spoil wagons (which entered service during the UT4 period) the RM902 will enable Aurizon Network to lift its blended mainline undercutting capability. This is the result of greater production efficiencies where the undercutting consist can be operated in longer blocks before the spoil wagons have to be taken away to be emptied.

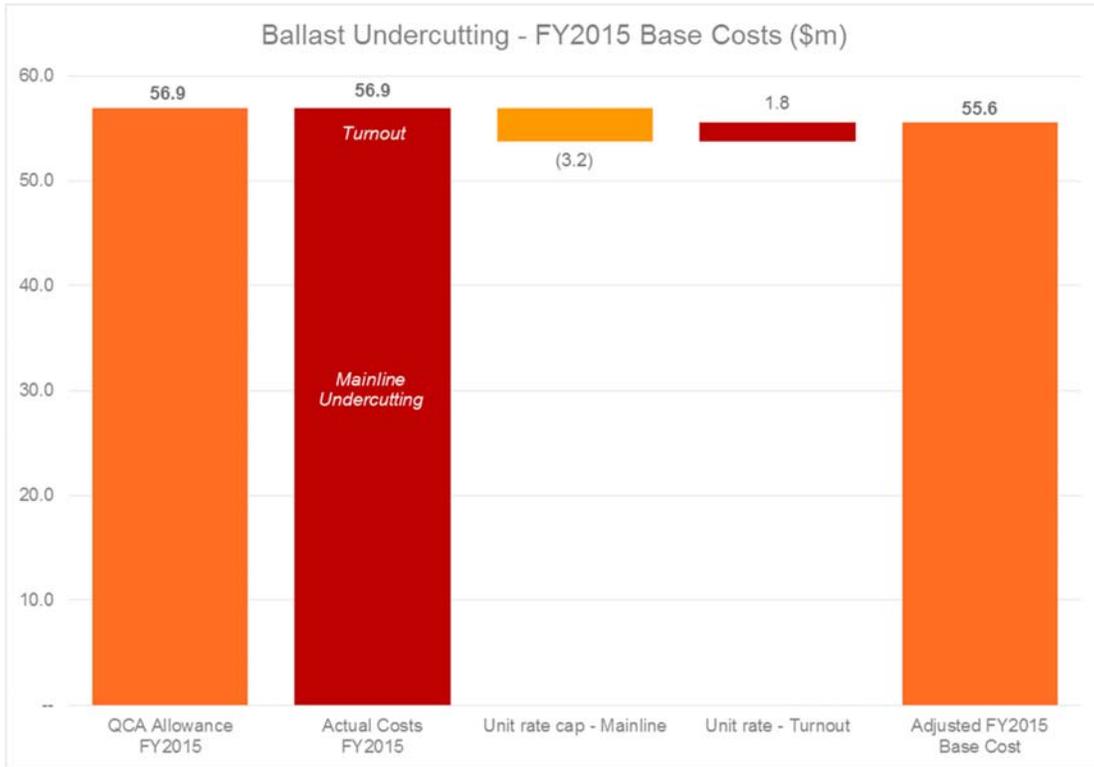
The RM902 will also provide in ongoing cost efficiencies as the new plant reduces the need to use the excavator undercutter, which on a unit rate basis is significantly more expensive to operate.

Efficient costs proposed for UT5

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the ‘adjusted base cost’. This is represented graphically in Figure 35.

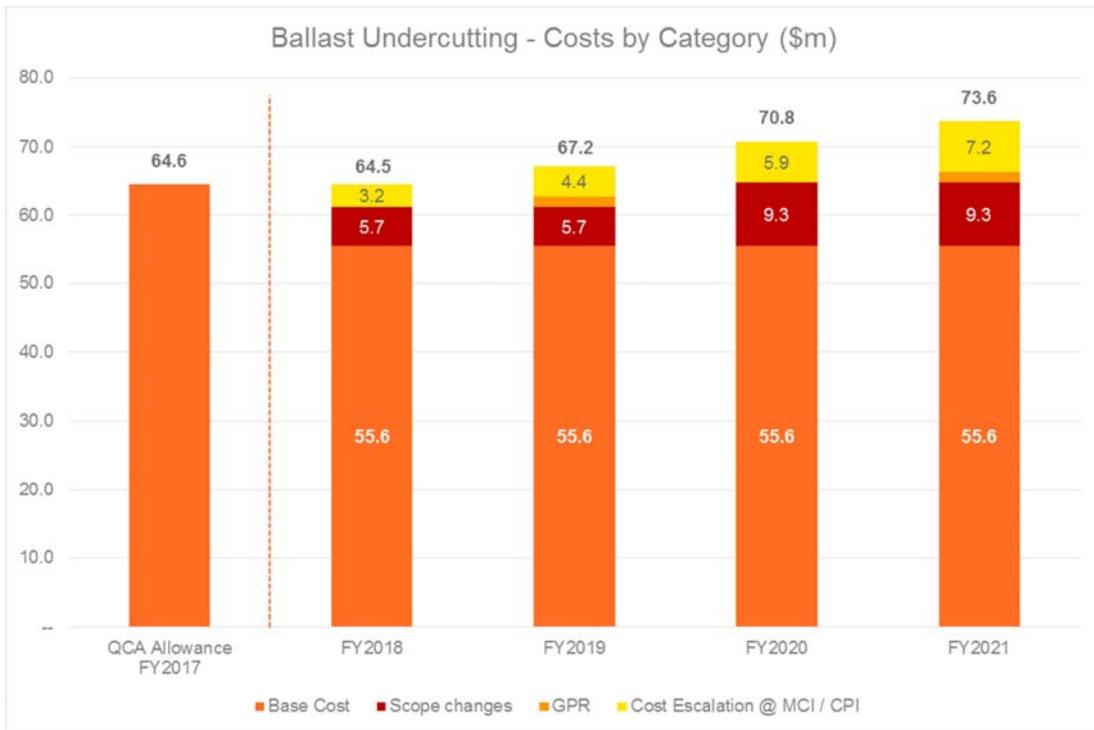
The adjusted base cost which Aurizon Network proposes to carry-forward into the UT5 regulatory period is lower than the QCA approved allowance by \$1.3 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$55.6 million per annum represents the efficient cost base for this maintenance activity.

Figure 35 Derivation of adjusted base costs for ballast undercutting (\$m)



The adjusted base cost underpins the maintenance expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 36 Ballast undercutting costs by category (\$m)



Rail grinding

Aurizon Network’s proposed scope and cost for the rail grinding program during the UT5 regulatory period is set out in the tables below.

Table 31 Scope: Rail grinding

Rail grinding scope	FY2018	FY2019	FY2020	FY2021
Mainline Scope (km)	4,139	4,139	4,139	4,140
Turnout scope (number)	748	757	781	782

Table 32 Direct Costs: Rail grinding

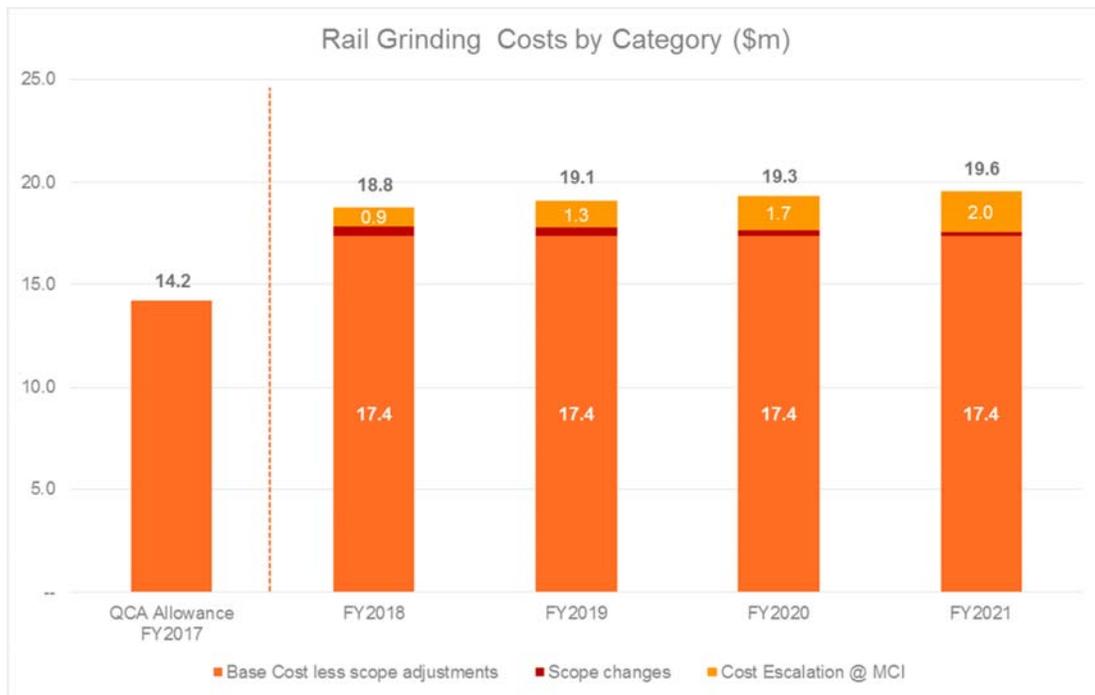
Rail grinding (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	18.8	19.1	19.3	19.6
Total - Real (\$FY2015)	17.9	17.8	17.7	17.6

In comparison with the approved UT4 allowance for this activity, this represents an increase of 26% in real terms (\$FY2015); or a 35% increase in nominal terms. The primary drivers of this change are:

- > correction of the funding shortfall imposed in the UT4 Final Decision, which was the result of an erroneous volume adjustment applied by the QCA, the effect of which was to under-compensate Aurizon Network for its efficient costs; and
- > the impact of inflation.

The contribution of each of these factors is outlined in the graphs below.

Figure 37 Rail grinding costs by category (\$m)



The adjusted cost base

In assessing Aurizon Network’s rail grinding proposal for the UT5 regulatory period, the QCA should note that its rail grinding costs are essentially fixed, regardless of the final volume forecasts due to the nature of plant and equipment

required to deliver the task and the number of people required to operate it. The QCA's Final Decision on UT4 incorrectly assumed that the rail grinding task was 100% variable with tonnes. In contrast, the fixed nature of the plant and its operators means that the unit rate is variable in regard with the maximum utilisation of that equipment, rather than costs being variable with volume based on a constant unit rate. Consequently, the deduction applied by the QCA upon finalisation of the UT4 volume forecasts was too high. The impact of that decision was to:

- > under-compensate Aurizon Network by approximately \$2.8 million per annum for the efficient costs of providing rail grinding services for the CQCN during UT4; and
- > overstate the variance between rail grinding costs approved in UT4 and those proposed for UT5.

Aurizon Network has developed its maintenance expenditure proposal for rail grinding with reference to the QCA's Final Decision on UT4 and actual costs incurred during the base year (FY2015), which have been independently audited with QCA oversight. The cost base was then adjusted as follows.

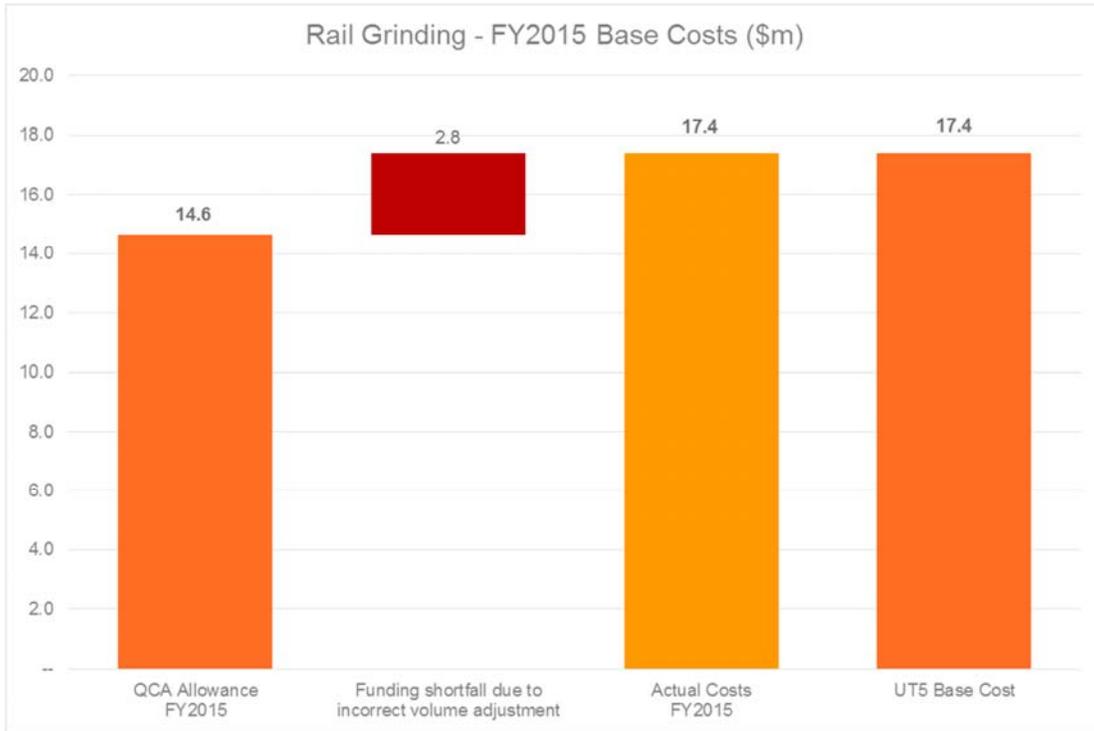
Additions to base cost

- > restate the base cost to reflect the efficient costs of rail grinding for the base year. In making its UT4 Final Decision in relation to maintenance costs, the QCA incorrectly assumed that rail grinding costs were perfectly correlated with the UT4 volume forecasts (for example, a 5% decrease in forecast volumes would lead to a 5% decrease in rail grinding costs). Due to the nature of plant and equipment required to deliver the task and the number of people required to operate it, a high proportion of rail grinding costs are fixed. As a result of this cost composition the UT4 rail grinding allowance did not compensate Aurizon Network for at least its efficient costs in maintaining the CQCN through its rail grinding program. Aurizon Network has sought to correct this in its UT5 proposal for maintenance expenditure.

Efficient costs proposed for UT5

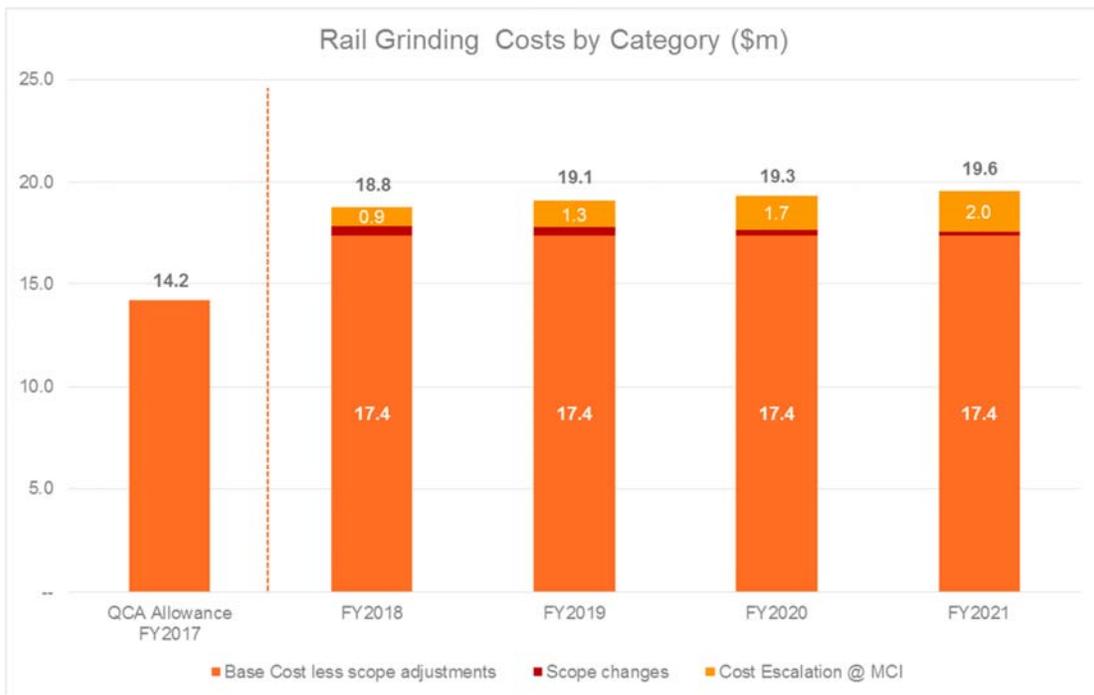
Rail grinding is an external provided service procured through Aurizon Operations. Aurizon Operations has successfully tendered (via a competitive market process) to provide rail grinding services for other Rail Infrastructure Managers in Queensland and in the Hunter Valley. Proposed costs of rail grinding services for the CQCN are commensurate (on a unit rate basis) with the costs proposed for other Rail Infrastructure Managers. The efficiency of these costs can therefore be demonstrated by that competitive market process.

Figure 38 Derivation of adjusted base costs for rail grinding (\$m)



The adjusted base cost underpins the maintenance expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 39 Rail grinding costs by category (\$m)



Resurfacing

Aurizon Network's proposed scope and cost for the resurfacing program during the UT5 regulatory period is set out in the table below.

Table 33 Scope: Resurfacing

Resurfacing scope	FY2018	FY2019	FY2020	FY2021
Mainline Scope (km)	1,868	1,891	1,909	1,926
Turnout scope (number)	375	380	384	387

Table 34 Direct Costs: Resurfacing

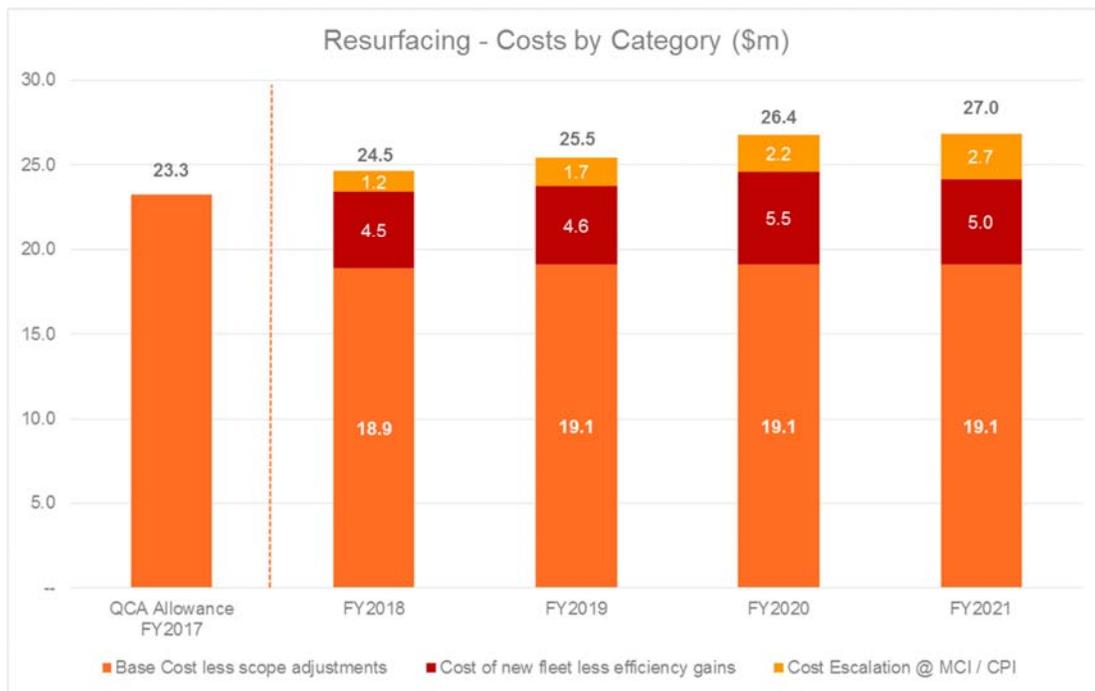
Resurfacing (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	24.5	25.5	26.4	27.0
Total - Real (\$FY2015)	23.3	23.8	24.2	24.3

In comparison with the approved UT4 allowance for this activity, this represents an increase of 16% in real terms (\$FY2015); or a 24% increase in nominal terms. The primary drivers of this change are:

- > costs associated with new fleet of resurfacing machines (less the modelled efficiency benefits); and
- > impact of inflation.

The contribution of each of these factors is outlined in the graph below.

Figure 40 Resurfacing costs by category (\$m)



The adjusted cost base

Aurizon Network has developed its maintenance expenditure proposal for resurfacing with reference to the QCA's Final Decision on UT4 and actual costs incurred during the base year (FY2015), which have been independently audited with QCA oversight. The cost base was then adjusted as follows.

Productivity Initiatives

- > Aurizon Network has procured a new fleet of high production tampers and regulators to perform the resurfacing task during the UT5 regulatory period. These new machines were procured to replace Aurizon Network’s ageing fleet, which had exceeded their useful asset life and whose corrective maintenance requirement was accelerating. Furthermore, the new higher production machines are expected to deliver productivity improvements by requiring less track access time to deliver the required scope, therefore freeing up network paths. Aurizon Network has included cost savings of up to \$4 million per annum to reflect the expected efficiency gains associated with the new fleet; and
- > Aurizon Network’s new resurfacing machines incorporate an integrated Dynamic Track Stabilising (DTS) solution which achieves the same track stabilisation qualities as stoneblowing, albeit through a different production process. Aurizon Network’s stoneblower and life-expired resurfacing fleet have subsequently been decommissioned, resulting in labour and maintenance costs savings, which have been incorporated in the resurfacing cost proposal for the UT5 regulatory period.

Additions to base cost

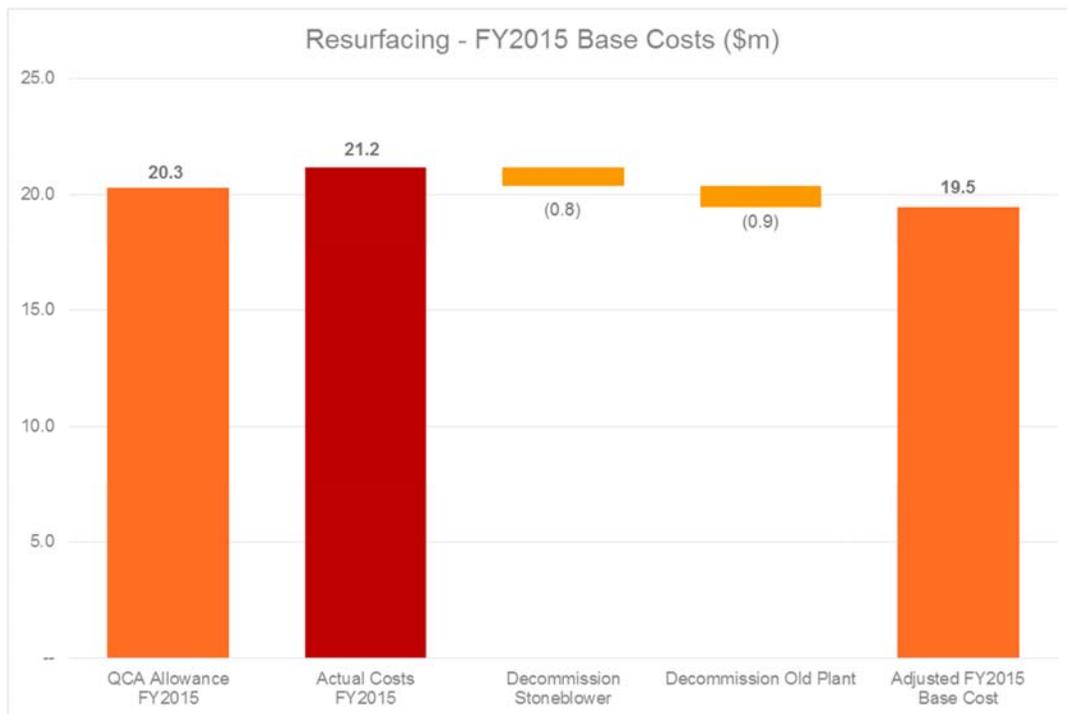
- > MCI escalation has been applied in accordance with the maintenance expenditure forecasting methodology; and
- > it should be noted that despite the efficiency benefits of the new resurfacing machines, their introduction does result in an overall net increase in the costs associated with delivering the resurfacing task. This occurs because historical unit rates did not reflect the replacement cost of the resurfacing machines and the associated depreciation profile (relative to the written down value of the life-expired retiring fleet) will produce step changes in costs where a large proportion of plant is renewed at the same time.

Efficient costs proposed for UT5

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the ‘adjusted base cost’. This is represented graphically in Figure 41.

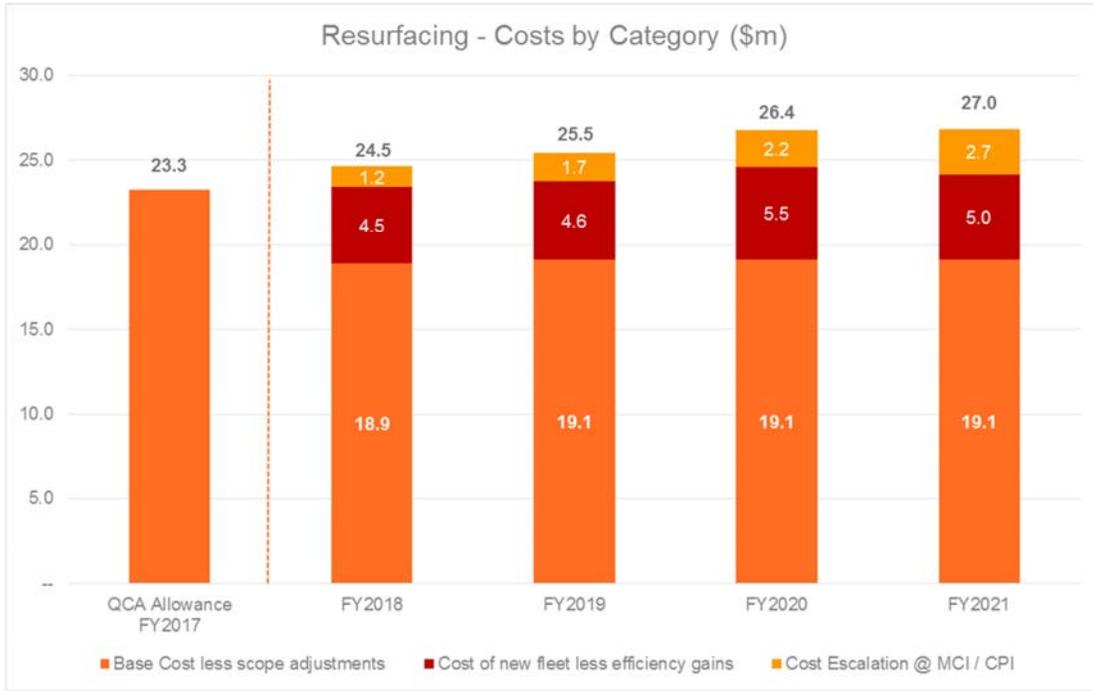
The adjusted base cost which Aurizon Network proposes to carry-forward into the UT5 regulatory period is lower than the QCA approved allowance by \$0.8 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$19.5 million per annum represents the efficient cost base for this maintenance activity.

Figure 41 Derivation of adjusted base costs for resurfacing (\$m)



The adjusted base cost underpins the maintenance expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 42 Resurfacing costs by category (\$m)



9.4.2 General maintenance

Aurizon Network’s proposed cost for the general maintenance program during the UT5 regulatory period is set out in the table below.

Table 35 Direct Costs: General Maintenance

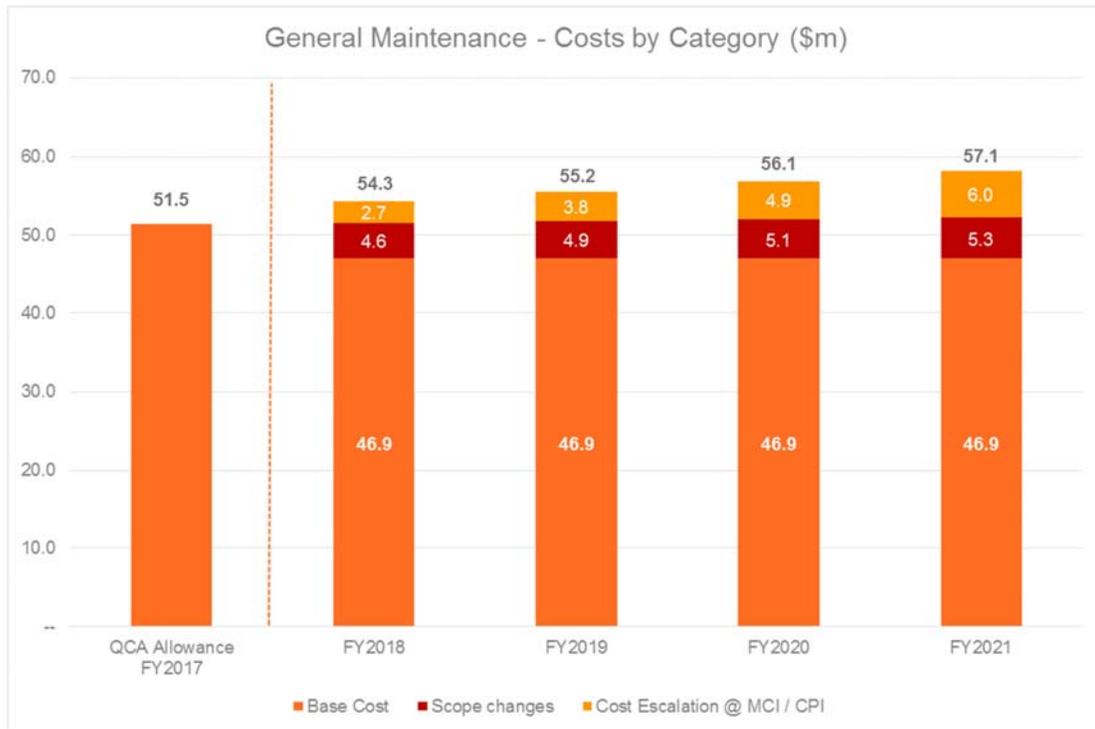
General Maintenance (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	54.3	55.2	56.1	57.1
Total - Real (\$FY2015)	51.6	51.4	51.3	51.1

In comparison with the approved UT4 allowance for this activity, this represents an increase of 6% in real terms (\$FY2015); or a 14% increase in nominal terms. The primary drivers of this change are:

- > increase in the scope of activities required to be performed; and
- > impact of inflation.

The contribution of each of these factors is outlined in the graph on the next page.

Figure 43 General maintenance costs by category (\$m)



The adjusted cost base

Aurizon Network has developed its maintenance expenditure proposal for general maintenance with reference to the QCA’s Final Decision on UT4 and actual costs incurred during the base year (FY2015), which have been independently audited with QCA oversight. The cost base was then adjusted as follows.

Additions to base cost

The scope of general maintenance is varied, and is comprised of both preventative and corrective activities. The preventative scope of general maintenance activities is determined by Aurizon Network’s NSAP model. The scope of expected corrective activities is based on historical trends assessed over the UT4 period.

- > Aurizon Network has seen an increase in vegetation management costs as a result of a significant increase in rainfall events over the UT4 period. Aurizon Network’s proposed vegetation management allowance for the UT5 regulatory period reflects the increased scope of this activity;
- > costs associated with the laser creep monitoring project will greatly assist with understanding rail movements, thereby identifying and directing rail re-stressing requirements. This activity will result in demonstrable improvements in network reliability (see *Productivity Initiatives* below);
- > costs associated with the roll-out of rubber flangeway installation at level crossings (refer to the Appendix4 for more information) will improve reliability and maximise the life of the rail and track in these areas; and
- > MCI escalation has been applied in accordance with the maintenance expenditure forecasting methodology.

Productivity Initiatives

Rail stressing

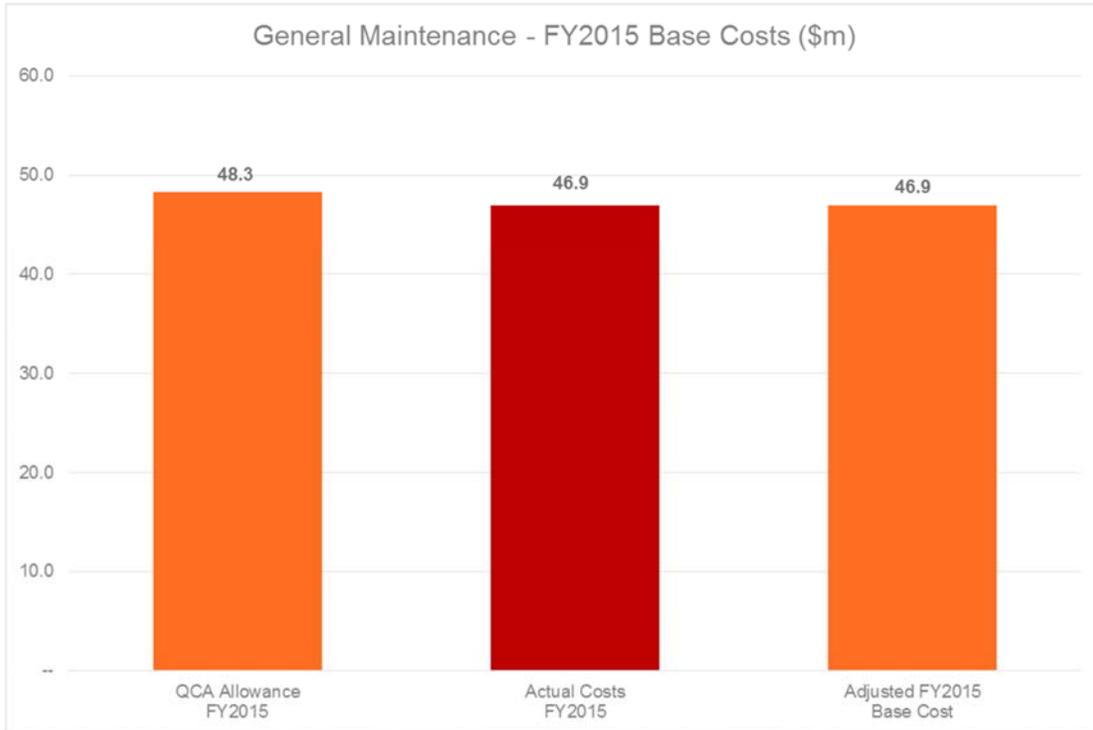
Rail stressing improves the performance and reliability of rail and has been proven to be effective in reducing the number of rail breaks. Aurizon Network has implemented a revised work practice in which rail stress testing is conducted after all rail related activities. Rail stressing reduces the risk of track buckles and rail breaks, which in turn reduces the risk of derailment and the associated impacts on network availability. The expected resilience improvements and reduced derailment risks have been accounted for in the assessment of self-insurance premiums; resulting in an expected premium reduction of \$3 million relative to UT4.

Efficient costs proposed for UT5

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the 'adjusted base cost'. This is represented graphically in Figure 44.

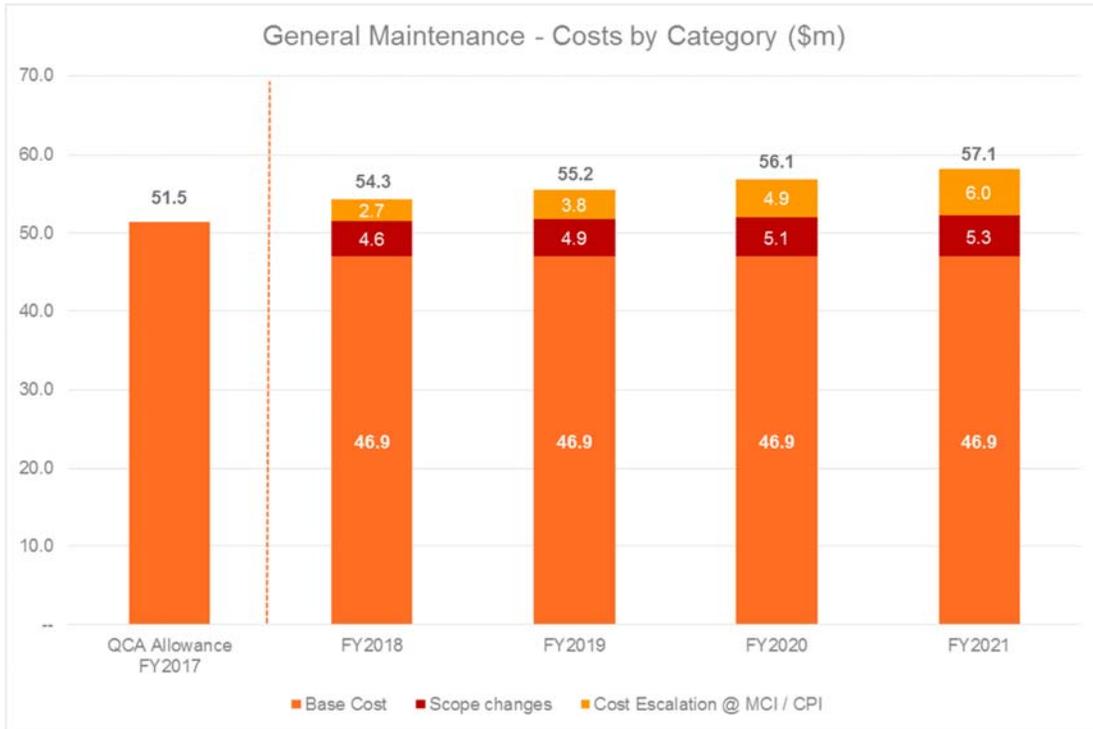
The adjusted base cost which Aurizon Network proposes to carry-forward into the UT5 regulatory period is lower than the QCA approved allowance by \$1.4 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$46.9 million per annum represents the efficient cost base for this maintenance activity.

Figure 44 Derivation of adjusted base costs for general maintenance (\$m)



The adjusted base cost underpins the general maintenance proposal for the UT5 regulatory period, which is represented graphically on the following page.

Figure 45 General maintenance costs by category (\$m)



9.4.3 Signalling

Aurizon Network’s proposed cost for the signalling program during the UT5 regulatory period is set out in the table below.

Table 36 Direct Costs: Signalling

Signalling (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	25.8	26.3	26.8	27.3
Total - Real (\$FY2015)	24.5	24.5	24.5	24.5

In comparison with the approved UT4 allowance for this activity, this represents a decrease of 3% in real terms (\$FY2015); or a 4% increase in nominal terms. The primary drivers of this change are:

- > labour cost savings as a result of recent enterprise bargaining negotiations; and
- > impact of inflation.

The contribution of each of these factors is outlined in the graph on the next page.

Figure 46 Signalling costs by category (\$m)



The adjusted cost base

Aurizon Network has developed its maintenance expenditure proposal for signalling with reference to the QCA’s Final Decision on UT4 and actual costs incurred during the base year (FY2015), which have been independently audited with QCA oversight. The cost base was then adjusted as follows.

Challenging the base cost

- > the lower cost base for signalling is driven primarily by cost savings implemented by Aurizon Network in recent EBA negotiations, the benefits of which have been passed on to Access Holders.

Additions to base cost

- > reallocation of costs associated with traction engineers to the signalling cost base as a result of recent restructures; and
- > MCI escalation has been applied in accordance with the maintenance expenditure forecasting methodology.

Efficient costs proposed for UT5

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the ‘adjusted base cost’. This is represented graphically in Figure 47.

The adjusted base cost which Aurizon Network proposes to carry-forward into the UT5 regulatory period is lower than the QCA approved allowance by \$0.5 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$24.5 million per annum represents the efficient cost base for this maintenance activity.

Figure 47 Derivation of adjusted base costs for signalling (\$m)



The adjusted base cost underpins the signalling expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 48 Signalling costs by category (\$m)



It should be noted that Aurizon Network’s proposed signalling costs for the UT5 regulatory period are lower than the FY2017 efficient costs approved by the QCA in its UT4 final decision. They are therefore, reflective of at least the efficient costs of performing this task for the UT5 regulatory period.

9.4.4 Other direct maintenance activities

Several other maintenance activities must be regularly performed to ensure the safety and reliability of the network infrastructure, so that the CQCN can accommodate the throughput it was built to deliver.

The remaining direct maintenance activities (outlined below), comprise a small proportion (individually less than 5%) of Aurizon Network’s maintenance cost proposal for the UT5 regulatory period. They include:

- > Traction power;
- > Telecommunications;
- > Maintenance Planning and Support; and
- > Structures.

Each maintenance product is discussed briefly in turn, and the efficient costs associated with providing the scope summarised in the consolidated table below.

Efficient costs proposed for UT5

Table 37 Direct costs: Other direct maintenance activities

	FY2018	FY2019	FY2020	FY2021
Traction Power (\$m)				
Total - Nominal	10.2	10.3	10.4	10.5
Total - Real (\$FY2015)	9.6	9.6	9.5	9.4
Telecommunications (\$m)				
Total - Nominal	5.0	5.1	5.2	5.3
Total - Real (\$FY2015)	4.8	4.8	4.8	4.8
Maintenance Planning and Support¹³⁴ (\$m)				
Total - Nominal	4.6	4.7	4.8	4.9
Total - Real (\$FY2015)	4.4	4.4	4.4	4.4
Structures (\$m)				
Total - Nominal	4.5	3.9	4.0	4.2
Total - Real (\$FY2015)	4.3	3.6	3.7	3.8

Determining the scope for other direct maintenance activities

The scope for each of the products categorised as other direct maintenance comprises both preventative maintenance and a forecast of unplanned corrective maintenance activities. The scope for preventative activities is determined using the NSAP model. The scope for unplanned corrective activities is determined on the basis of historical trends, which is then refined by depot and asset maintenance managers. The proposed scope also factors in forecast asset renewal activities, which are likely to reduce the probability of an unplanned corrective fault from occurring in the short term.

¹³⁴ Maintenance Planning and Support was previously allocated among direct cost categories. There is no comparable UT4 allowance.

Determining the efficient costs of "other direct maintenance" activities

In its Final Decision on UT4, the QCA approved Aurizon Network's forecast costs for these activities, which were reflective of at least its efficient costs.

To help facilitate the timely assessment of UT5, Aurizon Network has converted the actual costs incurred during the base year (FY2015) audited costs (independently audited with QCA oversight); converted into unit rates and escalated at MCI. The resulting unit rates were then applied to the required UT5 scope. The resulting labour costs were then escalated by the forecast MCI for the UT5 regulatory period. Aurizon Network's proposed allowance for these activities is materially aligned to the QCA's final decision on UT4 and, by extension, is reflective of its efficient costs.

As noted above, Aurizon Network's proposed allowance for telecommunications incorporates expected labour cost savings resulting from recent EBA negotiations.

Traction power

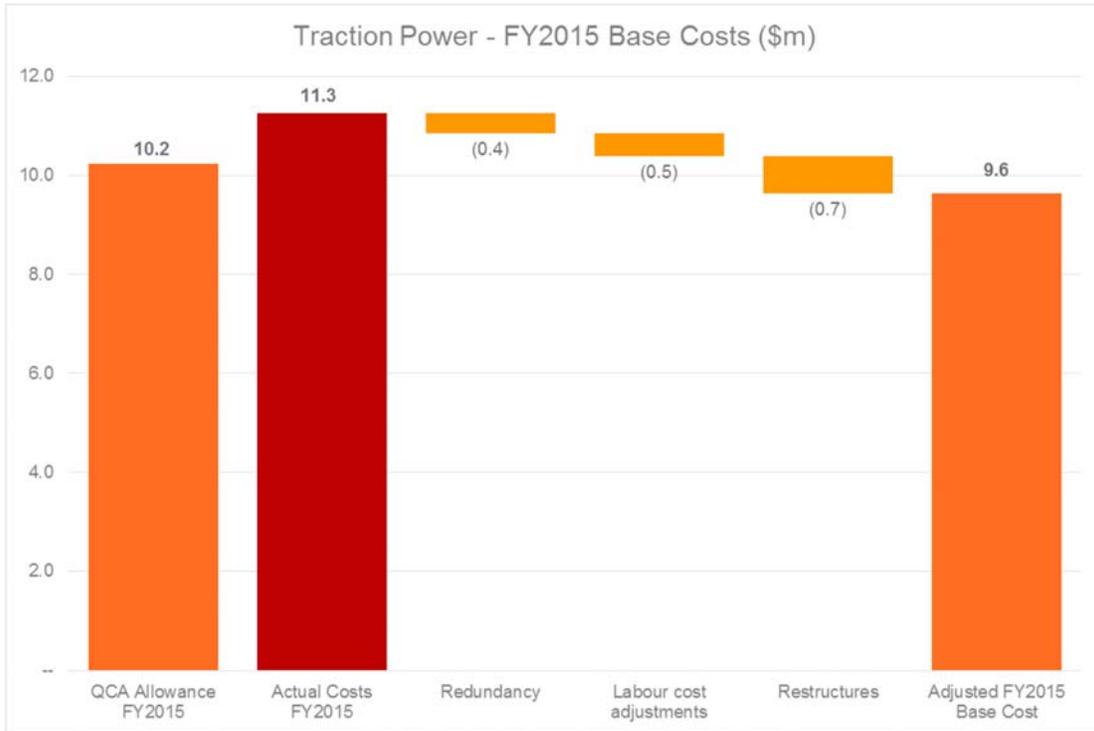
The traction power maintenance product is directly linked to the overall performance of the overhead traction infrastructure and it helps ensure that the system is maintained to a safe and appropriate operating level. The maintenance task includes preventative inspection-type work and corrective fault repairs for all equipment in the field, at feeder stations and at track sectioning cabins.

Power Systems Control maintenance is also undertaken to ensure operating anomalies and irregularities are identified early to provide a safe and operating power system. Overhead maintenance is expected to remain at current levels

The Aurizon Network proposal for traction power is 0.3% lower than the UT4 allowance (nominal) and 7% lower in real terms. The escalation component is identified separately, with any difference between forecast and actual cost escalation to be reconciled through the annual revenue cap process. It should be noted that these cost reductions have occurred in conjunction with the geographical expansion of the electrified network and a substantive increase in electric gross tonne kilometres (eGTK).

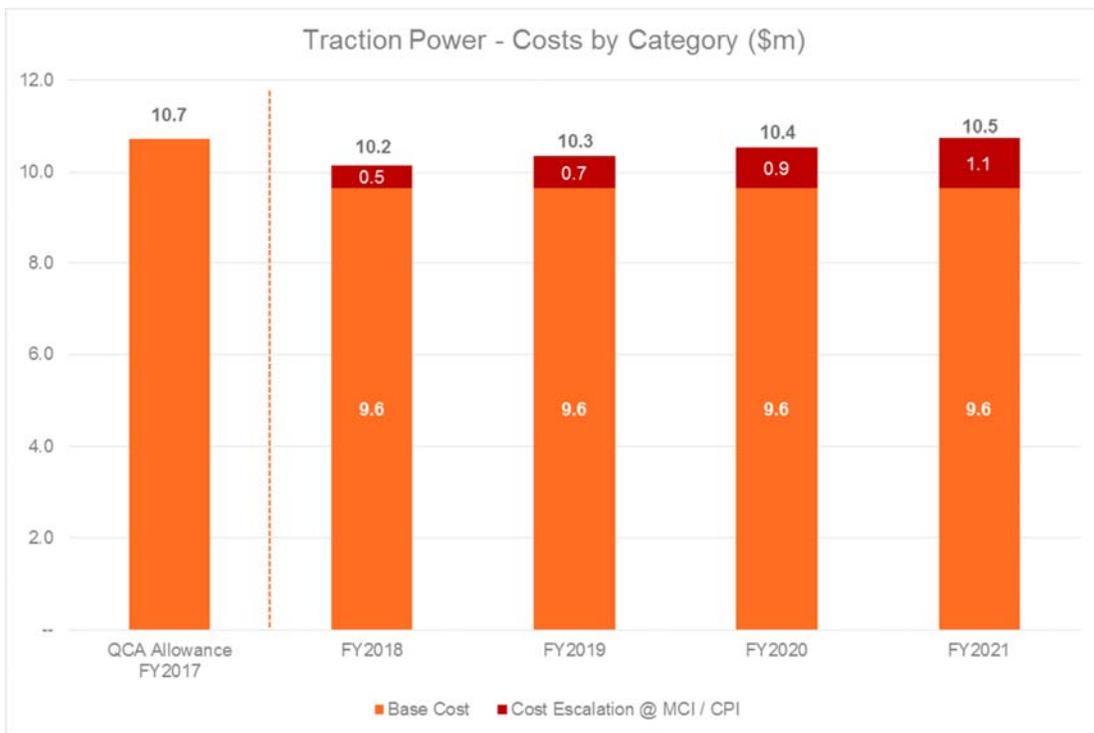
The proposed traction power costs for the UT5 regulatory period are lower than the approved FY2017 efficient costs and there is no decrease in scope. Therefore, the costs reflect at least the efficient costs of performing traction power maintenance for the UT5 regulatory period.

Figure 49 Derivation of adjusted base costs for traction power (\$m)



The adjusted base cost underpins the traction power expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 50 Traction power costs by category (\$m)



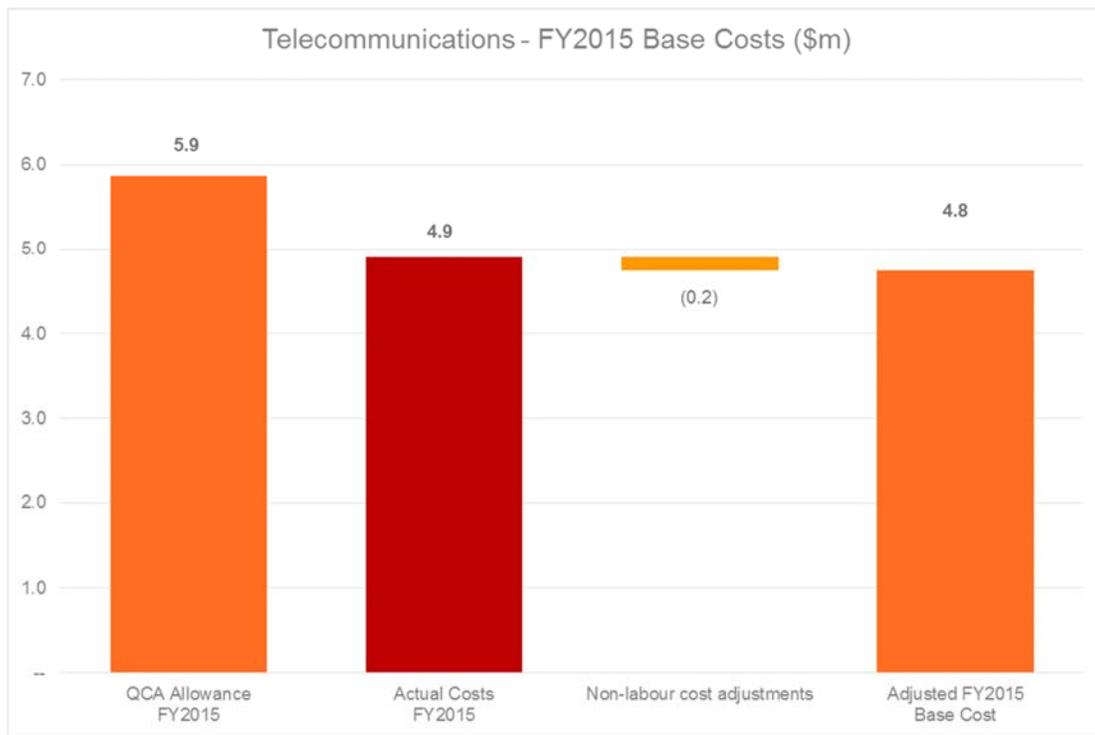
Telecommunications

Telecommunications maintenance is required to achieve the overall performance of the telecommunication infrastructure and the safe and appropriate operating level of the system. The task includes preventative inspection-type work, which maintains the accuracy of the voice and data services through regular testing, and corrective, fault repair work.

In nominal terms Aurizon Network's proposal for telecommunications is 13% lower than the UT4 allowance; and in real terms 19% lower. The proportion of costs associated with escalation at MCI are identified separately for clarity. Any difference between forecast and actual cost escalation will be reconciled through the annual revenue cap process.

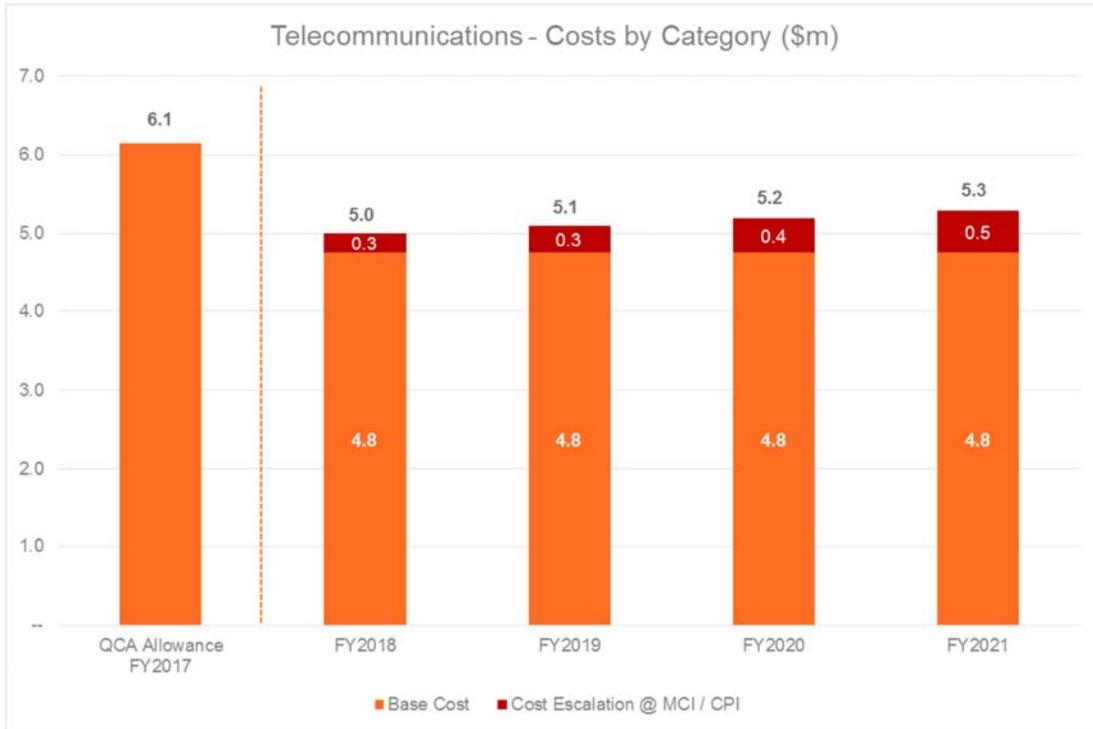
It should be noted that Aurizon Network's proposed telecommunications base costs for the UT5 regulatory period are lower than the FY2017 efficient costs approved by the QCA in its UT4 final decision. They are therefore, reflective of at least the efficient costs of performing this task for the UT5 regulatory period.

Figure 51 Derivation of adjusted base costs for telecommunications (\$m)



The adjusted base cost underpins the signalling expenditure proposal for the UT5 regulatory period, which is represented graphically on the following page.

Figure 52 Telecommunication costs by category (\$m)



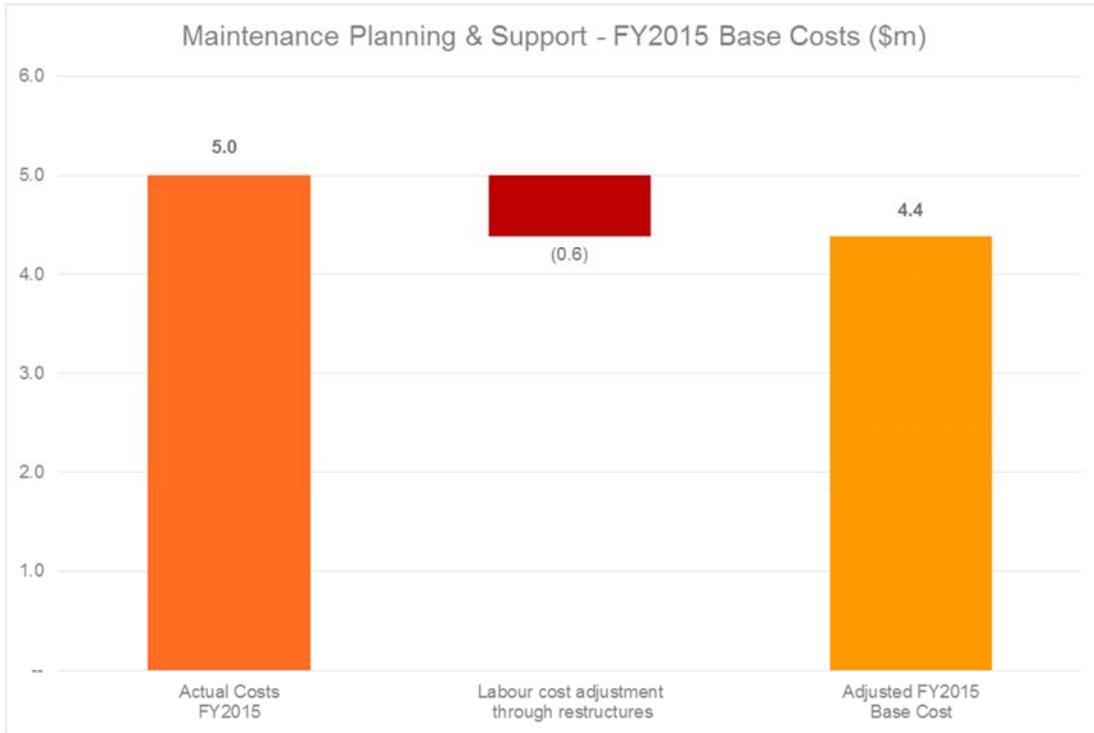
Maintenance Planning and Support

Maintenance Planning and Support costs relate to administrative activities necessary for planning and scheduling the required maintenance activities and other administrative functions such as time-sheeting and placing orders for inventory and materials. Each depot has an inventory logistics officer who is responsible for ensuring goods are ordered and made available from the central Inventory Material Logistics warehouses to either the depot or to the requisite job site.

During UT4 these costs were allocated among the broader maintenance product categories. To enable greater transparency and effective cost management, they have been separately identified in the maintenance cost proposal for UT5.

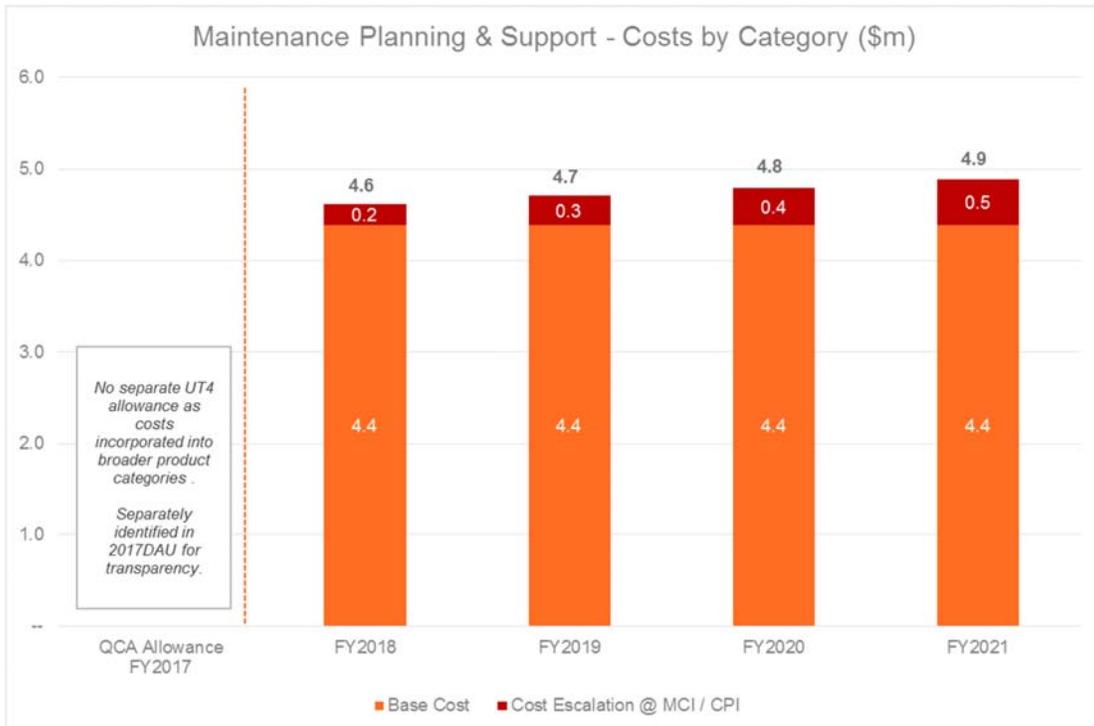
For clarity, these costs are booked (via timesheets) to specific work orders within Aurizon Network’s NMP. In doing so, Aurizon Network ensures that the costs associated with this activity are kept separate and distinct from the other maintenance cost categories. The UT5 proposal for these activities has been adjusted to account for expected labour cost savings as a result of recent restructures.

Figure 53 Derivation of adjusted base costs for Maintenance Planning and Support (\$m)



The adjusted base cost underpins the maintenance planning and support expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 54 Maintenance Planning and Support costs by category (\$m)



Structures

The Structures product group involves both preventative inspection-type work and corrective, fault repair work. As such, the scope can be based on time (for example, periodic inspections), or the life of the asset coupled with historical data on expected faults based on tonnages.

The Structures management product group includes maintenance activities of structures that support:

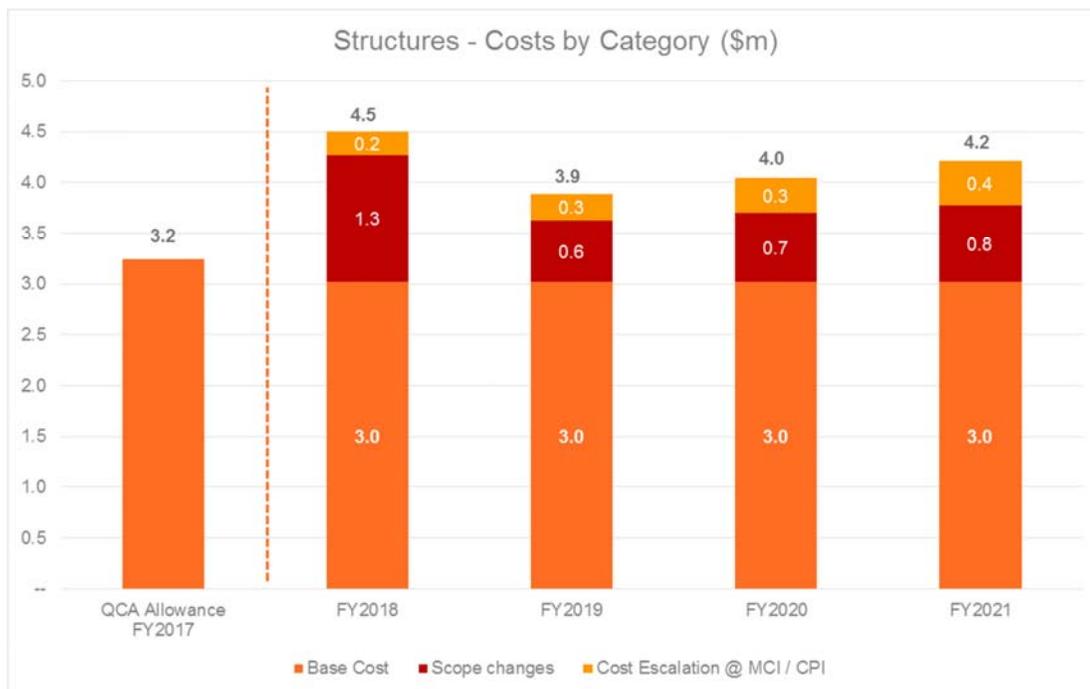
- > rail over road crossings;
- > road over rail crossings; and
- > structures that provide drainage under the track.

The primary drivers of the scope increase during the UT5 regulatory period relates to:

- > increased requirement for culvert and drain cleaning requirements as part of Aurizon Networks 'storm readiness' regime; and
- > expected increase in culvert maintenance attributable to the forecast reduction in culvert renewals.

Aurizon Network's proposal for structures is outlined below.

Figure 55 Structures costs by category (\$m)



9.4.5 Summary of total direct maintenance costs

Aurizon Network's cost proposal for its total direct maintenance costs for the UT5 regulatory period is summarised in Table 38.

Table 38 Total direct maintenance costs (\$m)

Direct Maintenance Costs (\$m)	FY2018	FY2019	FY2020	FY2021	TOTAL
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

Direct Maintenance Costs (\$m)	FY2018	FY2019	FY2020	FY2021	TOTAL
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
Total – Nominal	212.2	217.2	223.8	229.4	882.6
Total – Real (\$FY2015)	201.5	202.6	204.9	206.2	815.1

9.5 Indirect maintenance costs

Indirect maintenance costs comprise some 4% of the total proposed Aurizon Network maintenance costs for the UT5 regulatory period and are made up of the following categories:

- > return on plant; and
- > return on inventory.

9.5.1 Return on Plant

In delivering the maintenance regime, Aurizon Network is required to invest in plant and assets to efficiently provide maintenance services for the CQC. Consistent with the QCA's UT4 Final Decision Aurizon Network as calculated a return on these assets for each year of the UT5 regulatory period. The basis of the calculation is the written down value of Aurizon Network's maintenance plant, for example, mechanised production machinery, vehicles and trucks and so forth.

The rate of return on the assets has used a real pre-tax WACC of 6.7% to be applied to the maintenance asset base for each year of the UT5 regulatory period. Maintenance plant or assets that are either leased or included in Aurizon Network's RAB, are excluded from this calculation.

The resulting return on plant for the UT5 regulatory period is summarised in the table below.

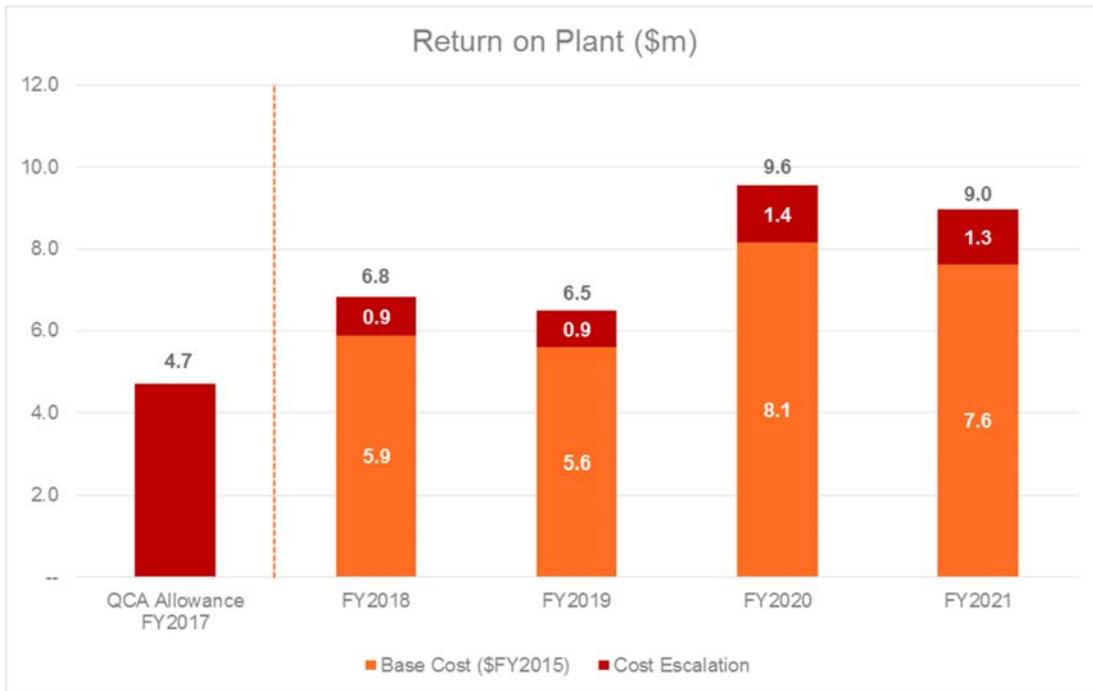
Table 39 Indirect maintenance costs: Return on plant

Return on Plant (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	6.8	6.5	9.6	9.0
Total - Real (\$FY2015)	5.9	5.6	8.1	7.6

The increase in the return relative to the same category in UT4 is driven by the acquisition of the new ballast undercutting machine and the resurfacing fleet, for which the book value is comparatively higher than the written down value of the life expired fleet they replace. As illustrated in figure 56 below, the increase:

- > between FY2017 and FY2018 is due to the acquisition of the new resurfacing fleet; and
- > between FY2019 and FY2020 is due to the acquisition of the RM902.

Figure 56 Indirect costs: return on plant



9.5.2 Return on Inventory

In order for Aurizon Network to fulfil its maintenance obligations in an effective and efficient manner it is critical that quality inventory is on hand and on location when and where it is required. In recognition of the fact that Aurizon Network must invest, procure and store an appropriate level of inventory, and consistent with the QCA’s UT4 Final Decision, Aurizon Network is entitled to a return on inventory held.

The inventory is attached to the different Aurizon Network’s depots, which are categorised as either:

- > maintenance depots;
- > construction depots; or
- > mixed depots.

For the purposes of determining this cost category, inventory held at construction depots has been excluded in entirety from this calculation. For inventory held at maintenance or mixed depots, the value of stock was assigned to below rail coal maintenance based on the work performed by that area (the mix of labour hours booked in FY2015). This process provides a clear allocation between dedicated below rail coal maintenance locations and those areas which perform capital works.

A real pre-tax WACC of 6.7% has been applied to the maintenance inventory base derived from the above methodology for each year of the UT5 regulatory period.

Throughout the UT4 period Aurizon Network has focused on improving the efficiency of its inventory holdings processes. As a result, Aurizon Network’s proposed return on inventory for the UT5 regulatory period is 12% lower than the amount proposed in UT4. The benefits of Aurizon Network’s efficiency initiative will be directly passed through to Access Holders.

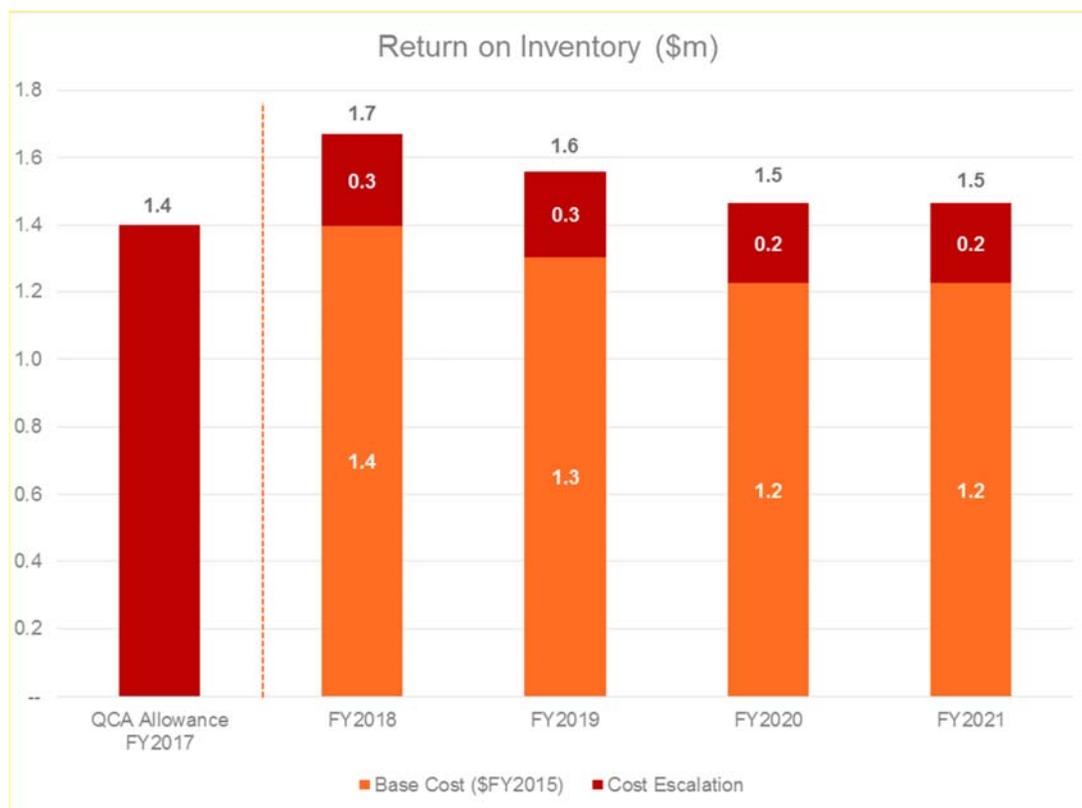
The resulting return on inventory for the UT5 regulatory period is summarised in the table on the next page.

Table 40 Indirect maintenance costs: Return on inventory

Return on Inventory (\$m)	FY2018	FY2019	FY2020	FY2021
Total - Nominal	1.7	1.6	1.5	1.5
Total - Real (\$FY2015)	1.4	1.3	1.2	1.2

It should be noted that Aurizon Network’s proposed return on inventory costs for the UT5 regulatory period are lower than the FY2017 efficient costs approved by the QCA in its UT4 final decision. They are therefore, reflective of at least the efficient costs of performing this task for the UT5 regulatory period.

Figure 57 Indirect costs: Return on Inventory



9.5.3 Summary of total indirect maintenance costs

Aurizon Network’s cost proposal for its total indirect costs for maintenance activities for the UT5 regulatory period is summarised in Table 41.

Table 41 Proposed indirect maintenance costs (\$m)

Indirect Maintenance Costs (\$m)	FY2018	FY2019	FY2020	FY2021	TOTAL
Return on Assets	6.8	6.5	9.6	9.0	31.8
Return on Inventory	1.7	1.6	1.5	1.5	6.2
Total – Nominal	8.5	8.0	11.0	10.4	38.0
Total – Real (\$FY2015)	7.3	6.9	9.4	8.9	32.4

Operating Expenditure

10. Operating expenditure

10.1 Introduction

Aurizon Network recognises that market conditions remain challenging for all CQCN stakeholders. Price volatility has been a feature of the coal market since 2010. In this environment, producers are under pressure to reduce costs. As seen during the UT4 period, this pressure has seen mines within the CQCN put into care and maintenance or voluntary administration on the expectation that market conditions will improve. In this current volatile market, miners will be seeking to balance cost savings whilst maximising throughput in order to take advantage of the recent surge in coal prices.

This operating environment creates cost pressures on Aurizon Network. This is driven from a range of sources including:

- > customers and industry stakeholders requiring greater interaction as they seek to scrutinise their below-rail access arrangements;
- > access requests and train scheduling requests are increasing in their complexity;
- > there is an increase in network capacity assessment and planning;
- > alternative operating requests require analysis and a response; and
- > an increasingly complex and prescriptive regulatory framework results in greater management requirements.

Aurizon Network has responded to these conditions by continuously challenging its internal structure and processes to drive asset and labour productivity. Aurizon Network's UT5 Revenue Proposal, including the operating expenditure component, have been developed to support the current demand for reliable railings of record volumes of coal in a cost-effective way. This submission outlines that Aurizon Network is proposing an Operating Allowance that is in line with the recently QCA approved 2016 Access Undertaking Allowance, which should be viewed as the basis for setting the efficient cost benchmark.

Aurizon Network's operating expenditure proposal for UT5 is 1.1% lower (in real terms) than the UT4 operating expenditure allowance approved by the QCA on 11 October 2016.

While increased connectivity of the CQCN has resulted in increasingly complex supply chain operations, Aurizon Network has delivered tangible improvements in supply chain performance as outlined in Chapter 1, while maintaining a focus on the efficiency of its operating expenditures. This continued focus on productivity and efficiency has resulted in record volumes, major reductions in delays and derailments and low levels of cancellations in recent years.

Aurizon Network's success is indicated by:

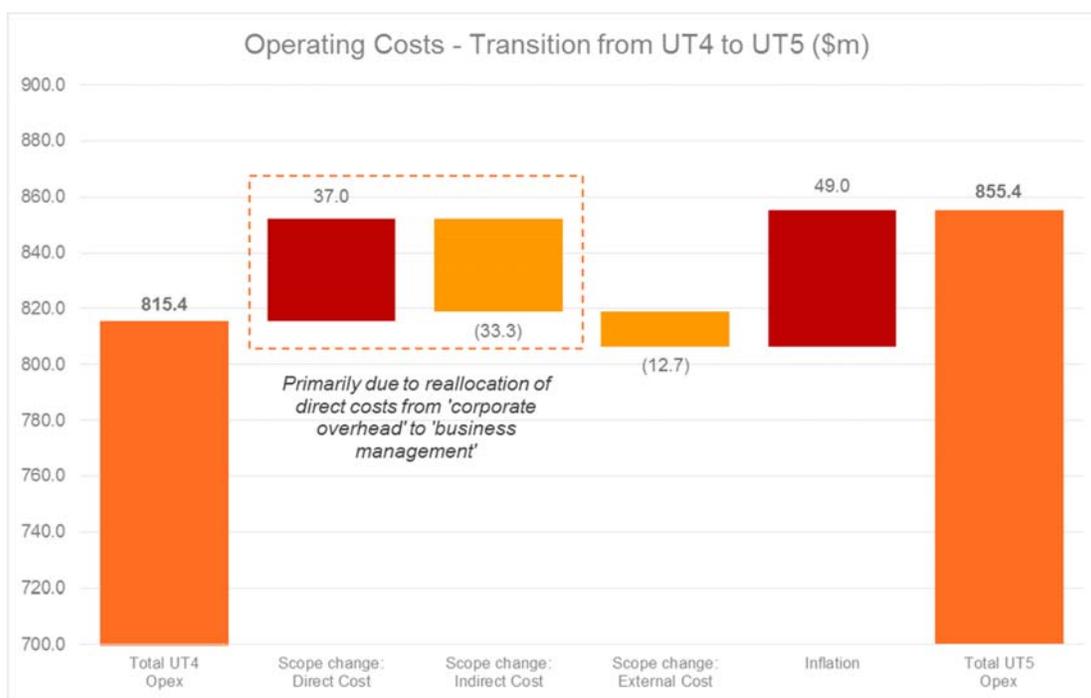
- > a reduction in maintenance closure hours from 1300 hours in FY2014 to 900 hours in FY2015;
- > an improvement in the delivery of the agreed plan of 3.3% since FY2015;
- > a decline in below rail cancellations attributable to Aurizon Network. Of the 3,199 services cancelled from the agreed plan across the CQCN, 304 (9.5%) were attributable to Aurizon Network, down from 513 (12.1%) in FY2015; and
- > progressively setting new annual tonnage records in the CQCN for each year to date of the UT4 regulatory period.

Whilst the Network has been performing to the benefit of our stakeholders, Aurizon Network has also developed a number of productivity improvements and cost efficiencies, which have been incorporated into this operating expenditure proposal. Examples include:

- > reduction in labour costs through internal restructuring and redundancies;
- > consolidation of management positions;
- > successful implementation of Movement Planner electronic train diagrams (first phase of APEX) into the Network Control Centre, which supports the delivery of increased coal volumes across the CQCN in an increasingly complex traffic management environment;
- > minimising expenditure on external services, for example, professional consultancy services; and
- > the optimisation of transmission service arrangements, resulting in expected cost savings from FY2018.

These initiatives have enabled an annual cost reduction of \$2.2 million in real terms relative to the efficient base year (FY2015) selected from the current regulatory period. The transition from UT4 to UT5 in the operating cost allowance is shown in Figure 58 below.

Figure 58 Operating Costs – Transition from UT4 to UT5



The rationale behind the changes can be summarised as follows:

- > Direct Costs – increased due to inclusion of Network Finance and Legal within the business management costs;
- > Indirect Costs – decreased due to the removal of Network Finance and Legal from the corporate overhead category;
- > External Costs – reduction in the number of connection points within the electrified network; and
- > Inflation – escalation of real costs in line with the QCA approved methodology.

A detailed outline of Aurizon Network’s methodology for forecasting operating expenditure over the UT5 regulatory period is provided later in this chapter. This methodology is consistent with the methodology adopted by the QCA to approve operating costs for UT4. As outlined within its responses to the QCA decision during UT4, while Aurizon Network does not fully agree with the QCA’s UT4 methodology, Aurizon Network has in the majority adopted it for

UT5 (other than as expressly identified in this chapter). This has been done in the interests of facilitating an efficient resolution of the undertaking process. In particular, Aurizon Network supports the QCA's observation that:¹³⁵

the Amended 2014 DAU is a product of an extensive and comprehensive consultation process involving interested parties over a substantial period of time during which time the QCA's policy intent has been formed and articulated in various decisions, including:

- *Draft Decision on Maximum Allowable Revenue (October 2014)*
- *the Initial Draft Decision (January 2015)*
- *the WIRP Draft Decision (July 2015)*
- *the Consolidated Draft Decision (December 2015)*
- *April 2016 Decision (April 2016).*

While Aurizon Network acknowledges the QCA must assess the UT5 DAU as a new undertaking and apply its statutory considerations afresh, Aurizon Network submits the QCA must give significant weight to the use of a methodology identical to the one utilised in a very recent undertaking process, and in circumstances where there has been no material change to the facts and circumstances relevant to the QCA's consideration of 138(2) factors.

In its Final Decision on UT4 the QCA determined a quantum of operating expenditure which the QCA assessed as being consistent with the pricing principles and representing "no more than" Aurizon Network's efficient costs¹³⁶. Again, while Aurizon Network does not agree that this is the correct test to apply (the correct test being "at least" Aurizon Network's efficient costs – see QCA Act s168A), it follows that the amount determined by the QCA in relation to operating expenditure for the UT4 period must necessarily represent a minimum starting point for the determination of operating expenditure for the UT5 period.

As Aurizon Network has, in the majority of cost categories, adopted the same methodology for the UT5 period to determine operating expenditure and the underlying factual circumstances and assumptions have not changed, the QCA should look to approve Aurizon Network's submission, as it represents its efficient costs.

10.1.1 Increasing cost of regulatory compliance

The QCA's Final Decision on UT4 included a range of additional regulatory obligations on Aurizon Network, which were not factored into the UT4 resourcing and operating cost estimates. As a consequence, there is some misalignment between the UT4 efficient operating costs and the activity levels that underpin these broader regulatory obligations. Furthermore, it is difficult to predict the full extent of all the costs as developing, finalising and implementing key processes (such as the SUFA) is still unknown and difficult to directly quantify.

Where feasible to do so at this stage, the costs of compliance with these additional regulatory requirements have been taken into consideration in developing this operating expenditure proposal, mainly through the business management allowance. Consistent with the statutory criteria discussed above, Aurizon Network should be compensated for the efficient costs incurred in complying with its access obligations.

¹³⁵ QCA (October 2016). Final Decision, Aurizon Network's Amended 2014 draft access undertaking, p. 1-2

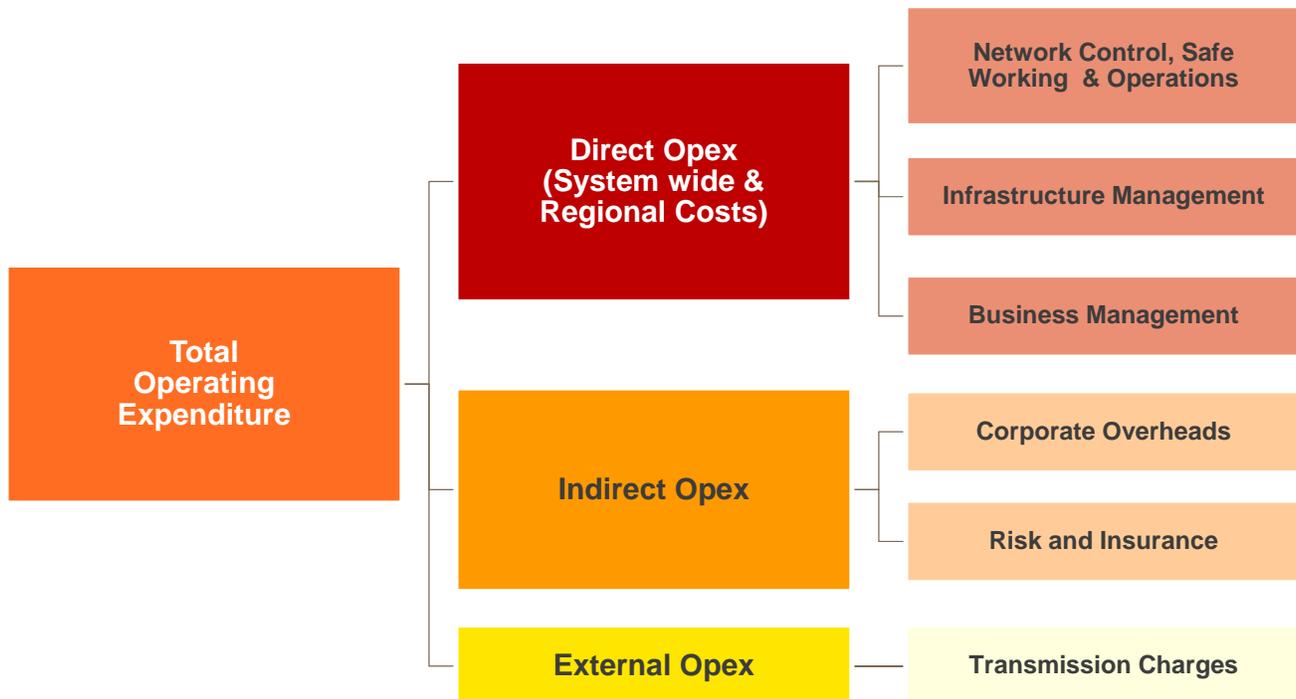
¹³⁶ QCA (April 2016). Final Decision, Aurizon Network 2014 Access Undertaking, Volume IV, Maximum Allowable Revenue, p. 29

10.2 Overview of operating expenditure proposal

Aurizon Network's operating expenditure proposal for the UT5 regulatory period is materially consistent with the methodologies and cost base approved by the QCA in its UT4 Final Decision in October 2016. While not agreeing with all elements of the QCA's decision, Aurizon Network accepted it in order to achieve regulatory certainty.

Aurizon Network's operating expenditure is categorised into direct, indirect and external operating expenditures and illustrated in Figure 59. The operating expenditure proposal that follows is presented in the same structure, which is also consistent with UT4.

Figure 59 Aurizon Network's operating expenditure categories



10.2.1 Total operating expenditure proposal

Aurizon Network's operating expenditure proposal is presented in the table above for each year of the UT5 regulatory period.

Table 42 UT5 operating expenditure proposal by year (\$m)

Operating expenditure category	2017/18	2018/19	2019/20	2020/21
System wide and regional costs	69.4	71.3	73.9	75.3
Corporate overheads	49.1	50.5	51.6	52.7
Risk and Insurance	9.0	9.3	9.4	9.6
Transmission charges	78.7	80.3	81.9	83.5
Total – Nominal	206.2	211.4	216.8	221.0
Total – Real (\$FY2015)	195.8	198.3	201.0	202.4

Table 43 Comparison of total operating expenditures across regulatory periods (\$m)

Type	Cost Category (\$m)	Total UT4	Total UT5	Variance
Direct	System wide and regional costs	235.7	289.9	23.0%

Type	Cost Category (\$m)	Total UT4	Total UT5	Variance
Indirect	Corporate overheads	223.0	203.8	(8.6%)
Indirect	Risk and Insurance	37.8	37.3	(1.2%)
External	Transmission charges	318.8	324.3	1.7%
Total - Nominal		815.4	855.4	4.9%
Total - Real (\$FY2015)		806.5	797.5	(1.1%)

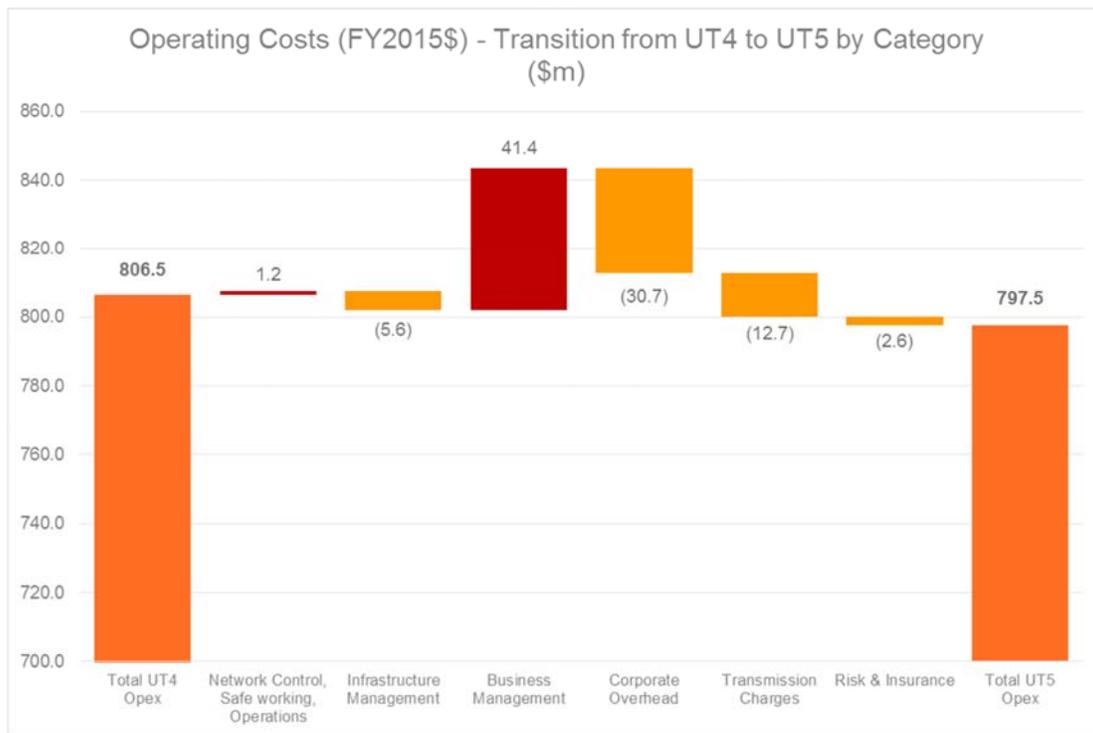
On aggregate, the operating expenditure proposal for the UT5 regulatory period is:

- > approximately 5% higher, in nominal terms than the operating expenditures approved for UT4; or
- > 1% lower in real terms (\$FY2015), which is equivalent to a saving of \$2.2 million per annum.

The primary driver of the total cost change between the UT4 and UT5 regulatory periods (in nominal terms) is the impact of forecast inflation.

Figure 60 below illustrates the transition from UT4 to UT5 for each cost category in real terms.

Figure 60 Operating expenditure transition from UT4 to UT5 by category – Real (FY2015 \$m)

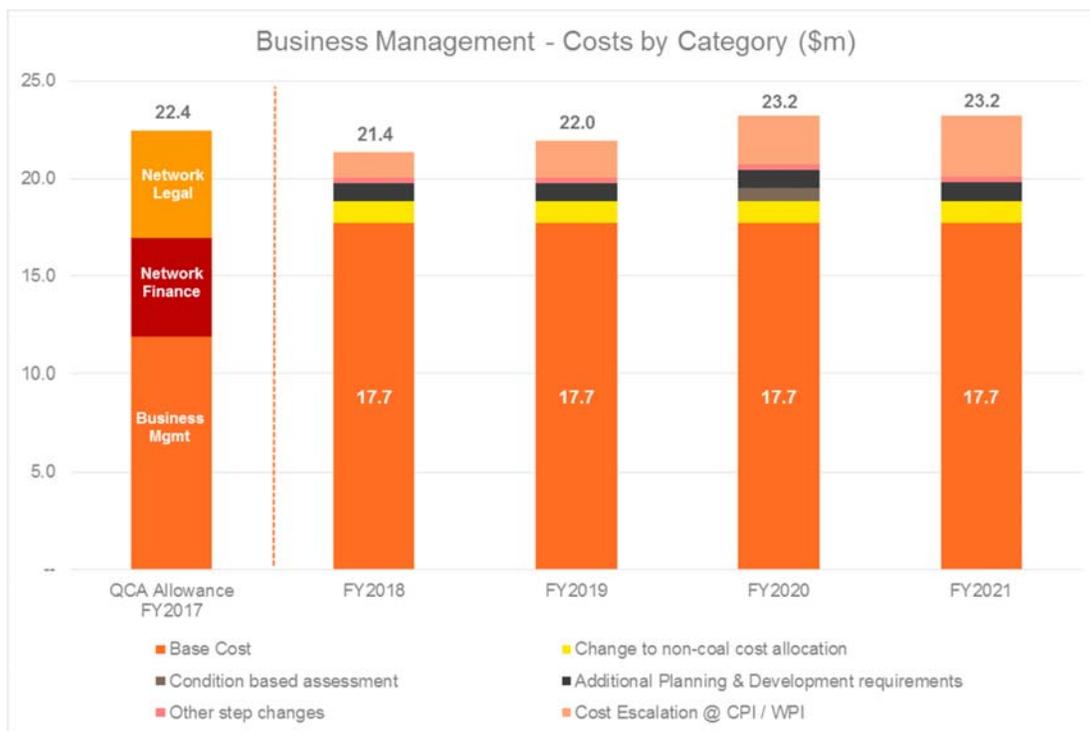


From Figure 60, it is evident that the 23%¹³⁷ uplift in system wide and regional costs for the UT5 regulatory period is driven by changes in the Business Management cost proposal. This is primarily due to the reallocation of Network Finance and Network Legal costs, which were incorporated into the Corporate Overhead allowance during UT4.

¹³⁷ Refer to Table 43.

While the UT5 Business Management cost proposal will be discussed in more detail in the following sections, the graph below illustrates the 'restated' Business Management allowance for FY2017 (the last year of UT4), in comparison to the proposed costs for UT5.

Figure 61 Comparing restated business management allowance to UT5 proposed costs



Direct operating expenditures: 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 of 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:
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.

Table 44 UT5 Direct Opex: system wide and regional costs (\$m)

Direct Opex cost item	2017/18	2018/19	2019/20	2020/21
Network control, safe working and operations	29.7	30.6	31.5	32.4
Infrastructure management	18.3	18.7	19.2	19.7
Business management	21.4	22.0	23.2	23.2
Total – Nominal	69.4	71.3	73.9	75.3
Total – Real (\$FY2015)	65.9	66.9	68.5	68.9

Indirect operating expenditures: corporate overhead and insurance

Corporate overhead

The operating expenditure proposal also 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
- > Finance¹³⁸
- > General council¹³⁹
- > Company secretary
- > Internal audit
- > Health, safety and environment
- > Information Technology

Risk and Insurance

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 includes 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.

The proposed corporate costs and insurance allowances for Aurizon Network for the UT5 regulatory period are presented in the following table.

Table 45 Indirect opex: risk and insurance costs (\$m)

Indirect Opex cost item	2017/18	2018/19	2019/20	2020/21
Corporate overhead	49.1	50.5	51.6	52.7
Risk and insurance	9.0	9.3	9.4	9.6
Total - Nominal	58.1	59.7	61.0	62.3
Total - Real (\$FY2015)	55.2	56.0	56.5	57.1

External operating expenditures: transmission charges

Aurizon Network voluntarily 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 connection charges (henceforth referred to as "transmission charges") are set by the Transmission Network Service Providers (TNSPs) in accordance with the requirements of the National Electricity

¹³⁸ 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.

¹³⁹ 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.

Rules (NER) and are subject to the regulatory oversight of the Australian Energy Regulator (AER). Aurizon Network is consequently a price-taker in the market for transmission and connection services.

Where possible, Aurizon Network has sought opportunities to optimise its electric pricing arrangements, which are expected to result in cost savings during the UT5 regulatory period, relative to FY2017 where total transmission charges were \$92.7 million.

Table 46 External opex: transmission charges (\$m)

External Opex cost	2017/18	2018/19	2019/20	2020/21
Blackwater	40.3	41.3	42.1	43.0
Goonyella	38.3	39.0	39.7	40.5
Total - Nominal	78.7	80.3	81.9	83.5
Total - Real (\$FY2015)	74.7	75.4	75.9	76.4

Electrical energy charges

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 it’s MAR. Aurizon Network procures 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. The forecast costs which underpin the EC charge are outlined below.

Table 47 Forecast electrical energy charges (\$m)

	2017/18	2018/19	2019/20	2020/21
Blackwater	22.0	23.8	24.1	24.4
Goonyella	30.4	31.1	31.4	31.8
Total - Nominal	52.4	54.9	55.6	56.2
Total - Real (\$FY2015)	50.1	51.5	51.5	51.5

10.3 Operating expenditure forecasting methodology

This operating expenditure proposal seeks the recovery of at least Aurizon Network’s efficient operating expenditure incurred in the provision of the declared service. Operating expenditure accounts for approximately 18% of MAR and Aurizon Network has been rigorous in ensuring its operating expenditure proposal for the UT5 regulatory period is robust and reflects the efficient costs of operating a highly reliable below-rail network.

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.”

In its CDD, 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)”.¹⁴⁰ 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.

Consequently, Aurizon Network has used the UT4 operating expenditure allowances approved by the QCA as the starting point for developing the forecasts for the UT5 regulatory period. Where appropriate, Aurizon Network has proposed changes to some of the methodologies employed by the QCA. These are highlighted in Table 48 below.

Table 48 Summary of cost allocations by functional area

Functional Area	% of costs Included ¹⁴¹	Commentary	Consistent with UT4 Final Decision?
EVP Network	Nil	EVP Network costs are not included as direct operating expenditure. This avoids any potential duplication with Aurizon CEO costs, which are provided for in the Corporate overhead proposal.	Yes
Network Control, Safe working and Operations			
Network Train Operations	98%	Responsible for Day of Operations activities, including the execution of scheduled train services and asset activity (yards / maintenance) and coordination of emergency response and recovery efforts where applicable. 'Non-coal' cost allocation of 2% applied, which more accurately reflects the cost impost of facilitating timetabled 'non-coal' train movements.	No; proposed amendment to non-coal allocation
Planning and Engagement	100%	Responsible for coal chain delivery, integrated planning and scheduling for the CQCN, ensuring that contracted outcomes, maintenance and renewal requirements are balanced. Tasks are required solely for the operation of the CQCN.	Yes
Infrastructure Management			
Network Assets	100%	Activities are directly related to the provision of access to customers, including development of standards for track, electrical, telecommunications and signalling; asset maintenance and renewals planning and execution; maintenance strategies, plans and programs. Base cost excludes all costs associated with capital work & non-regulated services; no further deduction is required.	Yes
Business Management			
Commercial		The activities performed by the commercial team are essential to the provision of access.	
CQCN Commercial	90% ¹⁴²	Responsible for managing customer relationships, commercial negotiations and contracts related to access, private infrastructure, interface agreements, expansions. Directly related to the provision of access.	Yes

¹⁴⁰ QCA (December 2015), CDD, Volume IV, p. 31

¹⁴¹ These percentages have been applied to the function’s costs excluding depreciation and insurance.

¹⁴² A portion of Aurizon Network’s annual revenue is earned from non-regulated activities, which supplement the revenue recovered through regulated reference tariffs. In recognition of this, Aurizon Network has excluded a portion of its forecast operating expenditures when

Functional Area	% of costs Included ¹⁴¹	Commentary	Consistent with UT4 Final Decision?
Commercial Development and Governance	90% ¹⁴³	Provides services to prospective CQCN customers and progresses commercial development initiatives with customers and suppliers. Activities are indirectly related to the provision of access.	Yes
Planning and Development	90% ¹⁴⁴	Responsible for supply chain and capacity planning and modelling; developing/evaluating technical proposals. Activities are indirectly related to the provision of access, however, train services could not operate efficiently without sufficient planning.	Yes
Major Projects	50%	Responsible for the development of SUFA, commercial negotiations and execution of contracts for new expansions. Involved in regulatory activities including submissions and responses in regard to SUFA, UT4 response to Draft Decision, Consolidated Draft Decision and Final Decision.	No, these costs were not included in the UT4 submission
Finance	100%	Responsible for billing, budgets, forecasting and preparing financial and statutory reports.	No, previously included in corporate overhead
Legal	90% ¹⁴⁵	This team provides legal advice on matters pertinent to Aurizon Network in relation to the supply of below rail services. The Aurizon Holdings Group maintains its own legal function.	No, previously included in corporate overhead
Network Operations Management	100%	Provides the works required as a Rail Infrastructure Manager in Queensland to ensure the network is maintained and operated in a safe, efficient, effective and sustainable way. This includes driving continued improvement initiatives of the Network Operations function, and developing skill sets of staff who operate within the track, traction, signalling, telecommunications and civil areas of the business, with a particular focus on safety, competency, quality and efficiency. These activities are essential for promoting the efficient operation of the CQCN.	Yes
Infrastructure (Asset Maintenance) and Mechanised Production	Nil	Included in the maintenance cost allowance.	Yes
Regulation	100%	The provision of rail access is a regulated service and this team is responsible for managing Aurizon Network's regulatory framework. Activities include development of Access Undertakings and Reference Tariffs, compliance, consideration of regulatory policy, preparation of submission material and regulatory reporting.	No; proposed amendment to non-coal allocation

10.3.1 Approach to forecasting Aurizon Network's efficient costs

The following figure illustrates the methodology Aurizon Network has followed to determine its efficient operating expenditures. The discussion of each of the operating expenditure categories in this chapter is similarly structured.

calculating its regulated revenue allowance and reference tariffs. In its final decision on the UT4, the QCA approved a 10% allocation for FY2017, representing the proportion of non-regulated revenue to total revenue. Aurizon Network has applied a 10% deduction consistently across all years of the UT5 regulatory period.

¹⁴³ Ibid

¹⁴⁴ Ibid

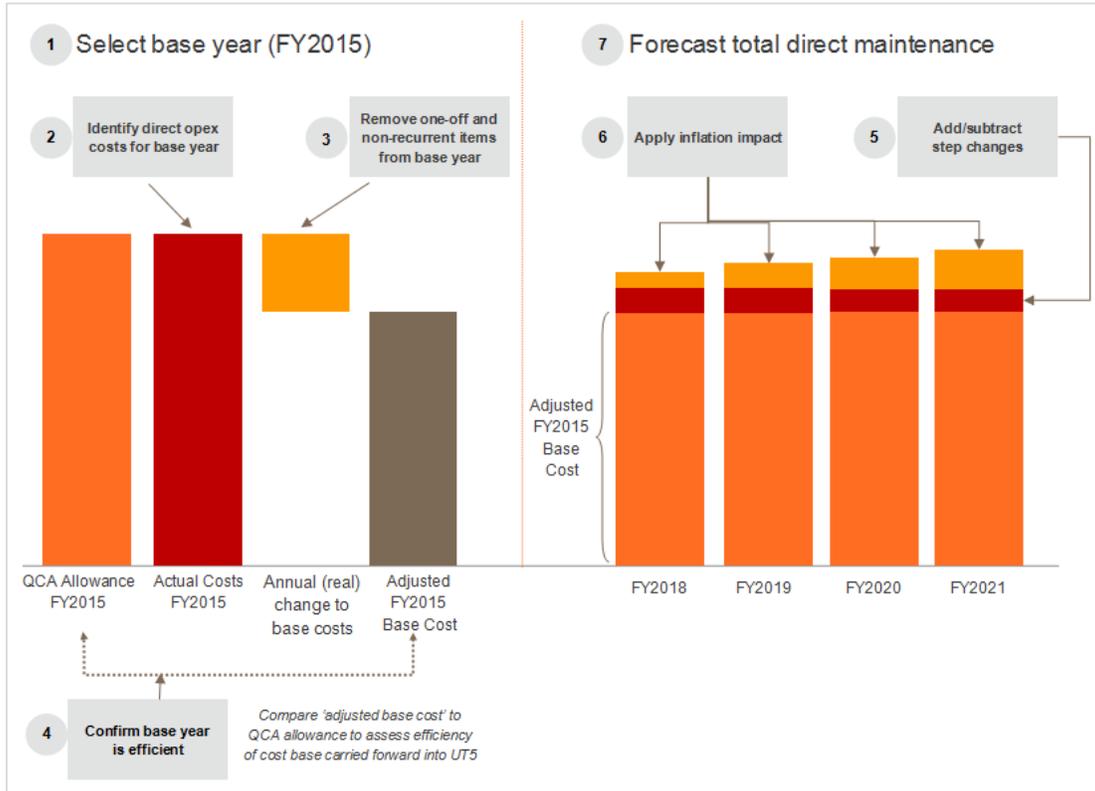
¹⁴⁵ Ibid

Figure 62 Aurizon Network’s operating expenditure forecasting methodology



How this methodology is applied to determine Aurizon Network’s operating expenditure for the UT5 regulatory period is shown in Figure 63. This approach is applied for each of the identified cost categories.

Figure 63 Application of methodology to determine operating costs for UT5 regulatory period



10.3.2 Identifying direct operating expenditure categories

This operating expenditure proposal has been developed on the basis of a 'bottom up' assessment of costs captured annually at a cost centre level. Aurizon Network has reviewed costs booked to each cost centre within its accounting system to identify below-rail costs attributable to the CQC. Each cost centre was analysed to determine whether the associated costs were:

- > directly related to the operation of the below-rail network, for example, network control and operations, infrastructure management;
- > indirectly related to the operation of the below-rail network but which would be required for a stand-alone regulated business, for example, the network regulation, finance and legal teams, CQC commercial, planning and development; or
- > related to non-regulated activities such as non-coal train services. For clarity, such costs are excluded from the operating expenditure proposal, are not included in the MAR, and Reference Tariffs do not recover any part of them.

10.3.3 Establishing the base year of efficient costs

In order to establish an efficient level of recurrent operating expenditure (in real terms) the operating expenditure proposal has been developed with reference to a base year, selected within the current regulatory period. FY2015 has been chosen as the base year due to the timing of the Initial Undertaking Notice, which required UT5 to be submitted by 9 September 2016. However, delays to the UT4 Final Decision meant that this date was unachievable and Aurizon Network requested an extension, which was subsequently granted by the QCA. To facilitate an efficient regulatory process and the timely submission of UT5, Aurizon Network continued developing its operating cost proposal with reference to the FY2015 base year rather than start from a FY2016 cost base.

Forecasts of direct operating expenditure categories have been made with reference to:

- > identification of efficient operating expenditures for FY2015, as assessed and approved by the QCA in its UT4 Final Decision;
- > actual costs incurred during FY2015, captured at a cost centre level;
- > disaggregation of total costs into 'labour' and 'non-labour' categories;
- > adjustments to account for 'one-off' or 'non-recurrent' costs (such as the impact of restructures, voluntary redundancies and the impact of cost saving initiatives); and
- > escalation rates consistent with indices approved by the QCA in its UT4 Final Decision.

The resulting cost forecasts were then challenged and reviewed in accordance with Aurizon Network's internal governance processes, which include:

- > review against operating allowances approved by the QCA in the UT4 Final Decision;
- > comprehensive peer review by senior management; and
- > management and executive approval of the allowance/costs.

The final cost allocations derived for the operating expenditure proposal are summarised in Table 48 Summary of cost allocations by functional area.

Aurizon Network operating expenditure proposal for this UT5 and accompanying Revenue Proposal reflects its efficient costs, and is consistent with both the requirements of the QCA Act and Aurizon Network's Access Undertaking.

10.3.4 Real cost escalation

This operating expenditure proposal has been developed with reference to costs incurred during FY2015, the base year. Base year costs are expressed in real terms (\$FY2015) and are escalated to determine the MAR and Reference Tariffs for each year of the regulatory period (expressed in nominal terms). Different price indices are used to escalate labour costs and non-labour costs.

Labour cost escalation

Aurizon Network has escalated FY2015 labour costs with reference to forecast growth in the Wage Price Index (WPI). This approach is consistent with the QCA's UT4 Final Decision. The WPI estimates for FY2016 through to FY2019 have been sourced from the Queensland Treasury and Trade, Mid-Year Fiscal and Economic Review 2015-16. Rates for FY2020 and FY2021 are equivalent to FY2019.

Table 49 Forecast labour cost growth (%)

Labour cost escalation (%)	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
WPI ¹⁴⁶	2.25%	2.75%	3.0%	3.25%	3.25%	3.25%

Aurizon Network considers these forecasts to be reasonable, a view broadly reinforced by Deloitte Access Economics when concluding in a report prepared for the AER¹⁴⁷ that:

... wages growth over the short term is expected to be relatively flat as employment prospects move downwards and as other sectors struggle to match the wages paid in the resources sector in recent years. [...] Over the longer term wages growth is expected to pick up as structural adjustments in the State's

¹⁴⁶ Queensland Treasury and Trade, Mid-Year Fiscal and Economic Review 2015-16; as per QCA's final decision on 2016AU.

¹⁴⁷ Deloitte Access Economics, Forecast growth in labour costs in NEM regions of Australia; 23 February 2015.

economy run their course, with wages growth of between 3% and 4% for the following years leading up to 2019-20.

Non-labour cost escalation

Aurizon Network has escalated FY2015 non-labour costs using a forecast rate of CPI. The QCA has previously approved a forecast rate of CPI set at the midpoint of the RBA target rate of inflation, i.e. 2.5%¹⁴⁸. The actual rate of inflation observed for the UT4 regulatory period has been well below the bottom end of the RBA's target range. Current indicators suggest that this downward trend will continue for the foreseeable future.

Aurizon Network has proposed, therefore, to set forecast CPI at 1.22% which is equivalent to the four-year breakeven inflation, in the month of June 2016. For a more detailed discussion of this proposal, refer to the Forecast Inflation section in the Revenue Proposal.

The rate of CPI applied to real (\$FY2015) non-labour costs for the operating expenditure proposal is summarised in Table 50.

Table 50 Forecast non-labour cost growth (%)

Non-labour cost escalation (%)	2015/16 (a)	2016/17 (f)*	2017/18 (f)	2018/19 (f)	2019/20 (f)	2020/21 (f)
CPI	1.49%	2.50%	1.22%	1.22%	1.22%	1.22%

*In line with QCA approved forecast inflation for the UT4 term

Source: FY2016 from Australian Bureau of Statistics, 6401.0, Table 2; FY2017 from UT4 final decision; FY2018 – FY2021 from CEG (September 2016).

Aurizon Network notes that while forecast rates of inflation are applied when deriving the regulatory operating expenditure allowances, an ex-post reconciliation does take place as part of the annual revenue cap process to account for any variance to observed rates of inflation.

10.3.5 Matters relevant to the QCA's assessment of costs and benchmarking

The QCA's assessment of efficient costs must take into consideration the unique characteristics of the CQCN. In particular, if the QCA is to benchmark Aurizon Network's operating costs against other businesses, it must take into account the following unique matters:

- > characteristics of the infrastructure itself, e.g. narrow gauge network;
- > geographically dispersed nature of infrastructure;
- > evolutionary development of CQCN was separate and distinct, resulting in a lack of standardisation in infrastructure and processes. Increasing integration is addressing these challenges;
- > climatic challenges – including extreme weather and soil conditions; and
- > electric and non-electric infrastructure.

Such characteristics may not typically be apparent in other comparator firms that Aurizon Network is benchmarked against by the QCA.

The QCA plays a critical role in the regulatory process and Aurizon Network reiterates that its legitimate business interests (which include the ability to fully recover efficient costs) must be equally considered with the interests of access holders and seekers. Aurizon Network's view is reinforced by the merits review decisions¹⁴⁹ made by the

¹⁴⁸ <http://www.rba.gov.au/monetary-policy/inflation-target.html>

¹⁴⁹ Australian Competition Tribunal, Review of Distribution Determination made by the Australian Energy Regulator, 26 February 2016. Available at: <http://www.judgments.fedcourt.gov.au>

Australian Competition Tribunal (ACT) in relation to the AER final decisions on the operating expenditure allowances for Ausgrid and ActewAGL.

In regards to the operating expenditure allowances, the ACT determined that the AER had placed too great an emphasis on the benchmarking model prepared by its consultant (Economic Insights), and noted that:

“Where, as here, the application of a new untested benchmarking model is applied to arrive at a total sum for operating expenditures, good administration practice suggests that the regulator responsible for its application would apply some form of quantitative “reasonableness check” bottom-up analysis to at least some, if not all of the cost components.”¹⁵⁰

The ACT’s findings suggest that in determining the businesses’ operating expenditure allowances, the AER should focus less on the results of benchmarking exercises conducted by its consultants, and place greater weight on the operating expenditure forecasts submitted by the service providers, who are in a better position to assess and understand the efficient costs of doing business within their own operating environment.

10.4 Direct operating expenditures - System Wide and Regional Costs

System wide and regional costs relate to the operation and planning of train paths. These costs are directly attributable to providing access to the CQCN.

Central to the transformational journey that Aurizon Network has embarked upon since privatisation in 2010 and throughout the UT4 regulatory period has been delivering strategic projects to improve productivity and efficiency of the planning and operation of network rail infrastructure.

The focus of Aurizon Network’s transformation programme has been to improve workforce productivity and reduce discretionary spending. Being more efficient, requires Aurizon Network to focus on challenging costs, while meeting the increasingly complex needs of our customers.

With that in mind, Aurizon Network’s expectation is that the QCA will approve a revenue amount in consideration of this operating expenditure proposal with a view to recovering at least the efficient costs required to provide the declared service during the UT5 regulatory period. Failure to do so would not permit Aurizon Network to fulfil its regulatory and commercial obligations under the access regime. This would not be in the interests of CQCN stakeholders as it may contribute to a decline in network performance, reliability and customer responsiveness.

While interest is capitalised to ensure the NPV neutrality of deferred capital expenditure, Aurizon Network has no opportunity to recover operating expenditure shortfalls in the event that the QCA does not approve a revenue amount that does not provide for full recovery of at least the efficient operating expenditures in the year they are incurred. It would be inappropriate for the QCA to make a decision that does not generate enough revenue that does not compensate Aurizon Network for at least its efficient operating expenditures incurred during the UT5 regulatory period.

10.4.1 Network Control, Safe working and Operations

The network control, safe working and operations function are responsible for controlling the movement of trains, light engines and track machines as well as the safe working of these vehicles as they traverse the rail infrastructure. The operation and planning of train paths is directly attributable to the provision of Access to the CQCN for coal carrying train services. Responsibilities include:

- > Network control and scheduling;
- > Operations planning and management;

¹⁵⁰ Australian Competition Tribunal, Review of Distribution Determination made by the Australian Energy Regulator, 26 February 2016, [408].

- > Maintenance planning;
- > Incident management;
- > Closure planning, command and control; and
- > Performance reporting and analytics.

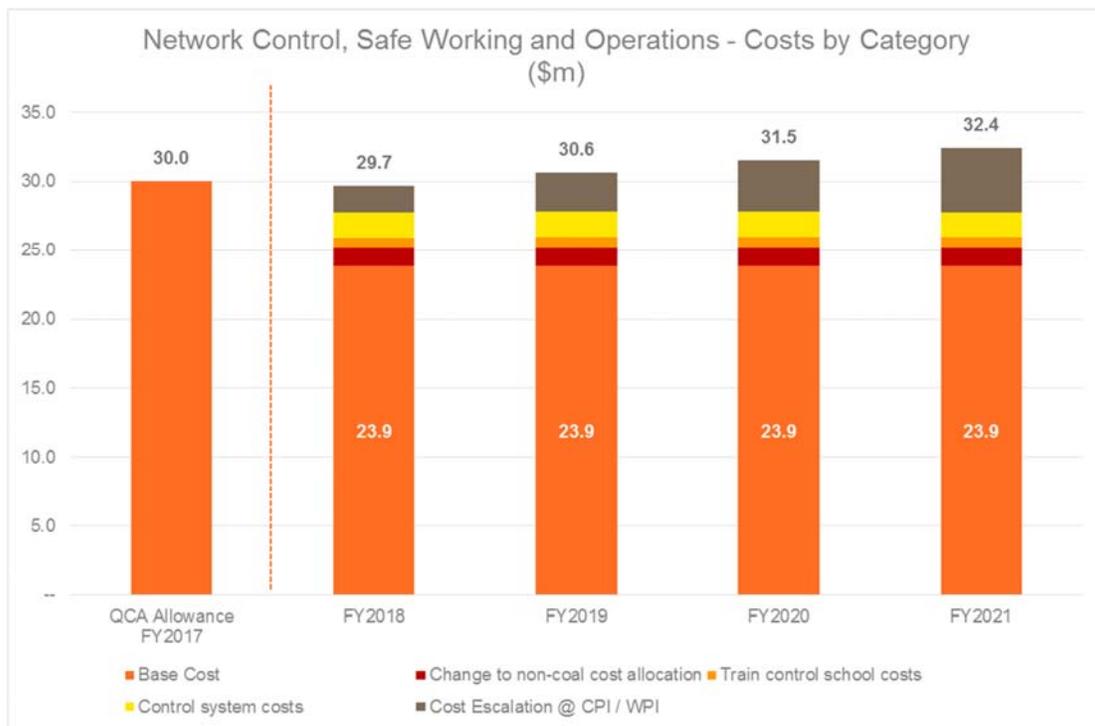
Aurizon Network’s proposed network control, safe working and operations allowance for the UT5 regulatory period is outlined below and represents 14% of Aurizon Network’s total operating expenditure proposal.

Table 51 Proposed network control, safe working and operations costs (\$m)

	2017/18	2018/19	2019/20	2020/21
Total – Nominal	29.7	30.6	31.5	32.4
Total – Real (\$FY2015)	28.2	28.7	29.2	29.7

In comparison with the approved UT4 allowance for this category of operating expenditures, this represents an increase of 1.0% in real terms (\$FY2015); or a 7.3% increase in nominal terms.

Figure 64 Network control, safe working and operations costs by category (\$m)



The adjusted cost base

To adjust the operating expenditure proposal for this function (developed with reference to actual costs incurred during FY2015) the following process was adopted:

One-off or non-recurrent costs

- > total labour costs were reduced to reflect the impact of restructures, where employees have either:
 - left Aurizon Network, in which case the attributable costs have been removed entirely; or
 - transferred to another Aurizon Network function.

With regard to the latter, the attributable costs have been removed from the operating expenditure proposal, but are recoverable elsewhere. Specifically:

- > labour costs of approximately \$0.9 million per annum have been removed from the Network Control cost proposal. These costs are associated with Fault Centre Coordinators (who are predominantly involved in maintenance activities) and have been included as part of the UT5 maintenance cost proposal; and
- > electricity consumption costs of approximately \$1.2 million per annum have been reallocated to the Corporate Overhead cost base. While these costs are incurred by Enterprise Real Estate, they are associated with powered assets required for the provision of the declared service, i.e. signalling huts.

Additions to base cost

- > CPI and WPI escalation have been applied in accordance with the operating expenditure forecasting methodology.

Non-coal cost allocation

- > the non-coal related services cost allocation has been reduced from 9% to 2%.

Aurizon Network's rationale for applying a 2% reduction is outlined below.

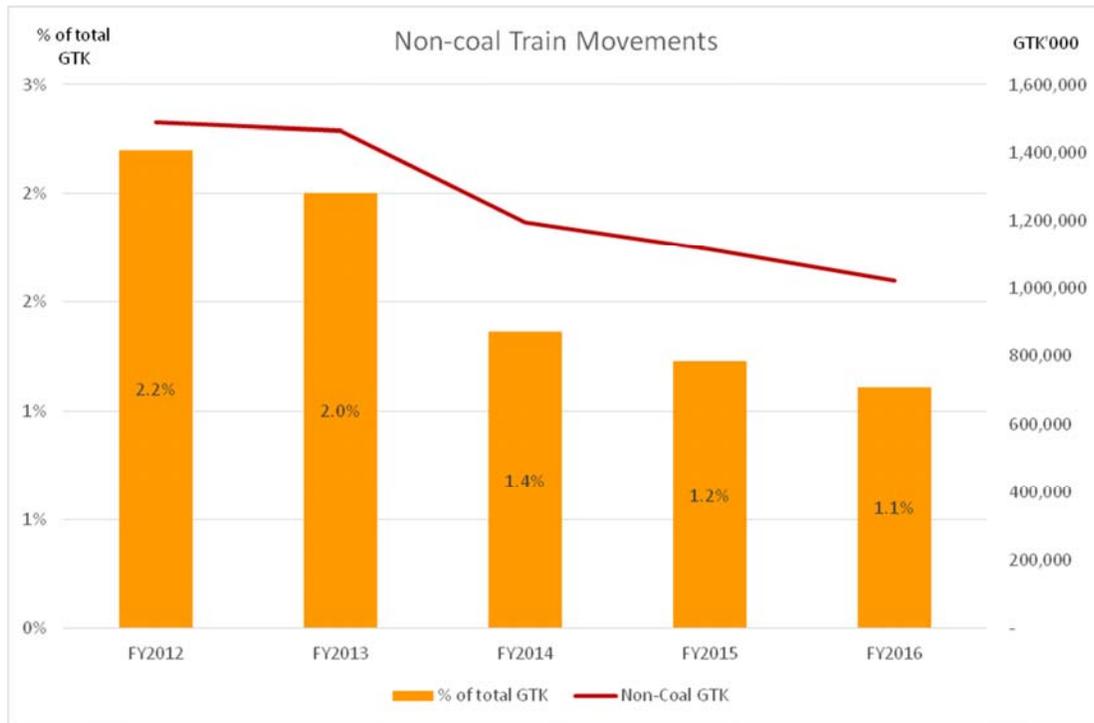
The Network Control Centre is responsible for coordinating all activities that take place on the CQCN. While the Network Control Centre has been optimised to facilitate the efficient delivery of the declared service, network controllers are also responsible for coordinating the movement of non-coal (freight and passenger) train services within the CQCN. This is incorporated into the existing workload of the network controllers, that is, no dedicated resources are required to facilitate non-coal services and if they ceased to operate, no cost savings would be realised.

Specifically, these non-coal train services:

- > do not require a dedicated network control board;
- > do not require a dedicated labour resource in the Network Control Centre;
- > predominantly run on only 120km (less than 4%) of network track kilometres; being the North Coast Line (NCL) between Parana (near Gladstone) and Rocklands (near Rockhampton);
- > operate as timetabled traffic, which means they are 'hard wired' into the master train plan and operate at the same scheduled times every week with little alteration; and
- > have declined every year over the last five years both in absolute terms and as a proportion of total volumes railed.

As illustrated in Figure 65, non-coal train services represent a minor proportion of total train movements (less than 2% of total GTK railed).

Figure 65 Non coal movements on the CQCN



While non-coal train services do not create any additional incremental costs for the CQCN, Aurizon Network has historically allocated a small portion of Network Control Centre costs to non-coal train services.

UT4 Treatment of non-coal cost allocation

Aurizon Network considers the 9% non-coal deduction applied by the QCA in its UT4 Final Decision excessive and materially overstated the incremental costs associated with managing non-coal train movements on the CQCN. As a result, Aurizon Network was not appropriately compensated for the efficient costs of delivering network control, safe working and operations services for coal within the CQCN during UT4.

The 9% reduction was obtained using completed train kilometres. An average of non-coal train kilometres over the UT3 period was divided by the sum of the estimated average of train kilometres over the UT4 period¹⁵¹ and the average non-coal train kilometres from UT3. This assumed non-coal carrying services over UT4 would be consistent with UT3. With non-coal remaining relatively static and coal volumes growing, the non-coal percentage allocation is expected to decline in future years. This reduction was not factored into the estimates.

Concurrent with the QCA’s consultant (RSM Bird Cameron) review, Aurizon Network reconsidered the approach of using kilometres as an allocator. This methodology was found to have the following deficiencies and consequently has not been used for this cost proposal:

- > it does not take account of the complexities associated with the scheduling of coal traffic compared with non-coal traffic. For example;
 - non-coal traffic is timetabled and effectively ‘hard-wired’ into the master train plan with little week to week alteration;
 - passenger train movements are prioritised over coal train movements, and coal traffic requires more ‘stop/start’ transactions in the cycle to interact with passenger trains and mine/port availability;

¹⁵¹ From the UT4 pricing model and is derived from the volume forecasts and the haul distances for each Origin/Destination pair.

- > it does not take into consideration closures for maintenance and on-track vehicles (closures is a complex task that consumes a lot of resources and is unrelated to non-coal services); and
- > it does not consider cancellations and rescheduling.

In light of the above, and the fact that non-coal train services represent less than 2% of total GTK railed, Aurizon Network proposes to exclude 2% of the costs attributable to the Network Control Centre from the network control, safe working and operations cost base for the UT5 regulatory period. This results in:

- > an annual deduction of \$1.6 million from the cost base; or
- > approximately \$6.3 million in total over the UT5 regulatory period.

Aurizon Network considers that this deduction is more than adequate to reflect the immaterial costs of coordinating non-coal train movements.

Step changes during regulatory period

- > Advanced Planning and Execution (APEX) tool
 - inclusion of support and maintenance costs associated with the successful implementation of Movement Planner electronic train diagrams; the first phase of Aurizon Network’s APEX system, which is an integrated, operational planning, scheduling and real-time traffic management system;
- > Network Control School
 - to better reflect costs incurred, an additional allowance is sought for the annual ‘network control school’. Network Controllers are a critical and highly specialised resource for ensuring the safe and efficient operation of the CQCN and it is essential Aurizon Network has adequate resources to attract and train skilled and highly competent staff to fill these roles. This is necessary to ensure the capability is maintained in short and longer time horizons and to reduce the risk of critical resource shortages. Forecast attrition levels of Network Controllers will result in significant turnover during the UT5 regulatory period. Approximately 20% of Network Controller resource base will be in or nearing the retirement window by 2021. The risk associated with shortages include reliance on overtime and leave restrictions to fill roster shortages, which may result in increased fatigue and absenteeism;
 - through the school Aurizon Network trains up to twelve prospective network controllers. An intensive theory and practical training regime is delivered over a 26 week period, followed by a mentoring programme in the ‘live run’ environment; and
 - ninety-nine percent of the network control school costs relate to the labour costs of trainees, and the two existing Network Control employees who conduct the training. Network Controllers are not salaried employees and Aurizon Network will incur incremental costs for their involvement in the training programme, that is, there is no ‘double counting’ because these costs are not part of the base labour charges captured in the Network Control cost centre.

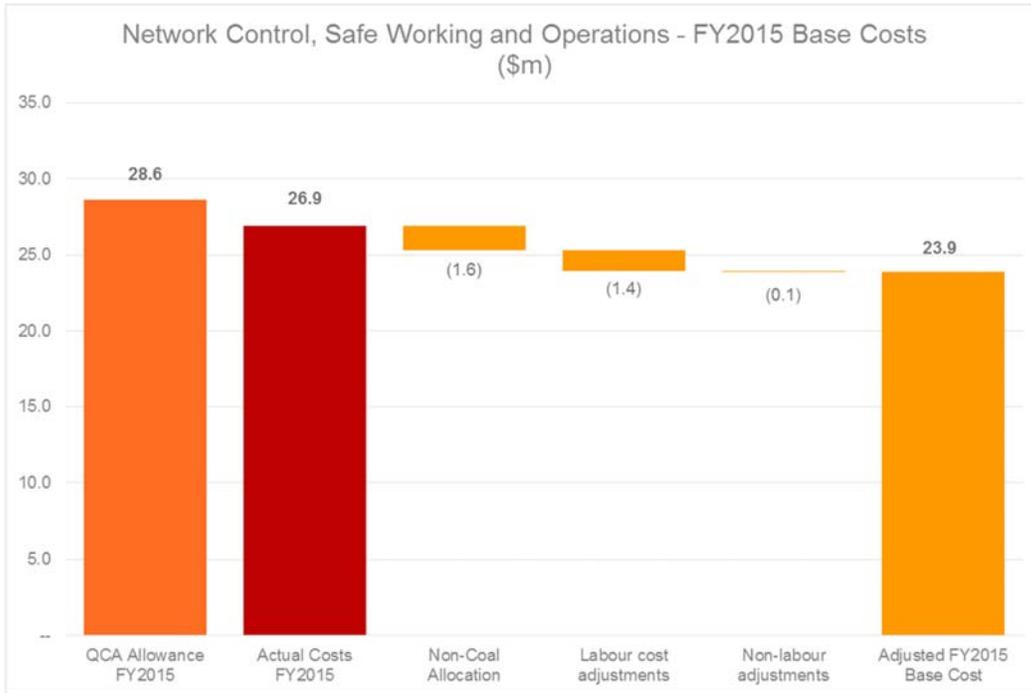
Productivity gains

- > labour cost savings of approximately \$0.5m per annum from recent yard restructures, which resulted in the consolidation of multiple yard control locations to Jilalan and Callemondah.

Adjusted base cost

The above adjustments are applied to the actual costs incurred in FY2015 to determine the ‘adjusted base cost’, illustrated in Figure 66. Actual costs incurred in FY2015 were lower than the QCA’s final allowance through tighter cost controls and the reallocation of power consumption costs from the direct cost base to corporate overhead.

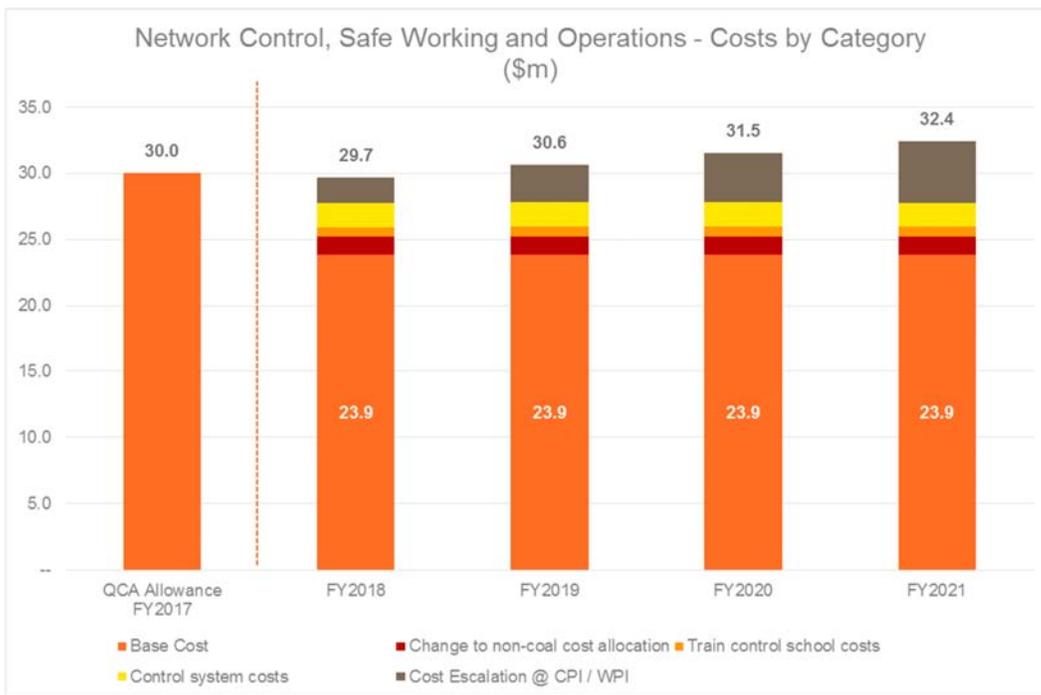
Figure 66 Aurizon Network UT5 network control, safe working and operations costs



The adjusted base cost is lower than the QCA allowance by \$4.7 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$23.9 million per annum represents the efficient cost base for the network control, safe working and operations function.

The adjusted base cost underpins the operating expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 67 Network control, safe working and operations costs by category (\$m)



10.4.2 Infrastructure Management

Approximately 9% of Aurizon Network’s total operating expenditure proposal for the UT5 regulatory period relates to the efficient costs required to manage the safety, reliability and availability of Aurizon Network’s rail infrastructure. These tasks are managed by the Network Assets team, with a wide range of responsibilities including:

- > Asset management and assurance (which covers track, civil, electrical, telecommunications and signalling assets);
- > Asset strategy (which covers regulatory compliance such as management of Rail Safety Accreditation and corridor asset management); and
- > Approval of scope for maintenance and capital activities.

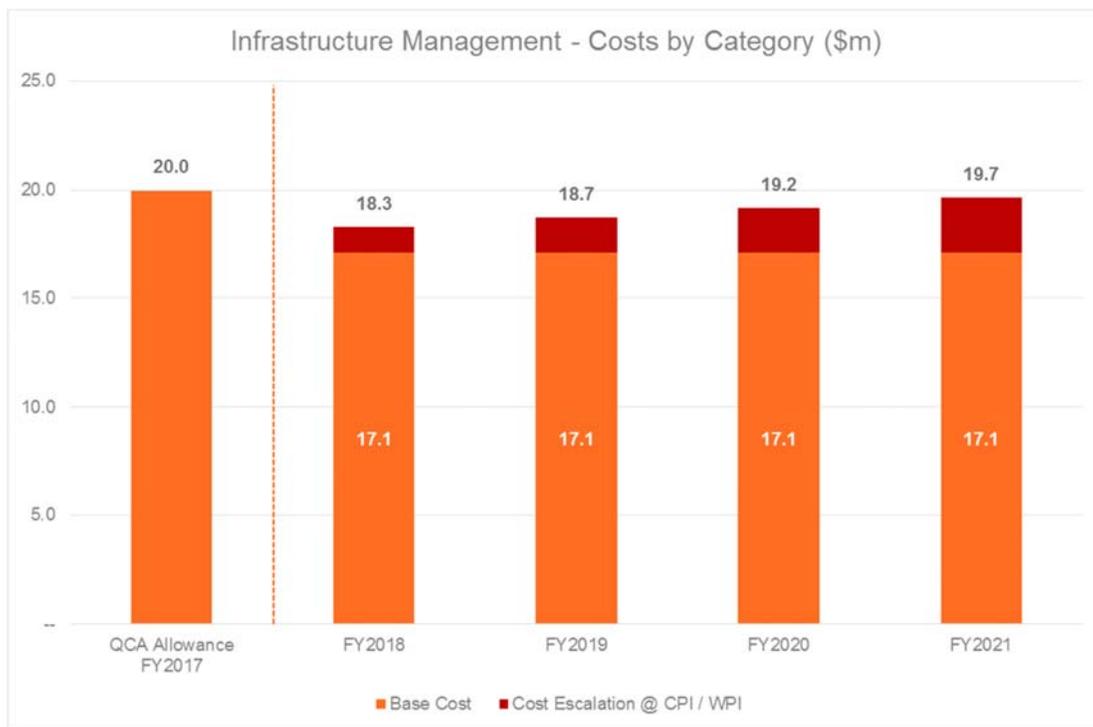
Aurizon Network’s proposed infrastructure management allowance for the UT5 period is outlined below.

Table 52 Proposed Infrastructure management costs (\$m)

	2017/18	2018/19	2019/20	2020/21
Total – Nominal	18.3	18.7	19.2	19.7
Total – Real (\$FY2015)	17.4	17.6	17.8	18.0

The UT5 proposal represents a decrease of 2% in comparison with the approved UT4 allowance for infrastructure management. This is equivalent to a 7.4% reduction in real terms (\$FY2015).

Figure 68 Infrastructure management costs by category (\$m)



The adjusted cost base

As previously stated, Aurizon Network has developed its operating expenditure proposal for infrastructure management with reference to actual costs incurred during FY2015. The cost base was then adjusted as follows.

One-off or non-recurrent costs

- > as a result of recent restructures, Aurizon Network has incorporated labour cost savings of approximately \$1.2 million per annum into its proposed infrastructure management base cost for the UT5 regulatory period. These are all operating cost savings; and
- > for clarity, any costs associated with non-regulated and capital activities (e.g. Rail Infrastructure Management costs on privately owned infrastructure) are captured through timesheets and recorded in separate cost centres and are excluded from this operating expenditure proposal.

Additions to base cost

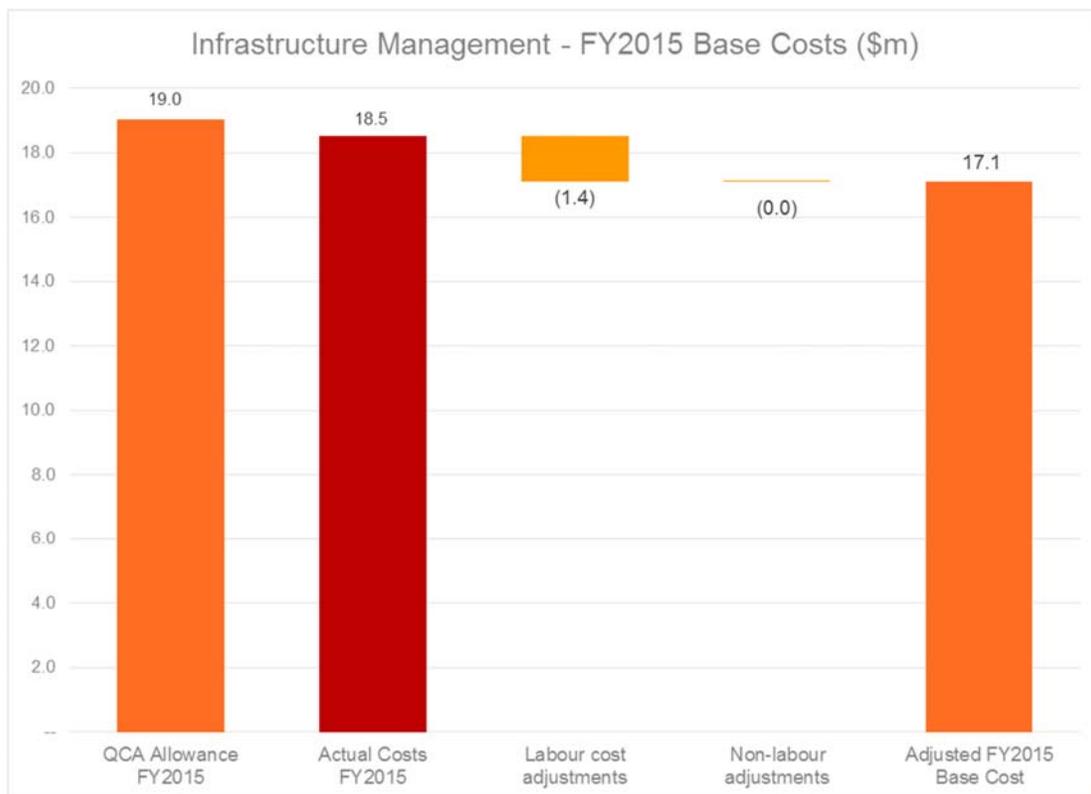
- > CPI and WPI escalation have been applied in accordance with the operating expenditure forecasting methodology; and
- > no further additions are proposed for the UT5 regulatory period.

Adjusted base cost

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the 'adjusted base cost'. This is represented graphically in the figure below.

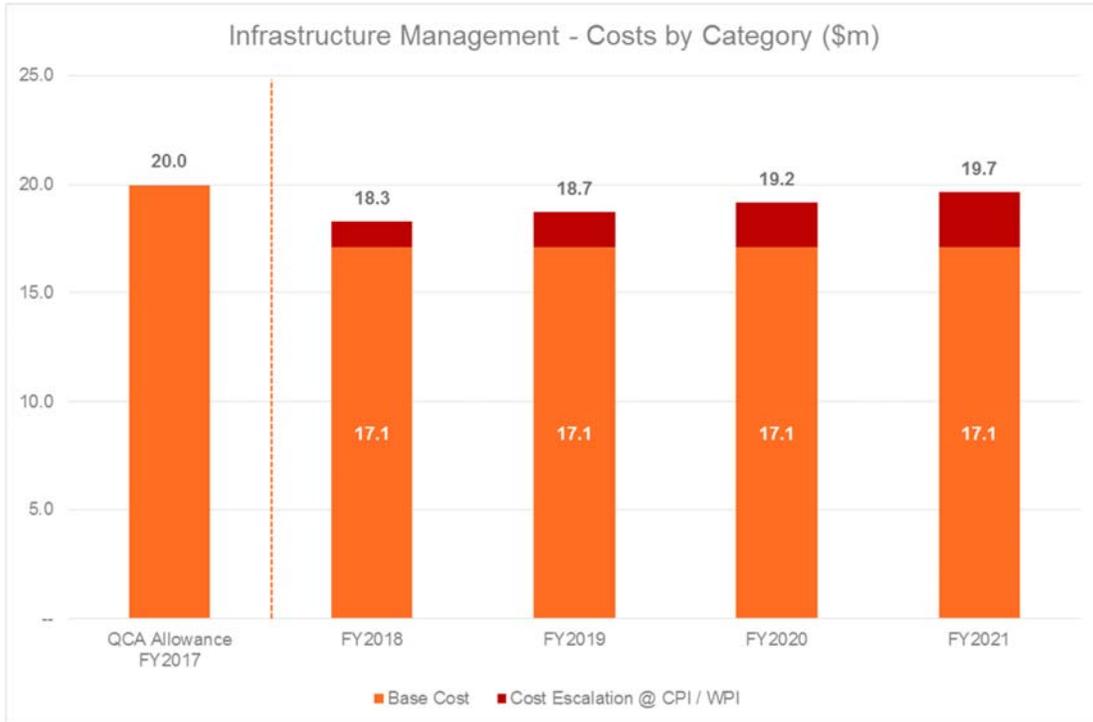
The adjusted base cost which Aurizon Network proposes to carry-forward into the UT5 regulatory period is lower than the QCA approved allowance by \$2 million in real terms. As a result, Aurizon Network contends that the adjusted base cost of \$17 million per annum represents the efficient cost base for the infrastructure management function.

Figure 69 Aurizon Network infrastructure management costs (\$m)



The adjusted base cost underpins the operating expenditure proposal for the UT5 regulatory period, which is represented graphically below.

Figure 70 Infrastructure management costs by category (\$m)



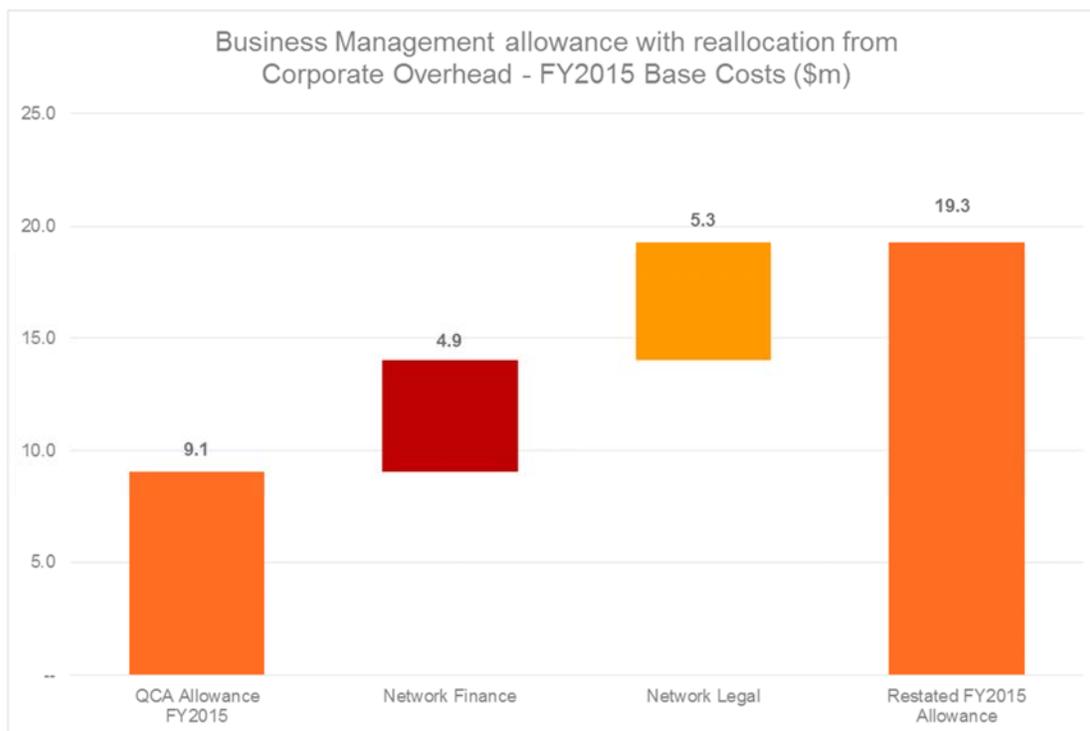
10.4.3 Business Management

The Business Management function of Aurizon Network is essential for operating a regulated below-rail business. The activities and tasks required for the business management function are provided by four core teams: Commercial; Network Finance; Network Legal; and Regulation.

Aurizon Network’s proposed business management allowance for the UT5 regulatory period represents approximately 10% of Aurizon Network’s total operating expenditure. The primary difference between regulatory periods is the inclusion of Network Finance and Network Legal costs, which were previously incorporated into Aurizon Network’s Corporate Overhead allowance for the UT4 regulatory period.

In order to facilitate a more accurate comparison of the cost movement between the UT4 and UT5 regulatory periods, Aurizon Network has restated the FY2015 allowance, as outlined in Figure 71 on the next page.

Figure 71 Restated FY2015 business management allowance (\$m)



On the basis of the restated allowance, business management costs proposed for the UT5 regulatory period represent a 10.3% increase relative to UT4. The primary drivers of this increase relate to:

- > the inclusion of 50% of the costs associated with the Major Projects team, which were omitted from Aurizon Network’s UT4 proposal;
- > an increase in Planning and Development costs to account for the additional obligations imposed by the QCA in the UT4 Final Decision (e.g. baseline capacity assessment, strategic train plan, consultation obligations for the development and associated review of the baseline capacity assessment, system operating parameters and the network development plan); and
- > unless otherwise outlined in Table 48 above, non-coal cost allocations have been set at 10% for all years of UT5, which is consistent with the QCA approved rate for FY2017.

Table 53 Proposed UT5 business management costs (\$m)

Business management	2017/18	2018/19	2019/20	2020/21
Total – Nominal	21.4	22.0	23.2	23.2
Total – Real (\$FY2015)	20.3	20.6	21.5	21.2

The adjusted cost base

As previously stated, Aurizon Network has developed its operating expenditure proposal for this function with reference to actual costs incurred during FY2015. To arrive at the business management adjusted base cost the following process was adopted:

One-off or non-recurrent costs

- > as a result of recent restructures, Aurizon Network has incorporated labour cost savings of approximately \$109,000 per annum into its proposed business management base cost for the UT5 regulatory period;
- > approximately \$74,000 of non-recurrent, non-labour costs have been removed.

Additions to base cost

- > CPI and WPI escalation have been applied in accordance with the operating expenditure forecasting methodology;
- > the Network Regulation team does not expect to be involved in any non-regulated activities during the UT5 regulatory period. As a result, Aurizon Network proposes to reduce the cost allocation for non-regulated activities from 10% to 0%; and
- > commercial costs have been reduced by 10% to reflect the Commercial team’s involvement in some non-regulated activities. This is consistent with the non-coal cost reduction applied by Aurizon Network in FY2017, which was approved by the QCA in the UT4 Final Decision.

Step changes during regulatory period

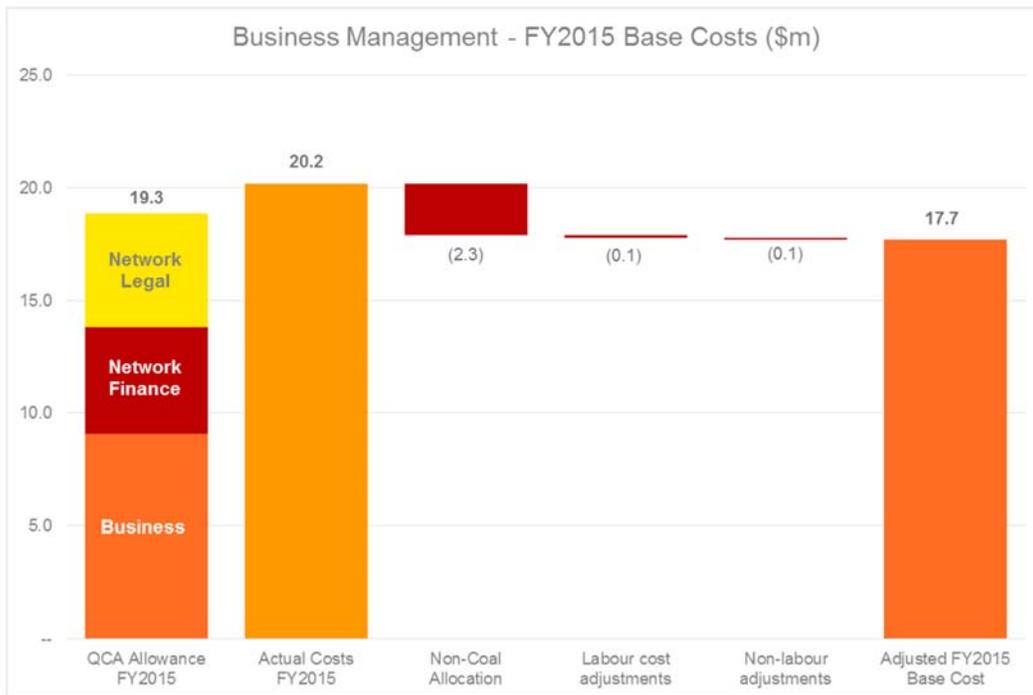
- > costs associated with the Major Projects team were excluded in their entirety from UT4. Due to that team's ongoing involvement in regulatory processes (such as the development of SUFA) Aurizon Network is seeking the recovery of 50% of the costs of providing this business management function. 50% represents the work undertaken on regulated activities;
- > the costs for Network Finance and Network Legal have been added to the proposed operating expenditures, having previously been incorporated into Aurizon Network’s Corporate Overhead allowance;
- > additional Planning and Development costs as a result of the UT4 Final Decision, specifically additional capacity assessments; and
- > costs associated with the conditions based assessment are categorised as business management costs. These costs were separately specified in the UT4 allowances.

The adjusted base cost

The above adjustments have been applied to the actual costs incurred in FY2015 to determine the ‘adjusted base cost’. This is represented graphically in Figure 72.

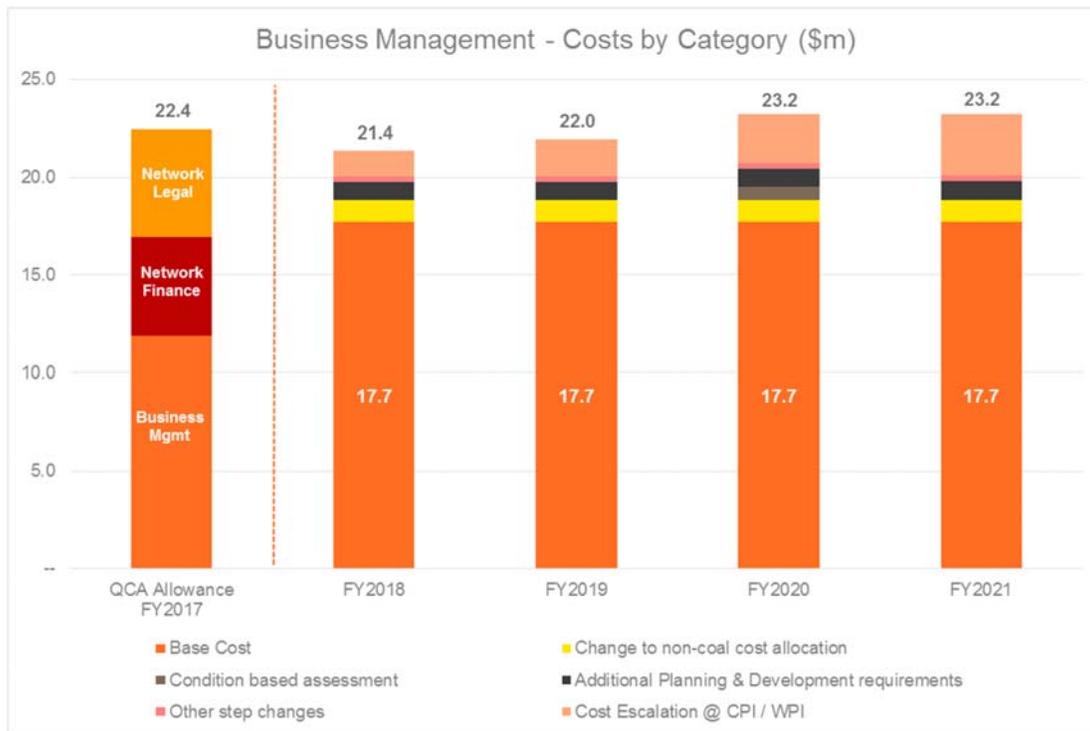
The adjusted base cost is lower than the QCA allowance by \$1.6 million in real terms, and as a result, Aurizon Network contends that the adjusted base cost of \$17.7 million per annum represents the efficient cost base for the business management function.

Figure 72 Aurizon Network business management costs (\$m)



The adjusted base cost underpins the operating expenditure proposal for the UT5 regulatory period, which is represented graphically in Figure 73.

Figure 73 Business management costs by category (\$m)



10.4.4 Summary of efficient direct operating expenditures

Table 54 below illustrates Aurizon Network’s direct operating expenditure proposal (in both nominal and real terms) relative to the QCA’s approved UT4 allowance for efficient costs. The business management allowance for FY2015 has been restated to include allocation of Network Legal and Network Finance costs to facilitate a consistent comparison between UT4 and UT5.

Table 54 Proposed UT5 direct operating expenditures (\$000)

Direct Cost Category	2014/15 (QCA)	2014/15 restated	2017/18	2018/19	2019/20	2020/21
Network Control, Safe working and Operations	28.6	28.6	29.7	30.6	31.5	32.4
Infrastructure Management	19.0	19.0	18.3	18.7	19.2	19.7
Business Management	9.1	18.9	21.4	22.0	23.2	23.2
Total – Nominal	56.7	66.5	69.4	71.3	73.9	75.3
Total – Real (\$FY2015)	56.7	66.5	65.9	66.9	68.5	68.9

10.5 Indirect operating expenditures

10.5.1 Corporate overhead

Introduction

The below rail regulated business activities of Aurizon Network are undertaken in a separate company, Aurizon Network, a subsidiary of Aurizon Holdings Limited. Aurizon Holdings Limited Group (the “Group”) operates under a functional organisational structure where overhead is incurred centrally and not within the operating business functions. As a result there are certain non-operational costs incurred within the Group that would reasonably be expected to be incurred by Aurizon Network if it operated on a stand-alone basis. A portion of these costs should, therefore, be attributed to the below rail business.

On this basis a robust cost allocation methodology was developed for UT4, which quantified efficient corporate overhead costs attributable to the provision of services to the CQC as if Aurizon Network operated on a stand-alone basis. The approved methodology for UT4 was as follows:

1. Identification of the activities and functions that would be incurred by a publicly listed, stand alone, rail infrastructure business, and the costs for these activities and functions ascertained. The key test applied is, if the regulated below rail network was to operate as a stand-alone business, what activities within these functions would need to be undertaken and hence what costs would be incurred?
2. Allocation of the costs associated with these activities and functions to the regulated below rail network business.
3. Confirmation of the reasonableness of the allocable confirmed by an independent benchmarking analysis conducted by Ernst & Young (EY), which was based on a number of sources including the American Productivity and Quality Centre’s Open Standards Benchmarking Collaborative Database, the Global Audit Information Network Benchmarking Survey and data from individual organisations approached for the purpose of the benchmarking study.

Savings from economies of scale and benefits from efficiencies and cost savings of specific business areas within the Group flow through to Aurizon Network using this methodology.

The QCA and its consultants reviewed the UT4 methodology in detail and determined that, with the amendments made by the QCA (which have been followed in this submission), it resulted in an allocation of corporate costs that were efficient.

This methodology is 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.

The methodology for the corporate cost allowance proposal for UT5 substantially follows the approved methodology for UT4. The main differences are:

- > Network Finance and Network Legal costs included in Business management rather than corporate overhead;
- > allocator based on transactions processed has been applied to Accounts Payable and Accounts Receivable functions rather than the direct costs allocator; and
- > there has been more detailed analysis of Enterprise Real Estate costs to identify costs specifically attributable to Network.

Each of the steps in the methodology are discussed in turn below.

Corporate overhead base

The corporate overhead base for the purposes of the UT5 regulatory period includes all of those functions performed within the Group which Aurizon Network would otherwise undertake if it were to operate as a stand-alone entity. The analysis required to create a corporate cost allowance involves the review of 161 individual cost centres, which outlines an overall annual cost of ██████ m. These align with the non-operational functions of the Group's organisational structure and set out in the following table. A more detailed description of these corporate functions is given in Appendix R.6.

Table 55 Corporate function

Function	Number of cost centres	FY2015 Actual costs (\$m)
Board and CEO	2	████
Finance, including:	42	████
> Treasury and Tax		
> Finance Shared Services (Accounts Receivable, Accounts Payable, Payroll)		
> Investor Relations		
> Enterprise Procurement		
> Group Accounting, Planning and Reporting		
Enterprise Real Estate	30	████
Human Resources	41	████
Enterprise Services, including	46	████
> General Counsel		
> Company Secretary		
> Safety, Health & Environment		
> Internal Audit		
> Information Technology		
	161	████

The cost allocation methodology detailed in this submission results in approximately ██████, being allocated to the below rail business.

The proposed corporate cost allowance has been prepared with FY2015 as the base year. The costs of the FY2015 base year have been adjusted by:

- > deducting redundancy costs incurred during that year (as one-off costs); and
- > including cost savings that were built into the budget set for FY2016 to take account of future anticipated savings.

Transformational Activities

In order to create sustainable value for the Group's shareholders, there is a drive within the Group to decrease costs and improve the operating ratio (and hence the EBIT margin). Savings of \$57 million in Aurizon Group corporate costs from transformational activities were achieved during the FY2014 and FY2015 years, including:

- > reduction in labour costs from reduced FTEs;
- > reduction in professional services; and
- > rationalisation of property portfolio and improved procurement practices.

Further savings of \$60-\$80 million have been targeted for the corporate areas between the FY2016 and FY2018. This includes restructures in the key support functions of Human Resources, Finance, Enterprise Real Estate, Safety, Health & Environment and Procurement, as well as continued real estate consolidation and rationalisation.

It should be noted that there is not a direct impact on the Network cost allocation from these cost saving initiatives. It is expected that the impact on Aurizon Network of transformation activities would be less than █% of the savings achieved by the Group. Of the █ specific savings targets included in the budget for FY2016, there is a █ on Network as a large portion of the savings is targeted for:

- > Above rail activities within Finance, and
- > Human Resources and Safety, health and environment are allocated to Network based on FTEs (█).

Given that Finance Shared Services are already largely outsourced, further savings are not expected from this area. Savings within:

- > the real estate portfolio are more likely within the Aurizon Operations function. Using the cost allocation methodology on which this submission is based, of the █ cost base for Enterprise Real Estate, there is only █ shared between Aurizon Network and the rest of the Group using allocators, with the balance being directly identifiable to either Aurizon Network or the rest of the Group; and
- > Information Technology; Aurizon Network has sought an independent assessment of the efficient costs for the company as a stand-alone entity. Hence reductions in the corporate cost base for this function should not impact upon Aurizon Network's efficient operating costs unless there is changes to the scope of IT services that the company utilises. Hence care needs to be taken if attempting to forecast the impact of future cost savings by the Group onto the Network corporate cost allocation.

Cost estimation methodology

The cost allocation methodology is primarily aligned to the process that QCA reviewed for UT4. The Group's cost base has been analysed at a cost centre level to determine which costs are to be included and excluded. Costs that are included are:

- A. directly related to below rail network operations (for example, depreciation of Network buildings); or
- B. not directly related to below rail network operations but which do provide services to the below rail network business and/or would be required for a stand-alone regulated business;
- C. costs that are not directly related to below rail network operations and which provide no services to the below rail network business are excluded (for example, Above Rail Finance).

Consideration has been given to the activities performed within each cost centre when choosing a driver for allocating costs to the below rail business where they cannot be specifically identified (category (b) above). These are:

- > FTEs - below rail network FTEs as a percentage of total Aurizon Holdings Limited Group FTEs (█ %)
- > Accounts Payable (AP) Transactions – number of vendor payments processed for Network as a percentage of vendor payments processed for the Aurizon Holdings Limited Group (█ %);
- > Accounts Receivable (AR) Transactions – number of customer receipts processed for Network as a percentage of customer receipts processed for the Aurizon Holdings Limited Group (█ %); and
- > Direct costs – direct operating costs of the below rail network business as a percentage of the direct operating costs of the operational functions of the Aurizon Holdings Limited Group (█ %). Direct costs have been used where no causal driver could be identified for allocation of costs from that particular cost centre to Aurizon Network.

To be consistent with the QCA's methodology for UT4 capital costs have been excluded from the calculation. However, Aurizon Network believes that capital costs should also be included as a driver as this represents a large

portion of expenditure for the infrastructure intensive business. The allocation percentage would be ■■■% if capital costs were also included.

To be consistent with the methodology approved for UT4, the blended allocator has not been used to calculate the submitted corporate cost allowance. However, Aurizon Network also believes that the use of a blended allocator (comprising revenue or direct costs, FTEs and assets) as proposed for UT4 still represents an appropriate driver for the allocation of corporate costs for which no causal driver can be determined.

Aurizon Network continues to outline that there is regulatory precedent for the use of a blended allocator for the allocation of costs between regulated and non-regulated segments of the business. If a blended allocator were used it would be approximately ■■■% for the UT5 regulatory period. Aurizon Network believes there is a risk that, by not incorporating capital costs into an allocator (either into the direct costs allocator or as part of a blended allocator), the subsequent revenue decision from the QCA, will not allow for the recovery of at least the efficient costs that are required by a stand-alone infrastructure business. Additionally, the ongoing use of the direct cost methodology, which implicitly include efficiencies, will eventually provide an outcome that will be below the efficient cost level and may impact the sustainability of the provision of those services.

The chosen allocators have been applied to the forecast costs for the four years of the UT5 regulatory period. A new allocation percentage has not been calculated for each year.

Nominal proposed cost estimates have been obtained by escalating the adjusted base year cost forecasts in FY2015 dollars by the appropriate escalator. Costs have been extrapolated to FY2018 and to FY2021 using WPI for labour costs and CPI for non-labour costs.

The allocation methods applied to each functional area are outlined in Table 56.

Table 56 Allocators of corporate overhead

Corporate Function	Allocation method	Consistent with UT4?
Board & CEO	Direct costs	Yes
Finance		
> CFO, Treasury, Tax & Insurance, Investor Relations, Enterprise Procurement	Direct costs	Yes
> Finance Partner Marketing & Operations	Nil	Yes
> Network Finance	Included in Business management costs	No
> Finance Shared Services		No – Direct costs used for UT4
– Accounts Receivable	AR transactions processed	
– Accounts Payable	AP transactions processed	
– Payroll	FTEs	
> Enterprise Real Estate	Property and associated costs directly identifiable FTEs applied to non-directly identifiable costs	No – More detailed analysis to identify specific network costs
> Group Accounting, Planning and Reporting	Nil	Yes
Human Resources		
> Executive Vice President (EVP)	FTEs	Yes
> Including share-based payments	Direct costs	
> Business partner teams, Organisational Capability, Enterprise support	FTEs	Yes

Corporate Function	Allocation method	Consistent with UT4?
> Brand and Communications	Direct costs (excluding Corporate Sponsorship and Events – nil allocation)	Yes
Enterprise Services		
> EVP, Company Secretary, Internal Audit, Information Technology	Direct costs	Yes
> General Counsel (excluding Network Legal)	Direct costs	No – Moved to Business Management
> Network Legal	Included in Business management costs	
> Safety, Health and Environment, Risk Services	FTEs	Yes

In line with the approval of UT4, the following functions have not been included in the cost allocation:

- > Strategy;
- > National Policy; and
- > Sustainability and Innovation.

Benchmarking

An internal review of the most recent costing methodologies used by other regulated companies (by reference to their published Cost Allocation Methodologies) shows that the use of allocators is common to determine the regulated entities share of corporate costs, and that similar approaches have been used as that now proposed by Aurizon Network for UT5. This regulatory precedence supports the cost allocation methodology that is proposed in this submission.

Some examples are listed in Table 57 below.

Table 57 Analysis of the allocation methods of regulated companies

Company	Allocation Method for Shared Costs
Jemena Electricity Networks (Vic) Cost Allocation Methodology November 2014	Proportion of direct costs for each applicable service classification to total direct costs.
Powercor Australia Limited Cost Allocation Method April 2014	A three factor formula comprising: value of RAB, distribution of revenue, and customer numbers is used to allocate costs of management team that provides services to both Powercor and CitiPower between businesses.
CitiPower Limited Cost Allocation Method October 2013	For the allocation of costs to different categories of distribution services, various allocators are used, including: <ul style="list-style-type: none"> • Expenditure • Revenue • Regulated assets • FTEs

Company	Allocation Method for Shared Costs
Endeavour Energy Cost Allocation Method November 2013	<p>Corporate overheads and shared business unit costs are allocated to the network business by a combination of causal factors relative to the nature of the expense type, for example, call volumes to call centre, and so forth. Where a causal basis cannot be determined overheads are allocated on the basis of the weighted value of costs attributed to distribution and non-distribution services.</p> <p>The network business's share of corporate overheads are then allocated to the relevant service categories using a similar approach as with network overheads, that is, allocated on a pro rata basis, based on the proportions of the direct or specific allocation of network costs (stages 1 or 2) to each service category.</p>
Energex Cost Allocation Methodology Effective 1 July 2015	<p>A three factor formula comprising assets, headcount and revenue has been used for the cost allocation between the regulated & non-regulated business.</p> <p>Energex has determined that regulated overheads are allocated to regulated services on the basis of total direct spend as this reflects a strong correlation with the consumption of the overhead.</p>
SA Power Networks Cost Allocation Method September 2012	<p>A causal driver is applied when one can be identified, for example:</p> <ul style="list-style-type: none"> • Accounts payable – transaction volumes • Payroll – FTEs • IT - IT systems and FTE usage rates • Real Estate – Office and depots costs on FTEs • HR – FTEs <p>Where no causal driver can be identified costs allocated on the basis of:</p> <ul style="list-style-type: none"> • Weighted average of all allocators for the particular functional area; or • Total revenue

10.5.2 Aurizon Network's approach to benchmarking

For the UT4 submission and accompanying Revenue Proposal, EY benchmarked the estimated Aurizon Network corporate overhead for FY2013 against the top, median and bottom quartile performers across:

- > all industries;
- > all industries of a similar size in terms of revenue; and
- > the distribution and transportation industry.

Various measures such as 'cost per \$1,000 of revenue' or 'cost as a percentage of revenue' were selected as the preferred benchmark types as they allow for easy and meaningful comparison across geography, function and industry. The 'costs as a percentage of revenue' metric was chosen for the benchmarking analysis due to its comprehensive data sets built from significant sample sizes of participant companies for benchmarking purposes. Other metrics were not readily available across all the corporate service categories required for Aurizon Network.

The benchmarking analysis compiled by EY involved matching corporate activities in the APQC database to functions of the Aurizon Network business. This enabled EY to construct a reliable comparison of costs on a like for like basis, and as a result, this benchmarking is referenced below in the analysis of costs included in the allowance for some of the functional areas.

No alternative approach was proposed by the QCA as part of the UT4 review process. For the purposes of UT5, and given the close proximity to the approval of UT4, Aurizon Network has not considered it sensible or an efficient use of funds to repeat such an analysis.

Proposed total overhead costs

Aurizon Network has an obligation to demonstrate to its stakeholders and the QCA that its forecast costs are efficient. Being part of an ASX listed company, achieving efficient costs is also integral to delivering value to shareholders, noting that the business is publicly accountable for its financial results and any variances between

budgets and forecasts. This is underpinned by the expectations from both debt and equity investors that this is managed in line with Aurizon Network's credit metrics, which has a BBB+ credit rating.

In total, the proposed corporate UT5 costs are less than an escalation of the UT4 allowances which were approved by the QCA as efficient costs.

The proposed corporate allowance for the UT5 regulatory period is summarised below.

Table 58 Corporate costs by function (\$m) (nominal dollars)

Functional Area	2017/18	2018/19	2019/20	2020/21
Managing Director/CEO	2.1	2.1	2.2	2.2
Finance	3.0	3.1	3.2	3.3
Enterprise Real Estate	14.8	15.4	15.8	16.0
Human Resources	3.7	3.8	3.9	4.1
General Counsel and Company Secretary	1.5	1.5	1.6	1.6
Information Technology	18.0	18.3	18.6	18.9
Safety, Health and Environment	2.5	2.6	2.6	2.7
Other Enterprise Services	3.4	3.6	3.7	3.8
Total	49.1	50.5	51.6	52.7

Analysis of costs by functional area

Board and CEO

The proposed costs are in line with UT4 costs approved by the QCA as efficient. There has been no change in methodology used to determine these costs.

The Board and Chief Executive Officer (CEO) costs included in the corporate cost allowance for Aurizon Network for the FY2018 are \$2.1 million, based on the applying the direct cost percentage to the Group CEO and Board costs. The costs of EVP Network (Network CEO) have not been included in the corporate cost allowance or business management costs to avoid the perception of duplication.

For the FY2015 year, total remuneration for the CEO of the Aurizon Holdings Group was \$5.4 million, including short-term and long-term incentives.¹⁵² Remuneration for non-executive Board members other than the Chairman is \$190,000 including superannuation. Directors' fees for the Chairman are \$475,000.¹⁵³ Non-executive directors' fees have not increased since 1 July 2012. An aggregate fee of \$2.5 million has been approved for the directors of the Aurizon Holdings Limited Board.

As well as being significantly lower than actual costs paid by the Group, the Board and CEO costs included in the proposed cost allowance are also significantly lower than benchmarking prepared by EY as part of the UT4 for a company of a similar sized to Aurizon Network.

The benchmarking report prepared by EY (based on data from 2012) referred to benchmark CEO and Board costs of \$3.2 million for ASX listed companies within 50%-200% of Aurizon Network revenue.¹⁵⁴ This comprised:

¹⁵² Aurizon 2015 Annual Report p36

¹⁵³ Aurizon 2015 Annual Report p35

¹⁵⁴ Ernst & Young – Benchmarking of Corporate Overhead Costs for Aurizon Network Operations 22 January 2013

- > CEO fixed remuneration: \$1,078,000;
- > CEO short-term incentive: \$519,000;
- > CEO long-term incentive: \$576,000; and
- > Board: \$984,000 (based on a Chairman fee of \$241,000; a non-executive director fee of \$124,000; and a median number of non-executive directors per company of six).

Based on internal analysis of FY2015 financial statements for a sample of 15 ASX listed companies¹⁵⁵ within a range of 50%-200% of Aurizon Network's revenue, the average total costs for the Board and CEO was \$2.6 million. This comprised CEO remuneration, (including short-term and long-term incentives) of \$1.8 million, and costs for a Board (five people including Chairman) of \$0.8 million. Consideration was also been given to the KMP Report prepared by Egan Associates in July 2015,¹⁵⁶ which showed that the average remuneration for non-executive directors for Top 50 ASX companies is \$0.8 million. On the basis of this analysis, the proposed cost allowance for Board and CEO for UT5 is efficient.

Finance

On a comparable basis to the benchmarking performed by EY for the UT4 submission (excluding Enterprise Real Estate and Enterprise Procurement, and including Network Finance) overall proposed costs for Finance are \$8.0 million for FY2018. This is in line with the benchmark of \$8.5 million median value for the Distribution/Transport industry. This benchmarking was performed in January 2013. Applying the appropriate escalation, the proposed cost estimate is well below this benchmark. It is also noted that offsetting the effects of inflation will be a cost saving from expected down-sizing of this function in other organisations. Costs of the Finance function within the Group have decreased as part of the Group's drive for cost efficiencies since the UT4 was submitted.

The amount included within the corporate overhead allowance for finance, only includes the following functions:

Treasury and tax:

Aurizon Network has approximately \$3 billion of debt at June 2016 that requires a Treasury function to assist with the management of this debt. This management includes bank facilities and the medium-term notes issued in both Australian and Euro markets, as well as interest rate swaps and cross currency interest rate swaps.

Treasury and Tax costs included in the corporate cost allowance for FY2018 are \$0.9 million and have been calculated by applying the direct cost percentage to the Group Treasury and Tax costs.

This is considered to represent an efficient cost, taking into account the nature of the work and market salary information. As well as staff labour costs, costs in this division include bank charges, computer software (treasury systems) and consultancy and professional services as required. Both of these divisions are integral to the Aurizon Network business. The application of the direct cost percentage results in an allocation of costs disproportionate to the debt balances and effort involved in Treasury activities by staff in this function. Given this, the allocation is considered conservative and efficient.

Finance shared services:

Finance shared services includes accounts receivable, accounts payable, payroll processing and compliance, credit card management and reconciliations, and motor vehicle fleet management.

Accounts receivable and accounts payable processing are currently primarily outsourced by Aurizon as this is the most cost efficient arrangement. The costs within this sub-function are primarily labour and on-costs, outsourcing and computer software amortisation.

¹⁵⁵ The companies in the sample are: Cardno Limited, QUBE Holdings Limited, Mineral Resources Limited, Whitehaven Coal Limited, AusNet Services (Distribution) Ltd, Liquefield Natural Gas Limited, Beach Energy Ltd, Breville Group Limited, Evolution Mining Limited, Greencross Limited, Oz Minerals Limited, IOOF Holdings Ltd, Adelaide Brighton, Northern Star Resources Ltd and Sandfire Resources NL.

¹⁵⁶ Egan Associates - The KMP Report Issue 12 – July 2015 Non-Executive Directors' Remuneration ASX Top 300 and NZ Top 50, page 6

The relevant costs included in the corporate cost allowance for FY2018 are \$0.8 million, calculated by applying:

- > the AP transactions processed percentage to the Accounts Payable division;
- > the AR transactions processed percentage to Accounts Receivable division; and
- > the FTEs percentage to payroll costs.

Investor relations:

The Investor Relations Team are a source of market investment intelligence. They manage the performance and strategic communications for the investment community. As an ASX listed company it is imperative to keep both debt and equity investors and analysts informed about the performance of the company to ensure future sources of funding for Aurizon Network.

The Group has debt capital market disclosures that are required within Australia and Singapore. Aurizon Network's issuance of Australian and European Medium Term Notes in September 2014 and May 2016, requires these disclosures.

As well as employee benefits expenses, the costs of the Investor Relations function include results presentation to analysts and debt and equity investor roadshows (made domestically and overseas), consultancy costs for research and reports on market and investor sentiment and conditions, and monthly shareholder analysis.

Using the direct cost allocator, the corporate cost allowance FY2018 includes an amount of \$0.4 million for Investor Relations. While it has not been possible to benchmark this function, it is considered the costs are efficient based on the scope of the required activities listed above.

Enterprise procurement:

The key function of the Enterprise Procurement team is to deliver best cost commercial outcomes across all Aurizon's supplier expenditures through a sustainable, systematic and disciplined sourcing process and active management of recurring spend categories. The team also maintains commercial relationships with all suppliers under contract. Procurement plays a significant role in the sourcing of contracts and alliance partners for infrastructure development to ensure Aurizon Network engages cost effective suppliers.

For approximately 70% of the forecast capital renewals spend for FY2017-FY2019 and approximately half of maintenance costs relates to non-internal labour, the Enterprise Procurement division is involved. This division is also extensively involved in the renegotiation of traction contracts, which represents a significant part of the expense base for Aurizon Network.

Applying the direct cost percentage to the Group Procurement costs, the amount included in the corporate cost allowance for FY2018 is \$1.7 million.

The EY benchmark median value for the Distribution/Transport industry was \$1.2 million, increasing to approximately \$1.3 million after applying appropriate escalation.

Though the proposed cost for this function is slightly higher than the benchmark, there are other functions such as CEO/Board and Human Resources within the corporate cost proposal, which are well below the benchmark. This should be viewed holistically when assessing the efficiency of the corporate cost allowance using the allocation methodology.

Group Accounting, Planning and Reporting:

The primary responsibilities of the Group Planning & Reporting team are described in Appendix R.6. As these responsibilities are similar to what the Network Finance team provides for the below rail business, the costs of this team have not been included in the cost allowance.

It should be noted, however, that this corporate finance team performs the following tasks that are not performed by Network Finance:

- > 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.

Other finance costs:

\$0.4 million for Finance Graduate Accountants and Admin Resource Centre. The employee benefits expenses for graduates rotating through Finance is an efficient cost, as if not for the graduates undertaking these rotations, it would be necessary to employ further more experienced staff. Administrative staff have been pooled together in a team to achieve efficiencies in services and costs.

Chief Financial Officer

The proposed allowance of \$0.4 million represents the employee benefits expense (excluding short-term and long-term share based incentives which are included as part of Human Resources) of the CFO of the Group. The Hudson Salary Guide 2015 shows the average salary for a CFO in Commerce/Industry to be in excess of \$170,000.¹⁵⁷ This is a base salary, excluding superannuation and bonuses from incentive schemes. An allowance of \$0.4 million is not unreasonable when cash bonus, travel and consultancy/professional fees are added to an average base salary.

Insurance team

\$0.1 million for the Insurance team. This team is responsible for placement of Aurizon's insurance coverage, liaising with the insurance broker and management of claims.

Enterprise Real Estate:

The Enterprise Real Estate (ERE) team have the functional accountability for the Aurizon built environment nationwide. ERE have identified and validated the occupancy footprint of all Aurizon Network operational sites, property and facility related assets in order to confirm property and facility maintenance costs for inclusion in this overhead cost proposal. The analysis completed by ERE for the purposes of UT5, has resulted in a more accurate cost allocation for these services within the corporate cost allocation.

The costing methodology and calculated costs for Aurizon Network's allocation of the Group's ERE costs are presented in the following table. Aurizon Network can only make a comparison with the UT4 proposed costs, as the QCA has not disclosed the composition of the approved UT4 allowance.

¹⁵⁷ <http://au.hudson.com/portals/au/documents/Salary%20Guides/SalaryTables2015-Aus-AF.pdf>

Table 59 UT5 and UT4 ERE costs

Component	Proposed FY18 \$m	Proposed UT4 \$m	Methodology
Housing	1.0	1.6	<p>Aurizon Network provides housing to approximately 85 employees in regional locations. Aurizon is involved in the housing market in remote areas because of the need to provide incentives to fill positions in remote locations through both guaranteeing the availability of accommodation and providing it at subsidised rental.</p> <p>Costs of the Aurizon housing portfolio are maintained in a centralised database. The total occupancy costs include rates, land tax, rent (if houses are externally leased), depreciation (if owned), maintenance and management costs. Properties relating to Network have been identified by occupants' cost centre.</p> <p>Operational maintenance is scheduled at the beginning of each financial year to address compliance and safety matters with a nominal sum allocated for reactive maintenance. The total occupancy costs are captured via a WBS structure within the general ledger.</p> <p>In 2013, it was identified that the Aurizon housing portfolio had a maintenance backlog of approximately [REDACTED] million (as assessed by external consultants in 2013). No portion of these costs have been included in the proposed allowance as all of the outstanding matters may not be addressed during the UT5 regulatory period. The maintenance costs included in the proposed allowance are based on FY2015 actual spend which is indicative of a base year spend.</p>
Depreciation of property facilities	0.9	1.4	<p>Properties identified by cost centre, with the total estimated cost being the aggregate of Aurizon Network cost centres' depreciation for FY2015 and indexed to and for the UT5 regulatory period.</p>
Corporate sites (commercial office tenancy)	3.3	3.4	<p>Costs for corporate sites are based on actual costs from FY2015 multiplied by Aurizon Network's occupancy share (proportion of Aurizon Network employees against total available occupancy). Depending on tenure, these costs can include rent, outgoings, utility charges, compliance reporting, land tax, repairs and maintenance of the following buildings:</p> <p>Leasehold: 192 Ann Street, Brisbane (occupancy share has been adjusted to include corporate employees based in 175 Eagle Street who would be included in an Aurizon Network stand-alone company) – to September 2018</p> <p>Leasehold: 900 Ann Street, Brisbane – from September 2018</p> <p>Owned: Mackay office and disaster recovery facility</p> <p>Owned: 320 Murray Street, Rockhampton</p> <p>Further detail on corporate sites is provided below.</p>
Operational sites	5.2	-	<p>The majority of operational sites are owned sites occupied by multiple business units. The costs were sourced from last financial year and distributed to Aurizon Network based on a prorate allocation (proportion of area occupied by Aurizon Network against total land area of site). Costs associated with operational sites include licence costs, land tax, facility maintenance and corporate contracts, council rates, electricity and outgoings (for leased sites).</p> <p>Costs relating to operational sites (including sites within the rail corridor) were not included in the UT4 approved cost allowance, as they were not included in the submitted costs. This was due to corporate cost allowance originally being submitted for maintenance and other all areas separately. This was overlooked when the allowances were combined by the QCA, with the result that Aurizon Network has been under-recovering in relation to operational sites during UT4.</p> <p>Further detail on operational sites is provided below.</p>

Component	Proposed FY18 \$m	Proposed UT4 \$m	Methodology
Property, services, facilities management	1.6	1.5	This is the employee cost of ERE division for the services provided by that function (services outlined in Appendix R.6). The costs have primarily been allocated using the FTE percentage allocator.
Electrical assets – consumption costs	2.8	-	<p>This cost represents electricity consumption charges and maintenance and compliance costs for corridor electrical assets such as signalling equipment rooms, communications equipment room, power equipment room and centralised traffic control, track coupling units, power supply cabins and power supply buildings. These costs are incurred in order to provide the services on the network.</p> <p>These electricity costs are separate from the traction costs incurred within Aurizon Network which are for the purpose of operating electric traction train services in the Blackwater and Goonyella coal systems and are passed through to railway operators.</p> <p>These costs were included in the UT4 allowance for train control, safeworking and operations as the submitted costs for that regulatory period were calculated at the time when the Group was transitioning to a functional organisation structure; these costs had been budgeted to be incurred directly within Aurizon Network. Under the Group's current structure these costs are incurred with the ERE function.</p>
Total	14.8	7.9	

Corporate sites:

Aurizon Network has a Licence Agreement with Aurizon Operations for the use of its corporate premises at 192 Ann Street, Brisbane. This agreement provides for the licence fee to be equal to the commercial rent paid by Aurizon Operations for those premises.

The Group has announced that it will be consolidating its Brisbane premises (175 Eagle Street and 192 Ann Street) to a new head office at 900 Ann Street from September 2018. This corporate cost proposal includes rent for 900 Ann Street in place of 192 Ann Street from that date.

The gross rent being paid for 192 Ann Street escalates year on year to ██████████ per sqm per annum in FY2018. This rate is reflective of an older style 'A' grade commercial office building located in the Brisbane CBD.

In analysis prepared for the Aurizon Group in April 2015 KPMG advised that gross rents per annum that new 'A' grade CBD fringe buildings could achieve rents in the range \$580 to \$700 sqm per annum, depending on location, age of construction, amenity and so forth¹⁵⁸.

The achievable rents in the CBD fringe are generally lower than CBD located properties. However, when compared against 900 Ann Street (CBD fringe), the passing rent at 192 Ann Street (CBD) is slightly lower, as it has been designed to an above "A Grade" office accommodation (as defined by the Property Council of Australia 2012 Revision) standard.

The KPMG research on recent large ASX listed tenants showed that gross face rents in CBD fringe ranged between ██████████ per sqm. The ██████████ sqm rent for 900 Ann Street is within this range.

Operational sites:

Operational costs have been applied to all Aurizon Network operational sites where applicable. Relevant costs include facility maintenance, corporate contracts, land tax, council and utility charges.

¹⁵⁸ KPMG Advisory (2015), Project Avant Garde – Market Overview (Private and Confidential)

The majority of operational sites occupied by Aurizon Network are on land owned by Aurizon Property Pty Ltd. Intercompany Lease/Licence arrangements are in place for the majority of these sites including

- > Blackwater Depot
- > Collinsville Infrastructure Depot
- > Dysart
- > Emerald maintenance depot
- > Gladstone Depot
- > Glenmore (North Rockhampton) Depot
- > Gracemere Depots
- > Jilalan Infrastructure Depot and Network track
- > Pring (Merinda) Infrastructure Depot
- > Rockhampton Depot
- > Yukan Depot

With the CQCN covering an expanse of over 2,670 kilometres, it is necessary to have depots at various locations to be able to provide maintenance activities in a timely manner to ensure the efficient running of the network. CBRE Valuations Pty Ltd were engaged to provide a desktop market rental advice for these sites. Market rates were only applied to the areas occupied by Network for the multi-user sites.

1. Land owned by private third parties

Where land is owned by private third parties, commercial licences are in place. Rent and outgoing costs (if applicable) are charged in accordance with the licence agreement. These sites include:

- Pine Mountain microwave tower (Carminya); and
- Gracemere New Depot.

2. Land owned by State Government or Aurizon Network

The remaining Aurizon Network operational sites are either on land owned by State Government, Aurizon Network (in freehold) or within rail corridor land under the rail head lease and sublease agreement with the Department of Transport and Main Roads. As such, no licence costs have been applied to the following sites:

- Biloela Track Depot;
- Callemondah yard overhead traction Depot;
- Duaringa Depot;
- Moranbah infrastructure depot and Moranbah maintenance and response depot;
- Mt Larcom track depot; and
- Waitara.

Human Resources

Included within this function are costs relating to executive share schemes. For internal reporting purposes, cost relating to these schemes are attributed to the HR function, except those relating to senior managers within Aurizon Network which are recognised in Aurizon Network.

Share based remuneration is only paid to senior management. These positions would exist in a stand-alone network company and would be a relatively fixed costs regardless of the number of FTEs in the entity. Share based remuneration costs for the support areas of Finance, HR and Enterprise Services and CEO have been allocated to Aurizon Network for the purpose of the corporate cost allowance using the relevant direct cost proportion.

The effects of discounting of employee benefits provisions are also included in the central Group HR function. Due to the change from a government bond rate to a corporate bond rate, the effect of discounting was a credit to expenses in FY2015. Costs that could be attributed to the support functions of the Group have been allocated to Network for the purpose of the corporate cost allowance based on proportionate FTEs.

The dedicated HR team that provides Aurizon Network with support and advice on general human resources management, rehabilitation, workplace relations issues and organisational development, case management (performance planning and review; investigations) and performance management (terminations and employee mediation) has been included in full in the corporate cost allowance.

The corporate cost allowance for Brand and Communications has been calculated by applying the direct cost percentage to the Group Brand and Communication costs. This allocator has been applied rather than proportion of FTEs as there is no causal relationship between the costs and the number of FTEs; costs for this category are relatively fixed costs and do not vary with FTEs.

External relations and communications are required functions for a stand-alone below rail business and are not duplicated within the Regulation or Investor Relations teams. It is necessary to keep stakeholders and other interested parties within the community informed about status of projects and activities being undertaken in the CQCR. The costs include subscriptions paid to various Regional Economic Development Corporations and various publications, and consultancy fees paid for government relations strategies. Corporate and community sponsorships are excluded from the submitted costs.

All other costs within HR have been allocated to Aurizon Network based on proportion of FTEs, an approach which Aurizon Network considers to be a conservative allocation of corporate HR costs.

The overall cost of \$3.7 million for Human Resources in FY2018 is significantly below the Distribution/Transport industry median value benchmark of \$6.95 million, even without adjusting for escalation of the \$FY2013 benchmark.

Enterprise Services

Company Secretary:

The Company Secretary is the prime interface between the Board and Management and is responsible for ensuring Aurizon's compliance with the statutory obligations specified under the Corporations Act and the governance requirements of the Australian Securities Exchange (ASX) Listing Rules. It is an integral function to a listed company and Aurizon Network.

The \$0.5 million cost included in the corporate cost allowance for FY2018 was calculated by applying the direct cost percentage to the Group Company Secretary costs.

Included external costs:

- > Listing fees: The Annual ASX Listing fee for a company with a value of quoted securities from \$1 billion to \$10 billion is \$77,624 + 0.001294% on amounts over \$1 billion¹⁵⁹. Share registry costs vary with the number of shareholders. Costs become incrementally cheaper as the number of holders increases;
- > Share registry costs: Aurizon's contract with Computershare stipulates a minimum cost of [REDACTED] per annum. Share registry costs are quoted in ranges based on the number of shareholders. As an indication of costs based on the number of shareholders, at the higher end of the range for the 'number of holders between 0 – 40,000' the cost is [REDACTED]. These costs generally increase each year by CPI or as a result of extraordinary corporate activity (buybacks for example);
- > cost of the annual report (development and distribution);
- > cost of the Annual General Meeting including cost of a video, mail out of the notice of meeting and other professional services relating to the co-ordination and execution of the meeting;
- > disbursements for printing and postage of new shareholder packs;
- > management fees for employee share plans; and
- > employee benefits expenses for a corporate secretary and support staff member.

General Counsel:

General Counsel provides legal advice to the Board and Management across the Company and manages the engagement of external legal service providers.

¹⁵⁹ ASX Listing Rules Guidance Note 15A – effective for the year ended 30 June 2016
http://www.asx.com.au/documents/rules/gn15a_schedule_of_listing_fees.pdf

General Counsel costs included in the corporate cost allowance for Aurizon Network for FY2018 are \$1 million, calculated by applying the direct cost percentage to the Group General Counsel costs. The \$1 million comprises \$0.8 million in labour and oncosts and \$0.2 million in other expenses.

In a stand-alone company the current Network Legal team resources (included in Business management costs) would need to be supplemented with additional resources to perform the following activities currently undertaken on an Aurizon Holdings Group basis.

- > commercial contract reviews including construction, information technology, procurement;
- > human resources legal support as required;
- > transactional support, including banking agreements and offering documents for debt issuances;
- > project support; and
- > continuous disclosure requirements.

It is important to note that Aurizon Network is subject not only to a complex economic regulation framework, but also to multi-faceted operational regulation. For example, where most businesses are regulated by one or two safety regulators, Aurizon Network is required to comply with Work Health and Safety, Rail Safety, Electrical Safety and Mining Safety regulations.

Aurizon Network is also subject to complex tenure arrangements for both its rail corridor land and rail infrastructure. These include two separate infrastructure leases from two separate lessors, and two rail corridor subleases, one of which is concurrent with another rail operator. As the SUFA project exemplifies, these tenure arrangements, when overlaid with existing access and regulation arrangements, result in relatively complex legal structures and considerations.

Safety, Health & Environment:

The Safety, Health and Environment division has accountability for advocating and advancing Aurizon's core value of safety and ZEROHARM commitment. The division is responsible for providing expertise in relation to safety, health, and environmental matters.

Services provided include:

- > coaching and governance advisory to the Board and Executive in relation to safety, health and environment;
- > management of Safety, Health and Environmental Management Systems and rail accreditations;
- > Managing Aurizon's environmental footprint and enterprise safety, health and environmental resources;
- > Management of Aurizon's interface with external regulatory bodies such as:
 - National Rail Safety Regulator and the Queensland Department of Transport and Main Roads for rail accreditations;
 - Environmental Protection Agency for environment licences and approvals; and
 - Registered Training Organisations for training compliance (in relation to rights and authorities to operate).

Aurizon Network's accreditation as Rail Infrastructure Manager, and its ability to own and operate the CQCN is based on the efficacy of its Safety Management System (SMS) and is the subject of regulation enforced by the Queensland Rail Safety Regulator. Aurizon Network's SMS details the prevention/intervention levels and the associated activities required to maintain the network. It also provides direction and guidance on how the maintenance tasks should be managed safely. By law, Aurizon Network must comply with its SMS at all times.

It is important to note that rail safety regulation differs from other forms of safety regulation in that it requires rail operators to develop a specific SMS rather than (for example) adopting or complying with pre-existing rules or published codes of practice. The SMS necessarily entails many thousands of pages of safety critical standards and procedures in order to demonstrate the discharge of these statutory requirements to the standard required by law. These standards must also be reviewed at regular intervals, and in response to learnings from specific incidents. Rail operators are also subject to ongoing reporting and auditing which are not present in many other industry sectors. Failure to comply with this regime may result in the suspension of operations, significant fines and custodial sentences for individuals involved.

The Safety, Health and Environment cost included in the for Aurizon Network corporate cost allowance for FY2018 has been calculated with reference to the FTE proportion as a percentage of the total Group Safety, Health and Environment costs. The \$2.5 million allocation comprises \$1.9 million in labour and oncosts and \$0.6 million in other costs.

Comparing this allocation to the UT4 approved amount and treatment, the total proposed cost is lower than for UT4 due to a lower cost base and the application of the FTE proportion to all costs (only labour and on costs were included in the UT4 treatment).

Costs in this function have decreased as part of the Group's drive for cost efficiencies since UT4 was submitted.

Aurizon has assessed what roles and positions currently provided by the Group would be required to provide the function for a stand-alone below rail business. On the basis of that analysis, approximately 14.6% of the Group's labour and on costs would be attributed to such a business. This proportion closely approximates the FTE % allocator, and so this already established allocator has been used in preference to an alternative methodology. The analysis does, however, validate the efficient costs allocated.

Safety costs were not able to be benchmarked by EY for the Transport industry as data was not available at that industry level. Data was available for a safety focussed company with similar revenue in the Asian Pacific region (collected in 2012). This company had costs of \$3.1 million (\$FY2012). If escalated this benchmarked figure would be well in excess of the safety costs allocated to Aurizon Network.

Specifically for Network, rules and procedures exist to provide the requirements for trackside protection for anyone who enters the rail corridor, those performing activities in the rail corridor and the safe operation of rail traffic on the rail network. There are also specific standards and requirements relating to civil engineering, electrical engineering, signalling, telecommunications, isolation and lockout and train operations (including speed restrictions, management of signals passed at danger (SPADs), track vehicles, safety in yards and facilities).

Aurizon Network directly pays its Rail Safety Accreditation fee. Costs specific to the Aurizon Network business that are incurred centrally include:

- > medicals for train controllers and infrastructure management workers;
- > databases and files separate to those of the Group are required for ring-fencing of investigations, audits and technical safety experts; and
- > interfaces between the Safety, Health & Environment Management System and Vizirail for the reporting of rail faults to the regulators.

Aurizon must also discharge similar obligations in relation to its Workplace Health and Safety and Electrical Safety duties, and also interacts with Mine Safety regulation.

Internal Audit:

Internal audit is an integral function of an ASX listed business. This division provides independent and objective assurance to Management and the Board on the adequacy of governance, risk management and internal control systems and procedures.

The Internal Audit team operates under an internal audit charter and manages the investigations of alleged fraud and corruption. The activities undertaken by this team are not duplicated with Finance. Work performed by Internal Audit is used by external audit to avoid duplication and reduce costs.

The Aurizon Network corporate cost allowance for Internal Audit for FY2018 are \$0.6 million and are calculated by applying the direct cost percentage to the Group Internal Audit costs. Based on a MAR of \$973.3 million approved for FY2015, this amount represents 0.06% of regulatory revenue for the year.

A benchmarking study prepared for the Aurizon Group by Global Audit Information Network (GAIN) in June 2014 found internal audit costs to represent 0.1198% of revenue for transportation industry companies with revenue

between \$500 million and \$1 billion. For Australian companies (non-industry specific), the cost increased to 0.2389% of revenue and 0.1553% of revenue for companies globally.

The costs of internal audit included in the corporate cost allowance are significantly below these benchmarks, and hence considered efficient.

Information Technology:

The IT department manages all information and business systems through robust and reliable project delivery frameworks; as well as external IT partnerships across the Group. The team is also responsible for the effectiveness of IT investments aligned to the business priorities.

During the UT4 consultation process in December 2014 Aurizon Network engaged ITNewcom (IT advisory and benchmarking analyst) to provide a costing for IT services required if Aurizon Network were a stand-alone company. The ITNewcom report is provided as an attachment to the UT4 submission.

The benchmark cost was based on current practices for standard run IT services. These IT services include service desk, end user computing, servers, storage, network, telecoms, data centres and applications used enterprise wide including by Aurizon Network.

The benchmarking report excludes Operational Technology (OT), which is hardware and software that monitors and controls how physical assets perform. The OT costs related to Aurizon Network operations (including technology such as UTC applications and Supervisory Control and Data Acquisitions (SCADA) networks), are incurred wholly within Aurizon Network. The cost of maintaining IT is incurred centrally within the Aurizon Group. The ongoing standard run costs for software maintenance and support services costs for software developed or under continued development for Aurizon Network will be incurred wholly within Aurizon Network as they are OT related costs. Ongoing costs relating to these systems have been included within the cost categories of Train Control and Infrastructure Management.

This benchmarking exercise found the stand-alone costs to be \$18.1 million, based on data provided for FY2014. Escalated using QCA approved CPI rates of 2.5% per annum during the UT4 term, produces an opening FY2018 benchmark cost of \$20 million. There have not been any significant changes in Aurizon's IT practices since this report was prepared and the benchmark is still considered appropriate.

Applying the direct cost percentage to the Group IT costs, the IT cost included in the corporate cost allowance for FY2018 is \$18 million. As this cost is below the benchmarked cost provided by ITNewcom Aurizon Network considers it to be an efficient cost.

Summary of corporate cost allowance

The corporate cost allowance has been determined with reference to the Group's actual costs for the year ended 30 June 2015, with an allocation being made for costs that would be reasonably expected to be incurred if Aurizon Network operated on a stand-alone basis.

Using the estimation methodology described in this section results in approximately [REDACTED] of the Group's corporate overhead base being allocated to the regulated below rail business.

Aurizon Network's estimate of corporate costs for the UT5 and Revenue Proposal is summarised by system and function in Table 60.

Table 60 Corporate costs by system (\$m) (nominal dollars)

System	2017/18	2018/19	2019/20	2020/21
Blackwater	20.6	21.2	21.7	22.1
Goonyella	21.1	21.7	22.2	22.6
Newlands	1.0	1.0	1.0	1.1
Moura	1.5	1.5	1.5	1.6
GAPE	4.9	5.0	5.2	5.3
Total	49.1	50.5	51.6	52.7

Corporate overhead costs have been allocated to the systems in the same proportion as business management costs, in accordance with the system allocation rules referred to in the Approach to Modelling in the Revenue Proposal.

10.5.3 Risk and Insurance

In providing network infrastructure for rail services, Aurizon Network is exposed to a range of risks that are beyond its control, as well as risks where avoidance is not economically justifiable. Aurizon Network mitigates these risks, which are typically asymmetrical in nature, through a combination of:

- > external insurance;
- > self-insurance; or
- > cost pass-through via the Review Event mechanism.

As a result, the efficient costs of managing asymmetric risks are recovered either through Aurizon Network's operating expenditure allowance, or mechanisms within the Access Undertaking.

In determining the proposed amounts for insurance and self-insurance for the UT5 regulatory period, Aurizon Network engaged:

- > Jardine Lloyd Thompson Pty Ltd (JLT) to provide annual external insurance premium costings for corporate and relevant Industrial and Special Risks insurance; and
- > Finity Consulting Pty Ltd (Finity) to provide self-insurance estimates for the stand-alone insurance policy premiums and deductibles.

In estimating the relevant premiums, the consultants applied a methodology which was consistent with the approach recently approved by the QCA in the UT4 Final Decision. A copy of both reports are included as attachments to this submission.

The prudent cost estimates provided by both consultants are outlined on the next page. Aurizon Network's proposal for risk and insurance costs for UT5 are 1.2% lower than UT4 in nominal terms. This represents a 7% reduction in real terms (\$FY2015).

Figure 74 External insurance and self-insurance premiums (\$m)

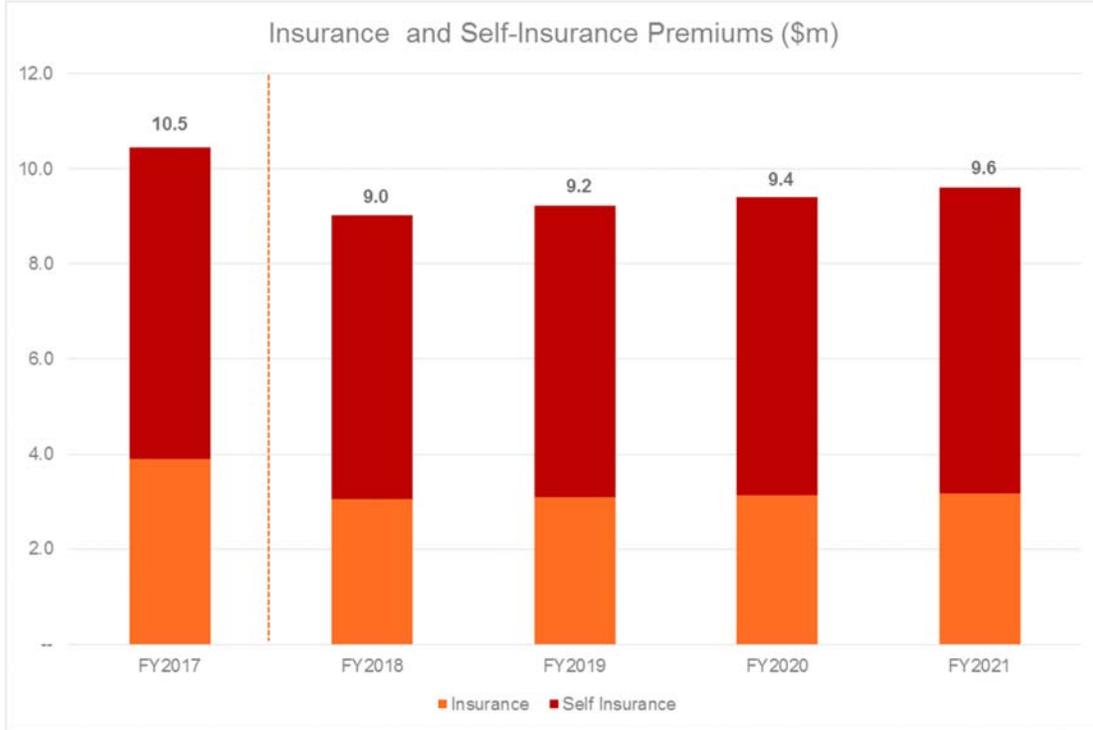


Table 61 Annual insurance premiums (\$m)

Category	2017/18	2018/19	2019/20	2020/21
External Insurance	3.0	3.1	3.1	3.2
Self-Insurance	6.0	6.2	6.3	6.4
Total	9.0	9.3	9.4	9.6

It should be noted that Aurizon Network bears the risk that its actual insurance costs are different from the approved allowance, given the premiums will be updated annually in line with market conditions. This similarly applies in the case of self-insured risks, as noted by Finity:

“We also note that unlike an insurer, Aurizon Network only gets the opportunity to “re-price” every four years whereas an insurer has the opportunity to re-price annually thus providing greater certainty as they can re-adjust premiums to recoup losses.”¹⁶⁰

External Insurance

This section provides a summary of the coverage and premiums associated with Aurizon Network’s external insurance arrangements. For a more comprehensive description, please refer to the JLT report, which is included as an attachment to this submission.

Aurizon Holdings Limited has a comprehensive insurance program specifically designed for its needs including several different insurance policies placed directly with the insurance market.

¹⁶⁰ Finity Consulting Pty Limited, Review of Self Insurance Risk Premium – Access Undertaking UT5, August 2016, pg. 43.

While the policies maintained by Aurizon Holdings Limited provide coverage for the activities of Aurizon Network, Aurizon Network does not have a separable premium. JLT was engaged to determine the annual insurance premium that would be applicable to Aurizon Network if it were a standalone entity.

A summary of the coverage and associated premiums is outlined in the Table 62 below.

Table 62 External insurance cover and estimated premiums (\$m)

Insurance Cover	Premium (\$m)	Description
Industrial Special Risks	1.3	<p>Provides coverage for physical loss or damage to Aurizon Network's high value, critical assets. Coverage applies to assets specifically nominated under that policy and is limited to:</p> <ul style="list-style-type: none"> • specified bridges; • power equipment including feeder stations; • other network assets e.g. computer, network control and monitoring equipment; • dwellings; and • mechanised maintenance plant (e.g. tampers and resurfacing machinery). <p>Rail track infrastructure is a specific exclusion from this policy. The premiums associated with covering assets of this extent and value through external insurance arrangements are considered cost prohibitive.</p> <p>Aurizon Network self-insures this infrastructure and these arrangements are discussed in the 'Self-insurance' section below.</p>
Corporate insurances – General Liability	0.7	<p>Covers Aurizon Network for its legal liability to third parties for personal injury or property damage.</p> <p>The policy also includes coverage (in accordance with standard policy terms and conditions) for Aurizon Network's exposures outlined in the Indemnities and Liabilities provisions in the Standard Access Agreement.</p>
Other Corporate insurances		
Directors and Officers (D&O)	0.4	D&O insurance indemnifies the officers of the company for losses and advancement of defence costs in the event of a legal action brought for alleged wrongful acts.
Professional Indemnity	0.1	Represents the minimum premium that would be required if professional services were undertaken and is based on a nominal limit of indemnity of \$20 million.
Marine cargo	0.1	Covers Network for its exposures to loss or damage to goods whilst being transported or "in transit".
Contract works	0.3	Covers material damage and third party liability and premium is based on value of assets under construction.
Employment Practices Liability, Corporate Travel, Crime	0.1	
Total (\$FY2017)	3.0	Premium includes terrorism levy and stamp duty, and excludes GST.

External Insurance Premiums for the UT5 regulatory period

JLT estimated the applicable external insurance premiums for FY2017 and in deriving an estimate for the UT5 regulatory period, escalated these premiums on the basis of the Insurance and Financial Services index.

Nevertheless, Aurizon Network has elected to reduce JLT's proposed premiums for the UT5 regulatory period by escalating the FY2017 premium at CPI¹⁶¹. This maintains consistency with the escalation approach applied to other operating costs.

Self-Insurance Premiums

This section provides a summary of the coverage and premiums associated with Aurizon Network's self-insurance arrangements. For a more comprehensive description, please refer to the Finity report, which is included as an attachment to this submission.

Aurizon Network engaged Finity to provide actuarial advice in relation to the self-insured risks of the CQCN. There are two types of self-insured losses included in Finity's assessment:

- > uninsured risks, which are specifically related to the tracks and associated infrastructure. As noted above, these risks are subject to losses that commercial insurance markets typically do not have the appetite to underwrite; and
- > below-deductible losses, which relate to below-deductible losses on insured risks where the CQCN holds material levels of risk in respect of the self-insured retention, either due to the frequency of such losses or the size of the retention, e.g. property and public liability losses.

For more information, please refer to the Finity report.

The most significant category of uninsured risk related to the CQCN's uninsured property risk, i.e. the property risk for the uninsured track and associated infrastructure. The CQCN is subject to losses from a range of perils such as:

- > Derailment;
- > Weather (storms, flood and extreme heat);
- > Earthquake;
- > fire and bush fire; and
- > accidental and malicious damage.

For derailments and weather losses, Finity estimated future losses for the UT5 regulatory period on the basis of historical observations, noting that:

“The number of low severity derailments has continued to trend downwards as [a] result of Aurizon’s increased emphasis on preventative maintenance and the rail restressing program, in response we have reduced our frequency assumption to reflect more recent experience.”¹⁶²

In relation to the other perils, Finity has not estimated a cost for these losses, even though in practice the expected losses are greater than zero.

Estimated self-insurance premiums

The estimated cost of self-insurance for the UT5 regulatory period is set out in Table 63 on the following page.

¹⁶¹ As outlined in the operating cost forecasting methodology section of this submission.

¹⁶² Finity Consulting Pty Limited, Review of Self Insurance Risk Premium – Access Undertaking UT5, August 2016, pg. 7.

Table 63 Estimated self-insurance premiums (\$m)

Self-insured item (\$m)	2017/18	2018/19	2019/20	2020/21
Derailement	4.4	4.4	4.5	4.7
Weather	0.4	0.5	0.5	0.5
Dewirement	0.4	0.4	0.4	0.4
Liability	0.6	0.6	0.6	0.7
Third Party Repairs	0.2	0.2	0.3	0.3
Total	6.0	6.2	6.3	6.4

Variations

In order to address any variations to the volume forecasts associated with the approval of the UT5, or to accommodate revenue variations attributable to additional access rights not contemplated in the Capital Indicator, Aurizon Network requested that Finity provide a unit rate applicable to the relevant exposure metric which could be used to forecast variations in the cost allowances for changes in risk. This is provided in the table below.

Table 64 Cost per unit of risk

Loss Type	Exposure Measure	Cost per unit of Exposure (\$)
Derailement	GTK (millions)	36,734
Weather	Track Km	150
Dewirement	eGTK (millions)	4,275
Liability	Turnover (millions)	451
Third Party Repairs	Track Km	82

Cost pass-through

Consistent with the approved UT4 approach, the Finity analysis concluded that the pass-through option is an efficient way of dealing with extreme events which occur infrequently, are extremely difficult to model and are beyond the normal control of the business.

The mechanism for doing so is (i.e. including a provision, such as clause 5 of Schedule F in the Undertaking, which permits Aurizon Network to recover through a QCA approved variation to reference tariffs the incremental costs of specified Force Majeure events.

The Finity analysis (and associated premiums) assumed that the following events will continue to be subject to pass-through:

- > major weather events where below-rail losses to the network exceed \$1 million¹⁶³;
- > catastrophic damage to the network from perils such as earthquake and other natural disasters where losses exceed \$1 million; and
- > liability losses which exceed \$8 million.

For clarity, there is no provision for such events within the external or self-insurance premiums proposed for the UT5 regulatory period.

¹⁶³ For clarity, the self-insurance premiums make no provision for a \$1 million deductible in relation to cost pass-through events due to the uncertainty which surrounds the frequency of which these events occur. For example, if an event resulted in a loss of \$1.5 million, the cost pass-through application would be for the full value of the loss (and not \$0.5 million).

Summary

Aurizon Network's risk and insurance proposal for the UT5 regulatory period reflects:

- > an external insurance premium for specific risks insured under the Industrial and Special Risks policy. Of the below-rail assets, only selected bridges, tunnels and feeder stations are covered. Due to cost prohibitions there is no cover for rail track infrastructure; this is managed through self-insurance arrangements;
- > an external insurance premium for corporate insurances, which have been costed on the basis of Aurizon Network operating as a stand-alone entity; and
- > a self-insurance premium for managing the below-rail asymmetric risks such as derailments, dewirements, weather events below \$1 million and below-deductible liability losses.

10.6 External operating expenditures

10.6.1 Transmission and electrical energy charges

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 Transmission Network Service Providers (TNSPs); 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.

Transmission and electrical energy charges fall under the jurisdiction of the Australian Energy Regulator (AER). The cost forecasts included in this operating expenditure proposal are 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. 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.

Transmission and connection charges

While electrical energy is distributed on the transmission network in "three phase" form, electric locomotives use single phase electricity and present as a "single phase", unbalanced load. As a result, the load presented by Aurizon Network's electric traction infrastructure must be "balanced" before it is connected to the transmission network. To facilitate this, Powerlink Queensland (Aurizon Network's principal TNSP) has made significant investments in specialised equipment at the majority of Aurizon Network's connection points. Transmission and connection charges reflect the costs associated with these investments, and the utilisation of the transmission network itself.

Transmission and connection charges are set by the TNSP in accordance with the requirements of the National Electricity Rules (NER). The majority of Aurizon Network's connection points are subject to the regulatory oversight of the Australian Energy Regulator (AER) and charges are set through 'prescribed' arrangements.

The NER requires that where the transmission services provided by a TNSP are associated with a single customer, connection charges must be set through a negotiated arrangement. Approximately one-third of Aurizon Network's connection points are subject to negotiated arrangements.

In this sense, Aurizon Network is a price-taker in the market for transmission and connection services. Nevertheless, Aurizon Network is investigating a number of options for optimising the cost of these services and is seeking to progress these initiatives with TNSP's. For example:

- > Aurizon Network has studied the harmonic distortion levels created by AC and DC locomotives. The study indicated that AC locomotives create lower levels of harmonic distortion than their DC counterparts. By operating AC locomotives in the Blackwater system, the associated reduction in harmonic distortion may provide an opportunity to remove harmonic filters from the connecting infrastructure. The removal of these filters is expected to improve the reliability and robustness of the distribution network, which may facilitate the optimisation of connection points in the Blackwater system; and
- > the ongoing implementation of regenerative braking on locomotives.

The full benefit of these initiatives would flow directly to Access Holders in the form of reduced electric Access Charges.

For the UT5 regulatory period, Aurizon Network also expects transmission and connection charges to reduce. These expectations are reinforced by Powerlink Queensland's revenue proposal for FY2018-FY2022, which highlights a reduction in MAR driven by a lower rate of return, a reduction in capital expenditure and lower operating expenditures, relative to Powerlink's actual expenditure during their FY2013-FY2017 regulatory period.

Aurizon Network's forecast for transmission and connection costs for the UT5 regulatory period are outlined below.

Figure 75 UT5 Transmission and connection charges (\$m)

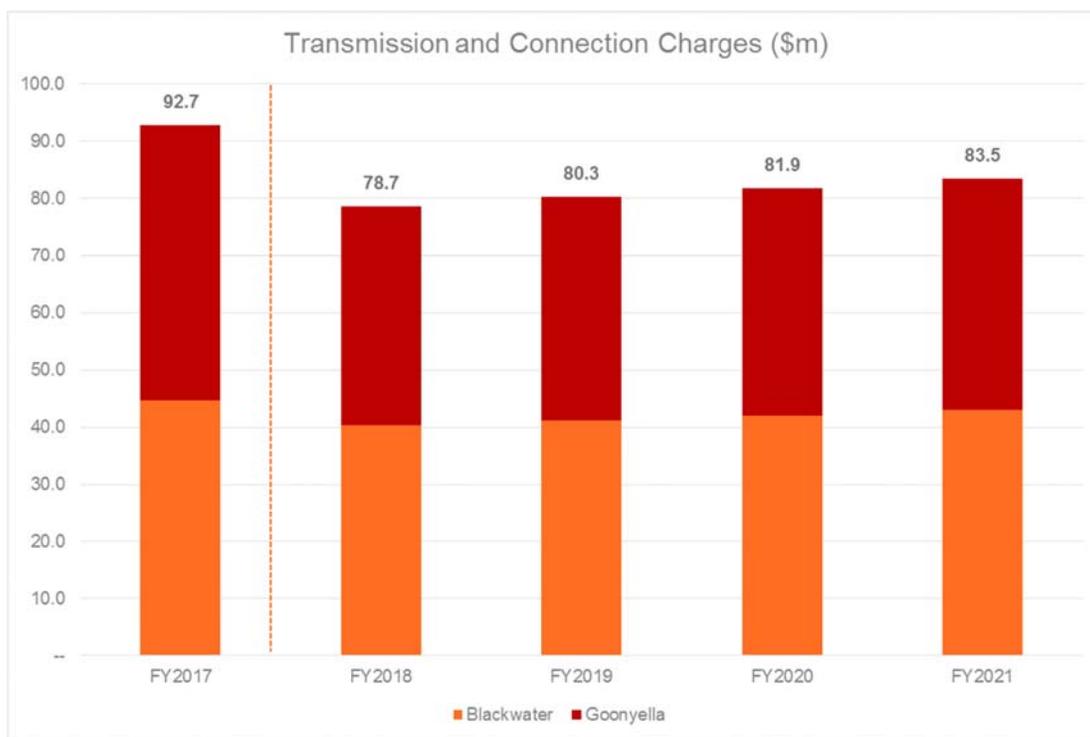


Table 65 Forecast UT5 transmission and connection costs (\$m)

System	2017/18	2018/19	2019/20	2020/21
Blackwater	40.3	41.3	42.1	43.0
Goonyella	38.3	39.0	39.7	40.5
Total – Nominal	78.7	80.3	81.9	83.5
Total – Real (\$FY2015)	74.7	75.4	75.9	76.4

While, on aggregate, transmission and connection charges have increased by 1.7% between UT4 and UT5, this difference is primarily due to the fact that two new feeder stations were commissioned mid-way through the UT4 regulatory period, which understates the total UT4 costs used for this comparison. In reality, the forecast annual cost for each year of the UT5 regulatory period are lower than the charges for FY2017, the final year of UT4.

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 it’s 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. It should be noted that 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. Aurizon Network will publish an updated EC charge by the end of May (prior to the commencement of the relevant year).

Aurizon Network’s forecast for electrical energy costs for the UT5 regulatory period are 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 66 Forecast electrical energy costs (\$m)

Electric energy (EC) costs (\$m)	2017/18	2018/19	2019/20	2020/21
Total – Nominal	52.8	54.9	55.6	56.2
Total – Real (\$FY2015)	50.1	51.5	51.5	51.5

10.7 Treatment of other efficient costs

Aurizon Network’s operating expenditure proposal also includes the recovery of the following efficient costs.

10.7.1 Asset condition assessment

Aurizon Network’s operating expenditure proposal includes a forecast of costs expected to be incurred to carry out the condition based assessment as required by the policy obligations within the Access Undertaking. These forecast costs are incorporated into the business management cost proposal.

10.7.2 Costs associated with the development of SUFA

Aurizon Network has not included the recovery of costs attributable to SUFA within the UT5 revenue proposal. Aurizon Network will seek to recover these cost through an alternative mechanism be it either regulatory or a commercial arrangement. This will be developed in consultation with relevant stakeholders.

10.7.3 Flood Review Event

Costs associated with the 2015 Flood Review event are currently under consideration by the QCA. For clarity, these costs (and the costs associated with the forthcoming 2016 Flood Review event) have not been included in this operating cost proposal. Aurizon Network will incorporate the approved costs into the relevant SAR and Reference Tariffs upon receipt of the QCA’s Final Decision.

Weighted Average Cost of Capital

11. Weighted Average Cost of Capital

11.1 WACC proposal summary

Aurizon Network continues to operate in a volatile and challenging industry and financial market environment. Aurizon Network recognises that the access undertaking for the UT4 period has only recently been finalised, however, rather than simply looking to 'roll forward' the UT4 WACC, Aurizon Network has undertaken a comprehensive review of the WACC methodology and parameters from first principles.

Having regard to the continuing volatility and uncertainties in its market environment and its changing commercial and business risk profile, Aurizon Network has an obligation to its shareholders to ensure that it proposes a rate of return that will 'at least' provide it with compensation for its commercial and regulatory risks, as required under the QCA Act. A detailed discussion of this legislative framework is contained within Chapter 2 of this submission. The other pertinent issue for Aurizon Network is ongoing financeability and the maintenance of its credit rating.

While Aurizon Network has undertaken a fresh review, it has done so having regard to recent QCA precedent, including its WACC methodology review concluded in 2014, as well as other relevant regulatory precedent from other jurisdictions. The full nature and extent of some of the challenges that are faced could not have been anticipated at the commencement of the UT4 review. In other areas, Aurizon Network has seen an increased exposure to regulatory risk, for example, the UT4 decision to impose revenue deferrals on key investments.

Aurizon Network also acknowledges that some of the issues raised in this submission have been raised previously, however they remain areas of fundamental concern. Ultimately, if Aurizon Network's rate of return is not commensurate with the returns that investors require based on the commercial and regulatory risks to which they are exposed, Aurizon Network will be unable to deliver an adequate return to existing shareholders (while also funding efficient capital and operating activities) and more importantly, will be unable to raise the capital it needs to fund efficient investment, including necessary renewals expenditure. This is contrary to the Objects clause.

This is therefore not just about satisfying the requirements of Aurizon Network's equity investors. Promoting efficient investment in the network – both in terms of investments in network renewals as well as future expansions - is essential to satisfying the interests of the users of the service. If the rate of return is inadequate and Aurizon Network is unable to invest in the network because this would not be in the interests of its equity investors, this could have a material and adverse impact on users whose own financial performance hinges on access to an efficient and competitive infrastructure supply chain. Providing an adequate rate of return is therefore equally important to investors and users of the service.

Providing an adequate rate of return is also in the public interest. A competitive export coal supply chain maximises the value of the State's high quality coal reserves, which remains a significant contributor to its economic growth and employment. For some regional communities, it remains critically important to their future prosperity.

In order to satisfy the requirements of the QCA Act and ensure that Aurizon Network is able to access capital to fund investment, it is essential that the rate of return:

- > is assessed from the perspective of investors – while theoretical models provide an important foundation for the approach, ultimately, it is necessary to have regard to the approach that investors will take in practice when forming their return expectations and evaluating alternative investments. As outlined above, this is also in the best interests of users, who depend on efficient ongoing investment in network growth and renewals in order to maintain a highly competitive supply chain;
- > reflects Aurizon Network's commercial and regulatory risks – Aurizon Network operates in a highly uncertain and volatile market environment. It has sought to clearly define this risk profile as a reference point for the development of its proposed WACC;

- > has regard to the characteristics of the investor base and their requirements – Aurizon Network must compete with other opportunities in the broader infrastructure asset class for scarce capital in an intensely competitive domestic and global financial market place.

Aurizon Network has largely adopted the QCA’s preferred models to estimate its proposed WACC for UT5. While these models have their shortcomings (as well as advantages), in Aurizon Network’s view, the key to delivering an appropriate rate of return to its investors rests on ensuring that the methodologies used to estimate each of the parameters in the models provide the best estimates of those parameters. It is also necessary to consider the reasonableness of the overall outcome from the financial models having regard to current market evidence.

Aurizon Network’s UT5 WACC proposal is summarised in the table below. It reflects an indicative twenty day averaging period to 30 June 2016.

Table 67 Aurizon Network’s WACC proposal and UT4 Final Decision

Parameter	UT4 Final Decision	Aurizon Network’s Proposal
Risk free rate	3.21%	2.13%
Risk free rate term	4 years	10 years
Gearing ratio	55%	55%
Benchmark credit rating	BBB+	BBB+
Asset beta	0.45	0.55
Equity beta	0.80	1.0
Market risk premium	6.5%	7.0%
Debt risk premium	2.72%	2.47%
Debt raising costs	0.108%	█ %
Interest rate swap costs	0.113%	█ %
Cross currency swap costs	n/a	█ %
Gamma	0.47	0.25
Return on equity	8.41%	9.13%
Return on debt	6.15%	4.86%
WACC (post tax nominal vanilla)	7.17%	6.78%

This shows that Aurizon Network’s proposed WACC is still nearly 0.4% below the WACC approved for UT4.

A number of the Section 138(2) Factors, and in particular, the pricing principles, are of direct relevance in the determination of the rate of return to apply in UT5. Aurizon Network has set out detailed submissions on the role of the objects and the Section 138(2) Factors in Chapter 2. Of particular importance to the determination of the rate of return is the pricing principle in section 168A(a), which provides that a price for access should:

*“generate expected revenue for the service that is at least enough to meet the efficient costs of providing access to the service **and include a return on investment commensurate with the regulatory and commercial risks involved**” (emphasis added)*

While the price for access is to have regard to the “efficient costs” of providing access, the return must at least be “commensurate with the regulatory and commercial risks involved”.

In order to assess the requirement in relation to the return that must be generated, it is necessary to properly understand the regulatory and commercial risks faced by Aurizon Network in respect of the actual service it

provides. Section 168A(a) directs the QCA to assess the particular risks and regulation applicable to the access provider's business and not to some hypothetical business or to any business operating in a different environment.

It is acknowledged that in certain circumstances it is appropriate for the QCA to utilise benchmarks, financial models and other analytical tools in seeking to confirm the appropriateness of the proposed return.

Ultimately, however, while benchmarking, financial models and other analytical tools may assist the QCA, there is no substitute for a bottom-up analysis of risks. In the absence of such an analysis, the application of theoretical models and tools that are divorced from considerations that are relevant to Aurizon Network's actual operating environment may result in inappropriate outcomes and a failure to comply with the requirement in section 168A(a). It is impossible to apply benchmarks, for example, to set Aurizon Network's return without a detailed, comparative analysis of regulatory and commercial risks between those faced by the benchmarked entity and Aurizon Network.

It is not appropriate to adopt a 'cookie-cutter' approach to setting the rate of return for Aurizon Network any more than that it would be for setting opex or maintenances allowances for UT5. **The rate of return must be tailored to the specific regulatory and commercial risks to which Aurizon Network is subject and any benchmarking must be aligned to those specific risks faced by Aurizon Network.**

In applying this test to establish the appropriate return the QCA must, for example:

- > have regard to empirical market evidence as to what an appropriate rate of return would be in respect of Aurizon Network's business including factors such as the risk free rate term for determining the cost of equity;
- > where it applies benchmarks, use data for firms that are comparable to Aurizon Network; and
- > give consideration to a credit rating for Aurizon Network that has been set by internationally respected credit rating agencies and not to impose its own view of what the credit rating should be for its modelling purposes.

In addition to the above matters, the QCA's task is essentially to simulate the outcomes that might be expected in a workably competitive market. As earlier indicated, the pricing principle in section 168A(a) acts as a price or revenue floor. In doing so, it protects Aurizon Network by ensuring it can recover at least its efficient costs and the relevant return. While the price for access may generate revenue in excess of that described in section 168A(a) (although not at levels above those that would be expected in a workably competitive market) it must not generate expected revenue that is less than that described under section 168A(a).

As noted in Chapter 2, the Australian Competition Tribunal has considered what the reference to "at least" (in the context of the National Electricity Law) means in the context of a pricing principle that provides for the opportunity to recover at least efficient costs. The Tribunal noted that the opportunity is critical to the answer—given all the uncertainties associated with setting revenues for a future period, it is essential that a regulated entity be provided to recover at least its efficient costs otherwise the entity will not have the incentives to achieve the efficiency objectives, which sits at the centre of these regulatory regimes.¹⁶⁴

Against this background, Aurizon Network's proposal on the cost of capital is set out below.

11.2 The commercial and financial market environment

Aurizon Network's UT5 revenue proposal is prepared and assessed in the context of its current commercial and financial market environment, having regard to the conditions that are expected to prevail over the four year regulatory period. This is essential given Aurizon Network has an obligation to its shareholders to generate a return on their investment that is commensurate with the risks they bear, which is consistent with the interests of persons who may seek access to the service as this promotes ongoing efficient investment in the network. It is also

¹⁶⁴ *Application by EnergyAustralia* [2009] ACompT 8, [79]–[82].

imperative that the UT5 outcome maintains a financially sustainable network business that satisfies key financeability metrics, as required by the ratings agencies, and therefore maintains its current credit rating. Achieving this is critical to ensuring Aurizon Network’s ability to continue to attract funding in what remains an intensely competitive environment for capital.

As will be outlined on the following page, the overarching theme is volatility. This underpins Aurizon Network’s risk profile in the short, medium and long term and is the issue of focus for investors when evaluating a dedicated export coal network compared to other infrastructure investment opportunities.

11.2.1 The commercial environment

The coal market environment and demand outlook

Since UT3 was approved in 2010, the CQCN has been experiencing a particularly challenging market environment – indeed it has clearly been the most difficult environment experienced since Aurizon Network’s first access undertaking (UT1) was approved back in 2001. The conditions that have emerged over the course of UT3 and the development and approval of UT4 have highlighted the inherent volatility of the coal market in which Aurizon Network operates.

This has largely been driven by the coal price, as shown in the following chart. Since 2009, the coal price has experienced a great degree of volatility. For example, the metallurgical coal price has dropped from the peak of over USD\$300 in 2011 to the low of less than USD\$80 in 2015, and experienced a rapid rebound to over USD\$200 in 2016 over the course of less than three months. A similar pattern is also observed for the thermal coal price. The significant volatility in coal prices highlights the uncertainty around the coal market and the inherently volatile nature of the industry.

Figure 76 Historical metallurgical and thermal coal price



Source: Bloomberg and Aurizon Network

Aurizon Network provides rail access services to producers who compete in the global seaborne coal market. These producers are largely price takers in this market and as has been evidenced from recent experience, will quickly and decisively alter their production to changes in market conditions. The demand for coal also depends on the competitiveness of Bowen Basin producers in world markets and where they are positioned on the world cost curve.

Major producers such as Anglo American and Rio Tinto are selling down their coal operations, while others have scaled back production.¹⁶⁵ Mines such as Blair Athol and Baralaba have been put into care and maintenance, while Clermont, Isaac Plains, Callide and Foxleigh have experienced change in control.

Chapter 1.3 describes the current outlook for the export coal market. As highlighted above, in setting the WACC, the key issue is volatility and the uncertainty associated with that outlook.

There are different drivers of this volatility for metallurgical and thermal coal. In the short to medium term, the outlook for both continues to be dependent on the global supply/demand balance and hence the coal price. In the longer term, this outlook also depends on developments in technology, the move to renewables and government policy, which all influence the demand for coal as an input into other production processes.

For metallurgical coal, the most significant driver of market volatility has been, and will continue to be, China, as it has a significant influence on the global supply/demand balance. This is not only because China remains one of the dominant sources of demand for metallurgical coal for use in steel production, but also because of ongoing changes to Chinese Government policy in relation to the amount that will be sourced from domestic suppliers. For example, in its most recent *Resources and Energy Quarterly*, the Office of the Chief Economist noted:¹⁶⁶

“Government-mandated coal mine closures and weather related supply disruptions in China’s main coal producing region of Shanxi have supported the recent surge in metallurgical coal prices.”

CRU observes:

“It is clear that the government’s intervention in the Chinese coal sector brings considerable uncertainty to the seaborne coal market in the short- to medium-term and the implementation of new policies will potentially lead to some volatility in coal prices.”¹⁶⁷

The International Energy Agency has observed that China possibly reached its peak coal consumption back in 2013.¹⁶⁸

For thermal coal, while China is also an important driver of the demand equation, the key issue is climate change. At the Paris Climate Conference in December 2015, 195 countries agreed to a legally binding agreement to address climate change, setting out a global action plan that is intended to limit global warming to well below 2 degrees celsius.¹⁶⁹ This included commitments to mitigation actions to reduce emissions.

¹⁶⁵ See for example, “Queensland coal mines up for sale as Anglo American tries to reduce debt”. ABC News, February 2016. <http://www.abc.net.au/news/2016-02-17/anglo-american-to-sell-metallurgical-coal-mines/7175444> {Accessed 27 October 2016}.

¹⁶⁶ Office of the Chief Economist (2016). *Resources and Energy Quarterly*, September, p.38.

¹⁶⁷ CRU (2016). http://www.crugroup.com/about-cru/cruinsight/Metallurgical_Coal_Price_Rally_Will_Chinese_production_controls_continue. {Accessed 3 November 2016}.

¹⁶⁸ International Energy Agency (2015). *Coal – Medium Term Market Report*.

¹⁶⁹ https://ec.europa.eu/clima/policies/international/negotiations/paris/index_en.htm.

As highlighted by Macquarie, there have been changes to the traditional institutional support for coal on a global basis as more weight is placed on Environmental, Social and Governance concerns and an increasing focus on Responsible Investments.¹⁷⁰ This is particularly the case for thermal coal, which has been described by some as already being in a 'structural decline' given the pressures by the community and governments to move away from thermal coal in electricity generation towards the use of renewables.¹⁷¹ Macquarie observes:

*There is a weak structural outlook for thermal coal driven by a global transition away from coal and towards cleaner energy sources.*¹⁷²

The shift towards cleaner energy sources may have some implications for electricity networks, in terms of dealing with distributed generation, however, these networks will retain (for the foreseeable future) their central role in the transportation of electricity from generation sources to end-users. The asset stranding risk faced by these networks is therefore comparatively low.

While Bowen Basin production is dominated by high quality coking coal, thermal coal volumes are sufficiently material for this to be a source of concern for Aurizon Network and its shareholders. This is exacerbated by the fact that much of this exposure is in the smaller systems, such as Moura and Newlands. As shown in Table 68, thermal coal accounts for nearly a quarter of the actual CQCN volumes, while the proportion of thermal coal volumes is 48% and 55% for Moura and Newlands respectively.¹⁷³

Table 68 Export Metallurgical and Thermal Coal Split by System

System	Metallurgical Coal Share (%)	Thermal Coal Share (%)
Goonyella	86%	14%
Blackwater	70%	30%
Newlands	45%	55%
Moura	52%	48%
Total	76%	24%

Source: Aurizon Network

While it has some cyclical characteristics, there is no consistent and predictable pattern in the coal market. Instead, there have been some major structural shifts in the industry in recent years, including a change in the structural cost competitiveness of Australian producers (as defined by Port Jackson Partners¹⁷⁴) and the growing impetus to shift away from thermal coal for electricity generation in response to climate change concerns (as highlighted above).

Aurizon Network's \$0.9 billion investment in WIRP is a pertinent case study. The investment decision was made on the back of projected annual volumes of 27 mtpa and was approved by customers. As is well known, since that commitment was made, market conditions changed substantially. Current railings are only 15 mtpa as per UT4 Final Decision forecasts. In UT4 the QCA therefore determined that it would impose a revenue deferral, delaying Aurizon Network's ability to recover its invested capital. This also illustrates how Aurizon Network bears material risk on investments that are made on behalf of the customers that have approved those investments.

There is also a threat of future competition for Aurizon Network's services in the northern Galilee Basin. In April 2016, the Queensland Government approved mining leases for the Carmichael coal mine and rail project in the

¹⁷⁰ Macquarie (2016). Coking Coal Opportunities.

¹⁷¹ Conroy, J. (2015). "Citi says Thermal Coal in Structural Decline", The Australian, May 29. <http://www.theaustralian.com.au/business/business-spectator/citi-says-thermal-coal-in-structural-decline/news-story/7618262352efce7d5a6bf827e5228a61> {Accessed 27 October 2016}

¹⁷² Macquarie (2016). p. 7.

¹⁷³ GAPE volumes have been included in the Goonyella and Newlands systems based on the location of mines.

¹⁷⁴ Port Jackson Partners (2011). Opportunity at Risk: Regaining our Competitive Advantage in Minerals Resources, Report Commissioned by and prepared for the Minerals Council of Australia.

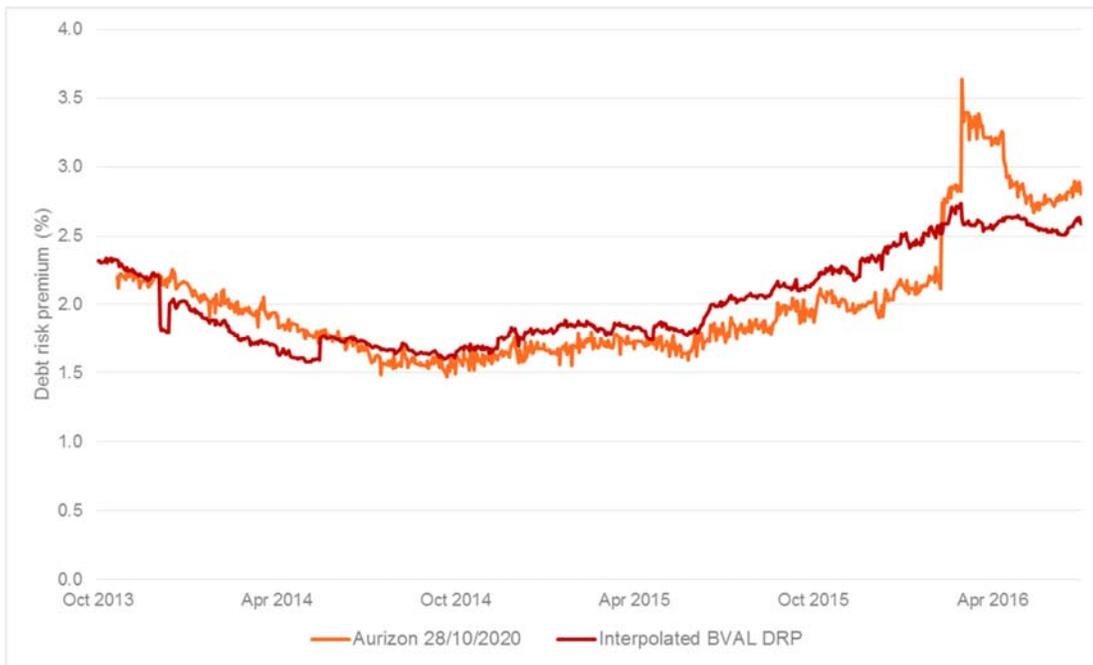
Galilee Basin. A 310km rail line is proposed to connect the northern Galilee Basin to the Port of Abbot Point. This presents a risk of bypass for Aurizon Network as existing Goonyella system users could divert tonnages to Abbot Point via the Galilee Basin rail line.

Evidence from the debt markets

The required return on equity is not readily observable (and hence one of the key reasons why it has been so contentious in regulation). The required return on debt, on the other hand, can be observed using data from the traded prices in the corporate bond market.

Based on this data, debt holders’ view of Aurizon Network’s risk profile is further demonstrated by evidence presented in the accompanying report by the Competition Economists Group (CEG) (refer CEG DRP Report). CEG observed the significant spike in yields on bonds issued by Aurizon Network from the end of 2015 compared to other issuers in the BBB category (noting that this encompasses BBB, BBB+ and BBB-).

Figure 77 Aurizon Network Debt Risk Premium compared to Bloomberg BVAL Benchmark



CEG (2016). Debt Risk Premium Coal Transporters, A Report for Aurizon Network, p.41.

This is also supported by evidence from the US market. CEG analysed changes in the debt risk premium (DRP) for bonds issued by coal-transporting railroads globally. As Aurizon Network’s current credit rating is BBB+, CEG focused on similarly rated firms. Table 69 sets out details of the bonds issued and provides evidence that these firms have also experienced significant increases in their DRP of a magnitude similar to Aurizon Network.

Table 69 Change in DRP for BBB+ coal railway operators – reproduced from CEG report

Company	Country	DRP in January 2015	DRP in January 2016	Change in DRP
CSX Corp	USA	1.60	1.96	36 bp
Canadian Pacific Railway	Canada	1.73	2.14	41 bp
Norfolk Southern Corp	USA	1.28	1.76	48 bp
Transnet Soc Ltd	South Africa	2.87	5.06	219 bp
Aurizon	Australia	1.66	2.13	47 bp

The marked divergence between the DRP for rail networks exposed to the coal market (including Aurizon Network) and other BBB/BBB+ issues provides evidence that market participants perceived a material increase in the risk of a coal infrastructure service provider. The fact that a similar divergence was seen for coal logistics firms in the US demonstrates that this cannot be explained by other factors that are specific to Aurizon Network. Regardless of whether this divergence persists, this highlights the debt markets' sensitivity to the coal industry environment and the overwhelming influence of the business and market environment on required returns, noting that bondholders have comparatively more certainty than equity investors.

The ratings agencies' perspective

Reference can also be made to the perspective taken by the ratings agencies. The ratings methodology develops two main profiles. The first is the business risk profile, which examines country and industry risk factors and the firm's competitive position in the market. The second is the financial risk profile, which is more specific to the firm and evaluates capacity to repay based on a number of key financial metrics.

The industry environment is a key factor underpinning the rating. This is reinforced by the credit rating downgrades that have been applied to dedicated coal export infrastructure owners as a consequence of the recent industry downturn. These are summarised in the following table.

Table 70 Downgrades of dedicated coal export infrastructure in Australia

Company	Change in credit rating	Ratings agency	Rating change date
Newcastle Coal Infrastructure Group	Baa3 to Ba1	Moody's	June 2016
Adani Abbot Point Coal Terminal	Baa3 to Ba2	Moody's	March 2016
DBCT	Baa3 to Ba2	Moody's	March 2016
DBCT	Baa2 to Baa3	Moody's	December 2015
DBCT	BBB+ to BBB	S&P	July 2014

Moody's, Standard and Poor's.

CEG highlights comments made by the ratings agencies in relation to coal infrastructure providers in Australia, which reinforce that the risk profile of an infrastructure provider that is dedicated to the coal industry is inextricably linked to the riskiness of the industry and its customers (noting that land transport costs are comparatively small relative to total FOB costs, as shown in Figure 5. Examples cited from Moody's include:

In relation to Aurizon Network and its limited ability to socialise lost revenue

"Whilst the regulatory framework allows Network to recoup revenue if actual volumes fall below forecasts – and to rebalance future tariffs based on reduced volumes – the weakened financial position of its counterparties increases the risk of them not having the capacity to pay such increased costs. This risk is a consequence of the escalating financial pressures facing the mine counterparties from weak commodity sector fundamentals."¹⁷⁵

In relation to the downgrade of the Adani Abbot Point Coal terminal:

"The ratings downgrade reflects the increasing likelihood of material volatility in AAPT's cash flows due to the weakened position of AAPT's coal mining counterparties, the sole source of such cash flows", says

¹⁷⁵ Moody's Investors Service (2016a). Credit Opinion, Aurizon Network Pty Ltd, p.4.

Mary Anne Low, a Moody's analyst, adding, "the ongoing severe pressure facing the coal sector translates into an increased likelihood of AAPT's counterparty contracts either not being renewed or subject to early termination."¹⁷⁶

Further:

"Moody's believes that the current coal market downturn is structural in nature, with weak conditions likely to persist. Such conditions will continually erode the mine counterparties' financial capacity over time, increasing the likelihood of a default.

Unlike other infrastructure asset classes such as airports and toll roads, which ultimately derive revenue from an extensive and broad base of customers, Moody's believes that if an AAPT counterparty defaults, weak coal market conditions will make it challenging for AAPT to secure replacement tonnage on equivalent terms."¹⁷⁷

In relation to the assessment of the Newcastle Coal Infrastructure Group (NCIG):

"Moody's believes that the coal market risks are outweighing the benefit of the structural protections available to NCIG to mitigate the risk of counterparty default. Such protections include NCIG's contractual right to immediately draw on third-party provided security covering 12 months of ship-or-pay obligations, the ability to recover shortfalls in revenue by increasing tariffs to the remaining users up to a finance charge cap, in addition to its right to sell or assign such default capacity."¹⁷⁸

In relation to the downgrade of DBCT

"Unlike other infrastructure asset classes such as regulated utility networks, which ultimately derive revenue from an extensive and broad base of customers, Moody's believes that if a DBCT counterparty defaults, weak coal market conditions will make it challenging for DBCT to secure replacement tonnage on equivalent terms."¹⁷⁹

Aurizon Network further notes the following comments made by Standard and Poor's in relation to DBCT:

"Ultimately, the terminal's long-term financial viability is inextricably linked to the long-term sustainability of the Bowen Basin and global metallurgical coal demand. Should either or both decline, this would likely affect the coal reserve life and trigger an early cash sweep amortisation that would significantly disincentivise the project's sponsors as all available cash would be redirected toward debt payment."¹⁸⁰

It is therefore clear that from a ratings agency perspective, the risk profile of a coal infrastructure provider is directly tied to the industry environment which has deteriorated. This is seen as outweighing any protections that are available to mitigate exposure to volume risk. The other point to note here is that as an infrastructure provider subject to revenue cap regulation, the risk faced by Aurizon Network is not symmetric. The nature of revenue cap regulation means that even when times are good, Aurizon Network does not earn higher revenues that may offset periods of lower earnings. That is, the returns Aurizon Network is permitted to earn will not exceed the regulated rate of return. As such, regulation limits the upside risk while leaving Aurizon Network exposed to the downside risk. The QCA's decision to apply revenue deferrals during the recent market downturn highlights Aurizon Network's exposure here, which is only to downside risk.

¹⁷⁶ Moody's Investors Service (2016b), in: Competition Economists Group (2016a). Debt Risk Premium of Coal Transporters, A Report for Aurizon Network, p.46.

¹⁷⁷ Moody's Investors Service (2016), in: Competition Economists Group (2016a). p.47.

¹⁷⁸ Moody's Investors Service (2016), in: Competition Economists Group (2016a). p.47.

¹⁷⁹ Moody's Investors Service (2016), in: Competition Economists Group (2016a). p.48.

¹⁸⁰ Standard and Poor's (2014). DBCT Finance Pty Ltd. Lowered to 'BBB' on Weakening of Customers' Credit Quality; Outlook Remains Stable, p.3.

Deterioration of mining company credit ratings and changing ownership structures

Over the past few years, Aurizon Network has observed that the credit rating profiles of its customers have materially deteriorated as a consequence of the change in market conditions described above. Moody's has on average downgraded Aurizon Network's major customers by about 2.6 notches for the past three years as shown in Table 71. Standard and Poor's similarly has lowered the credit ratings by about 1.5 notches (on average). The deterioration in major mining companies' credit ratings has materially increased the risk exposure of owners of supply chain infrastructure dedicated to the industry, including Aurizon Network. This has contributed to the negative sentiment expressed by credit rating agencies towards coal-related infrastructure.

Table 71 Customer Credit Rating – Moody's

Customer	FY2014 Credit Rating	FY2015 Credit Rating	FY2016 Credit Rating	Change
BHP Mitsubishi Alliance				
BHP Billiton	A1 (stable outlook)	A1 (stable outlook)	A3 (negative outlook)	2 Notch Decline
Mitsubishi	A1 (negative outlook)	A1 (stable outlook)	A2 (negative outlook)	1 Notch Decline
Glencore	Baa2 (stable outlook)	Baa2 (negative outlook)	Baa3 (stable outlook)	1 Notch Decline
Anglo American	Baa2 (negative outlook)	Baa2 (negative outlook)	Ba3 (positive outlook)	4 Notch Decline
Peabody Energy	Ba2 (negative outlook)	B3 (negative outlook)	Withdrawn	9 Notch Decline
Wesfarmers	A3 (stable outlook)	A3 (stable outlook)	A3 (stable outlook)	No Change
Rio Tinto	A3 (stable outlook)	A3 (stable outlook)	Baa1 (negative outlook)	1 Notch Decline
Idemitsu	N/A	N/A	N/A	No Change
Vale	Baa2 (stable outlook)	Baa2 (negative outlook)	Ba3 (negative outlook)	4 Notch Decline
Sojitz	Ba1 (stable outlook)	Ba1 (stable outlook)	Ba1 (stable outlook)	No Change
Yancoal	Ba1	Ba2 (negative outlook)	B2 (negative outlook)	4 Notch Decline

Source: Moody's and Aurizon Network Analysis

This deterioration is further highlighted by major asset impairments in Aurizon Network's customer base.

Table 72 Asset writedowns in the CQCN (\$ million)

	FY2012	FY2013	FY2014	FY2015	FY2016
Rio Tinto					954.8
Anglo Coal	43.3	321.4	108.9	1,441.3	1,615.9
Glencore Coal		8,375.3	0.0	328.5	
Peabody Energy	775.7	402.9	87.3	422.4	
Vale	989.4	0.0	381.1	758.3	
Wesfarmers					850.0
TOTAL	1,808.4	9,099.6	577.3	2,950.5	2,465.9

Source: Annual reports, Aurizon Network analysis

The other change that Aurizon Network has observed following the downturn in the coal price is a change in the industry structure. While the industry has previously been experiencing consolidation, the more recent trend has been the divestment of mining projects by some of the larger companies to smaller entities (with the exception of the

Clermont sale to Glencore). Some of these smaller entities do not have previous mining experience. This increases Aurizon Network’s credit exposure. A list of mine ownership changes in the past three years is provided in Table 73.

Table 73 Change of Mine Ownership from 2014 to 2016

Mine	Original Mine Owner	New Mine Owner	Previous Mining Experience
Clermont	Rio Tinto	Glencore	Yes
Isaac Plains	Vale	Stanmore	Yes
Callide	Anglo American	Batchfire Resources	No
Foxleigh	Anglo American	Middlemount South	No

Source: Market Intelligence, Aurizon

Aurizon Network also notices that larger mining companies such as Anglo American are still in the process of divesting interests in coal mines.¹⁸¹

Implications for Aurizon Network

Historically the QCA has taken the view that Aurizon Network is largely immune from the above risks because of the revenue protection provided by take or pay (a commercial mechanism) and the revenue cap (a regulatory mechanism), to the point where electricity and water networks are considered the best comparators in setting its rate of return. Aurizon Network has strongly rejected this contention and will continue to do so. The evidence provided above also clearly supports its view that the overarching driver of the returns required by its investors is the business and market environment, which is markedly different to the environment for electricity and water utilities.

As has been previously submitted, take or pay only provides protection for the term of the relevant contract, presuming the counterparty remains solvent. Since the downturn in the coal price, Aurizon Network has observed a trend emerging with Aurizon Network’s customers seeking to renew contracts for shorter terms when existing access rights expire, rather than renewing for a 10-year period.

In a recent example, one of Aurizon Network’s customers chose to extend its below rail access rights for only 12 months through the transfer of access rights instead of executing a new contract. Another customer extended its existing below rail access rights by only three years to align with their contract with the port terminal.

As Aurizon Network has also previously submitted, the revenue cap only provides protection for the duration of the regulatory period. At four years, Aurizon Network’s regulatory period is very short compared to the long-term horizon of investors and (potential) commercial and operating life of the CQCN. Further, as highlighted above by Moody’s, despite the existence of the revenue cap “the weakened financial position of its [Aurizon Network’s] counterparties increases the risk of their not having the capacity to pay such increased costs.”¹⁸² This risk has been exacerbated by the fragmentation of the RAB, with WIRP being a case in point. With the QCA’s decision to defer revenue relating to WIRP Moura due to the administration of Cockatoo Coal, there were no remaining customers within that system from whom the revenue could be recovered.

Any short-term protection provided by the revenue cap therefore also only applies to the revenue amount that has actually been approved by the QCA in the relevant period. If that approved revenue does not allow Aurizon Network to recover the full return on and of its invested capital, for example because revenue deferrals have been applied, the revenue cap mechanism does nothing to mitigate Aurizon Network’s exposure in relation to that deferred revenue, or provide it with any certainty that the deferred revenue will eventually be able to be recovered. This highlights Aurizon Network’s significant exposure to regulatory risk.

¹⁸¹ See for example, “Anglo American announces sale of Moranbah coal mines”. Daily Mercury, February 2016. <http://www.dailymercury.com.au/news/anglo-american-announce-sale-moranbah-coal-mine-2934339/>. {Accessed 27 October 2016}.

¹⁸² Moody’s Investors Service (2016a), p.4.

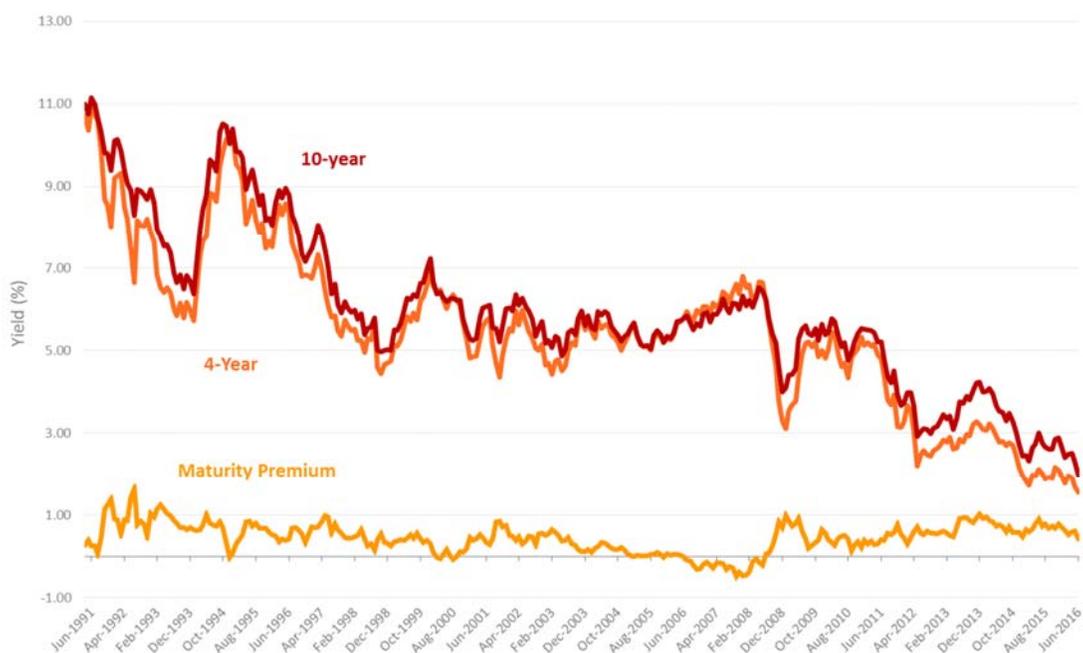
In conclusion, stranding risk therefore continues to be a key issue for Aurizon Network in the medium to long term. It does not currently have the ability to socialise costs between systems and its RAB has been subject to further fragmentation via the separation of key project costs for major developments such as WIRP, GAPE and NAPE. Coupling this with the uncertainty associated with the long-term demand outlook, Aurizon Network’s stranding risk has markedly increased, particularly since the approval of UT3 and hence remains a high priority issue for the UT5 review.

11.2.2 The financial market environment

Consistent with the environment underpinning the UT4 review, the financial market environment remains volatile and vulnerable to shocks.

The risk free rate also remains historically low, as shown in the following chart from the accompanying report by the Brattle Group (Brattle) (refer Brattle WACC Report).

Figure 78 Yield on 4 and 10 year Commonwealth Government bonds



Source: Bloomberg

Brattle Group (2016). Aurizon Network 2016 Access Undertaking, Aspects of the WACC, p.8.

As discussed further below, this creates particular challenges in estimating the required return on equity as it is considered neither reasonable nor plausible to assume that this required return has fallen one for one with the reduction in the risk free rate (as clearly implied by recent QCA decisions, including UT4). Evidence to support this is provided in the next section.

A new issue confronting Aurizon Network in the current review is the prospect of persistent low inflation, at least over the horizon of the UT4 period. Aurizon Network has commissioned a report from CEG on this issue (refer CEG Inflation Report). CEG highlights that applying the historical approach to forecast inflation, which has been set at the mid-point of the RBA’s target band, implies a “strongly negative” real risk free rate. While this has been a reasonable assumption to apply historically, the unusual circumstances confronted by major central banks at the current time, including the RBA, means that maintaining an inflation forecast of 2.5% is likely to materially overstate actual inflation for the UT5 period. A different approach is therefore needed, which is explored further in Chapter 5.

11.3 The regulatory task

As a capital intensive infrastructure business, Aurizon Network's return on capital remains the most significant component of the MAR allowance. It is estimated on a forward-looking basis as the Weighted Average Cost of Capital (WACC). This is the weighted average of the expected returns required by equity investors and debt investors in order to be willing to commit capital to Aurizon Network, having regard to competing opportunities available elsewhere.

In the context of the commercial and financial market environment outlined above, this section considers the implications for setting Aurizon Network's required rate of return within the regulatory framework.

11.3.1 The rate of return must be assessed from the perspective of investors

The WACC, being the returns required by equity and debt holders, is the one critical input that is estimated on behalf of parties that are not participants in the regulatory process, although as noted above, the legitimate interests of the owners are directly aligned with those of users who depend on ongoing efficient investment in the network. In effect, Aurizon Network, and the QCA, must replicate the decision-making process that capital providers will apply in assessing an appropriate rate of return for Aurizon Network having regard to its risk profile and prevailing financial market conditions. This process will be driven by practical considerations, as well as commercial and market experience. It also needs to have regard to the investment universe that investors are considering and how they view Aurizon Network's commercial and regulatory risks.

The legislative framework is discussed in detail in Chapter 2. As outlined above, one of the key legislative requirements that governs the setting of the WACC is the pricing principles (section 168A(a)), particularly the requirement that prices are set so as to:

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

This directly supports the Objects clause, which is to:

“...promote the economically efficient operation of, and use of, and investment in, significant infrastructure by which services are provided, with the effect of promoting competition in upstream and downstream markets...”

In practical terms, this requires the establishment of a rate of return that is commensurate with the regulatory and commercial risks involved in providing the relevant services, which as noted above, needs to be evaluated from the perspective of investors. If this requirement is not satisfied, Aurizon Network will not deliver an adequate return to its existing investors who have funded the existing infrastructure, potentially undermining the financial stability of the business. It will also have an adverse impact on its ability to raise capital to fund new investments in the CQCN. This will directly undermine the Objects clause, which is ultimately of detriment to users of the service.

11.3.2 The rate of return must be set to reflect Aurizon Network's commercial and regulatory risks

There are two key limbs to section 168A(a) that need to be satisfied, being that the rate of return is:

- > “at least enough to meet the efficient costs”; and
- > “commensurate with the regulatory and commercial risks involved”.

Integral to satisfying the second limb is clearly defining Aurizon Network's relevant “commercial and regulatory risks”. This is not a theoretical construct. In order to satisfy the second limb of 168A(a), the rate of return needs to reflect the actual commercial market and operating environment within which the firm operates, aspects of which

could be unique to that firm. If it abstracts from that reality or is mis-specified, the rate of return will not be “commensurate with the regulatory and commercial risks involved”.

As outlined above, Aurizon Network operates in a highly dynamic market environment, as evidenced by the most recent industry downturn. It will therefore continue to be necessary to review Aurizon Network’s commercial and regulatory risks as its operating and market environment continues to evolve and change into the future.

In order to determine the efficient compensation for the regulatory and commercial risks borne by Aurizon Network’s equity and debt investors, the WACC needs to be estimated having regard to the following characteristics:

1. It operates a stand-alone below-rail coal network that has a long economic life and no current or future alternative use.
2. As a capital intensive infrastructure provider, it has high operating leverage (that is, a high proportion of its cost base is fixed).
3. The coal network operates as part of a complex integrated supply chain, servicing multiple export ports and coal systems. Aurizon Network currently services five main coal systems, linking around 40 mines to five export coal terminals.
4. The firm’s operations are domestic only. However, the nature and scale of these operations require it to raise capital in both domestic and global markets. Around 53% of Aurizon Network’s shareholders are domiciled offshore and it currently raises just under 50% of its debt through foreign bond issues (with this percentage likely to increase in the next few years).
5. The ultimate demand for services is derived from the seaborne coal market, in which CQCN producers are price takers. It therefore depends on the relative competitiveness of CQCN producers in that market, which can also be influenced by government policy actions domestically and globally.
6. Particularly compared against other categories of regulated infrastructure such as electricity and water, the user base is highly concentrated.

These characteristics are relevant in assessing the overall rate of return, as well as informing the approach to be taken in estimating specific parameters, including the term to maturity for the risk free rate, as well as gearing, beta and the debt risk premium (DRP). It is also important in considering the approach that the QCA has taken to estimate the distribution rate for the purpose of gamma.

11.3.3 The rate of return must have regard to the requirements of the investor base

As satisfying the requirements of the legislation requires the WACC to be estimated from the perspective of investors, it is relevant to have regard to the nature of Aurizon Network’s investor base. As part of Aurizon Holdings, which is a listed entity, Aurizon Network has a detailed understanding of these requirements through regular investor interaction.

The investor base has the following characteristics:

1. It comprises sophisticated domestic and global investors who are constantly evaluating opportunities in the global marketplace.
2. Infrastructure investors evaluate those investments over a long-term forward-looking horizon.
3. Investors are becoming increasingly focussed on regulatory risk and value stability and predictability in the regulatory framework. While investors are not necessarily averse to risk, this should not be risk that is either unnecessarily created or can be reduced or avoided – regulatory risk is in that category (noting that there is also no ‘upside’ in bearing exposure to regulatory risk).

4. These investors evaluate Aurizon Network as part of a broader infrastructure asset class, which comprises regulated and unregulated assets.
5. Investors are more likely to focus on the overall return (relative to the risks involved), rather than underlying parameter estimates. Investors take a practical, commercial approach in forming their return expectations, rather than a theoretical one.

As outlined above, another key feature of the investor market is the increasing focus on Environmental, Social and Governance concerns and Responsible Investments. This is an issue for both equity and debt investors, with some investors either limiting their exposure to, or refusing to fund (or refinance), coal-related projects. Macquarie cites the following examples of what is happening in practice:

- > “Globally, funds representing US\$2.6 trillion of Asset Under Management (‘AUM’) from 2,040 individuals and 400 institutions have committed to divest assets in fossil fuel sectors
- > Allianz and AXA have announced plans to divest interests in companies with greater than 30% and 50% of revenue from coal, respectively
- > Global banks such as Citi and Bank of America have announced they are reducing credit exposures to coal mining”.¹⁸³

It is therefore essential for the QCA to set a return that is commensurate with the commercial and regulatory risks faced by Aurizon Network to enable it to attract and retain equity and debt investment.

As highlighted above, the risk free rate remains very low. As will be explored further below, one of the key issues for this review is whether investors’ return expectations have fallen with the risk free rate and if so, to what extent. Evidence presented in this submission demonstrates that these return expectations are more stable through time. This evidence includes the following.

Observations by the former Reserve Bank Governor

The former Reserve Bank Governor, Glenn Stevens, recently observed that the equity risk premium has likely risen in response to the fall in the risk free rate. This means that the required return on equity has not fallen as evidenced by stable earnings yields:¹⁸⁴

“...post-crisis, the earnings yield on listed companies seems to have remained where it has historically been for a long time, even as the return on safe assets has collapsed to be close to zero (Graph 2). This seems to imply that the equity premium observed *ex post* has risen even as the risk-free rate has fallen and by about an offsetting amount.”

¹⁸³ Macquarie (2016). p.6.

¹⁸⁴ Glenn Stevens (2015). Speech to the Australian American Association, New York, 21 April.



He goes on to state that:¹⁸⁵

“...the risk premium being required by those who make decisions about real capital investment has risen by the same amount that the riskless rates affected by central banks have fallen.”

McKinsey study

A study by Dobbs, Koller and Lund from McKinsey Inc also examined the impact of the fall in government bond yields and also concluded that despite this fall, the required return on equity appears to be quite stable.¹⁸⁶ Based on discussions with investors and corporate managers, they observe that required returns have not fallen:¹⁸⁷

“...a ‘rational expectations’ investor who takes a long-term view should regard today’s ultra-low rates as temporary and therefore likely will not reduce the discount rate used to value future cashflows. Moreover, such investors may assign a higher risk premium in today’s environment.”

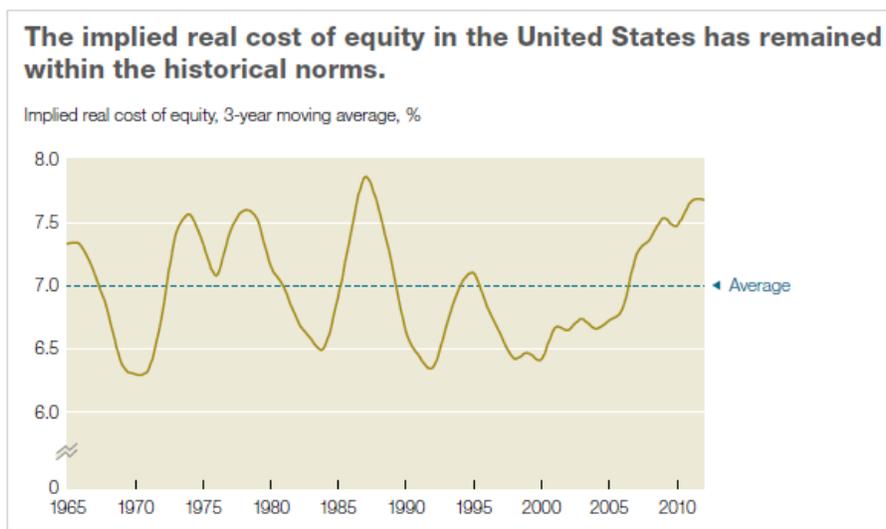
They noted that if the required return on equity had fallen, we should observe an increase in P/E ratios. Instead, as observed by Frontier, the opposite has occurred in Australia. Dobbs, Koller and Lund show that in the US, the implied real return on equity has remained stable and within the historical norms.

¹⁸⁵ Glenn Stevens (2015).

¹⁸⁶ Dobbs, Keller and Lund (2014), in Frontier Economics (2016b). The Market Risk Premium, Report Prepared for Aurizon Network, September, p.16.

¹⁸⁷ Dobbs, Keller and Lund (2014), in Frontier Economics (2016b). p.17.

Figure 79 Implied real return on equity



Dobbs, Keller and Lund (2014), in Frontier Economics (2016b).
The Market Risk Premium, Report Prepared for Aurizon Network, September, p.18.

Evidence from independent expert reports

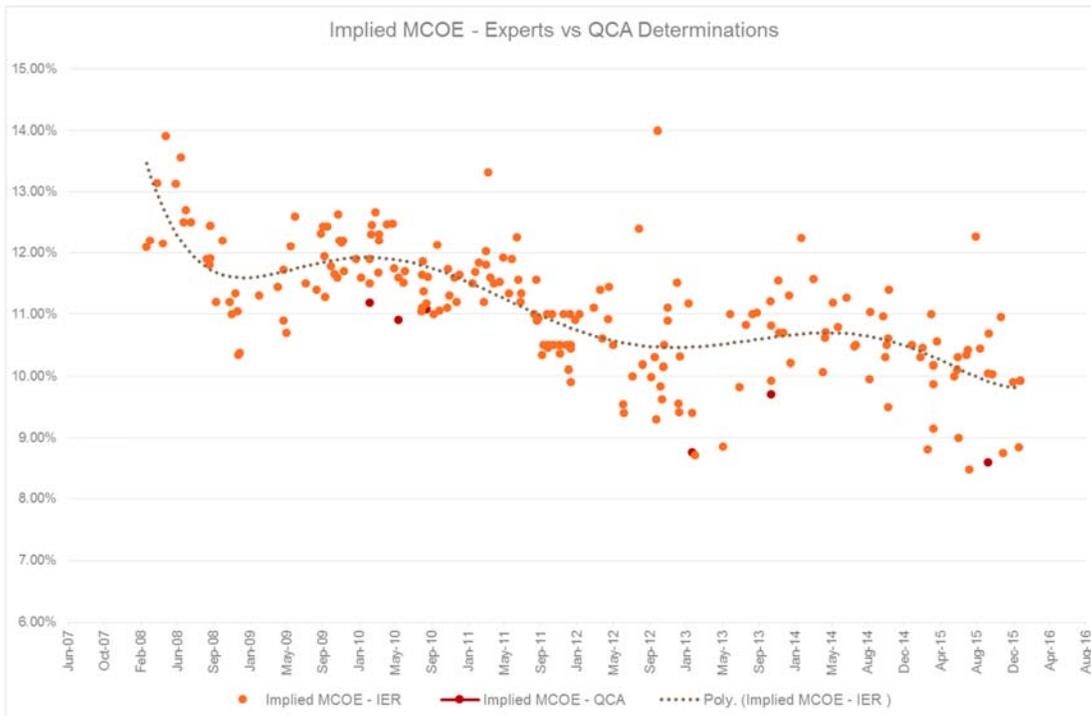
The accompanying report from Ernst and Young (refer EY Cost of Equity Report) examines the approaches applied by independent experts in Australia to determining the market return on equity for valuation purposes. This revealed that particularly since the GFC, rather than applying a mechanistic approach to determine the return on equity, they have made adjustments either to the WACC or the return on equity. For example, in 2015 the majority of the experts (23 out of 24 of the reports in Ernst and Young's sample) "made adjustments by either applying company or project specific risk premia, using longer term averages of the government bond yield for the risk free rate as opposed to a short term spot values or increase the overall inputs-based CAPM cost of equity or discount rate applied based on wider market considerations."¹⁸⁸

The approaches applied by independent experts is highly relevant in this context given the required return on equity that is applied must reflect the long-term, forward-looking expectations of investors in the firm that is being valued. Aurizon Network's investors are similarly evaluating their investment decision based on a long-term forward-looking discounted cashflow approach, where the discount rate applied in that valuation reflects the return that the investor requires given Aurizon Network's risk profile, having regard to prevailing market conditions. The approaches applied in these reports demonstrates practical application of the Capital Asset Pricing Model (CAPM) by independent experts in the field whose opinions are being prepared based on the requirements of the *Corporations Act 2001*.

Ernst and Young also show that in contrast, the mechanistic way in which the QCA has applied the CAPM results in an implied return on equity that is consistently well below the assumptions applied by these independent experts, particularly in more recent years when the risk free rate has been very low, as shown in the following chart.

¹⁸⁸ Ernst and Young (2016). Market Evidence on the Cost of Equity, pp.1-2.

Figure 80 Implied ROE: independent experts and QCA



Ernst and Young (2016). Market Evidence on the Cost of Equity, p. 3.

This also shows that while the implied return on equity has fallen, it has not fallen as dramatically as the risk free rate, as is implied by the approach applied by the QCA in the UT4 decision (which also reflects its preferred WACC methodology).

Evidence from approaches applied by other Australian regulators

Other Australian regulators have recognised this problem. For example, in its 2015 decision for ATCO Gas, the Economic Regulation Authority (ERA) commented:

“...the Authority has now concluded that it is not reasonable to constrain the MRP to a fixed range over time. The erratic behaviour of the risk free rate in Australia to date, and more particularly, its pronounced decline in the current economic environment, leads to a situation where the combination of a fixed range for the MRP and prevailing risk free rate may not result in an outcome which is consistent with the achievement of the average market return on equity over the long run.”¹⁸⁹

It addressed this by increasing its MRP estimate from 5.5% to 7.6% in the ATCO Gas Final Decision. It applied in a similar approach in its WACC methodology review for rail networks, where it applied a MRP of 7.3%.¹⁹⁰ It maintained this same approach in its most recent decision for the Dampier to Bunbury Pipeline in June 2016, where it applied a MRP value of 7.4%.¹⁹¹

¹⁸⁹ Economic Regulation Authority (2015a). Final Decision on Proposed Revisions to the Access Arrangement for the Mid-West and South-West Gas Distribution Systems, p.249.

¹⁹⁰ Economic Regulation Authority (2015b). Review of the Method for Estimating the Weighted Average Cost of Capital for the Regulated Railway Networks, Final Decision.

¹⁹¹ Economic Regulation Authority (2016). Final Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline 2016 – 2020.

The Independent Pricing and Regulatory Tribunal (IPART) also recognised this issue in its 2013 WACC methodology review. In commencing this review in 2012 it observed:

“The application of the CAPM using a stable historic MRP (of 6%) and a prevailing market rate for the risk free rate means that the cost of equity will move in synchronicity with the risk free rate for a given level of equity beta. If the risk free rate fluctuates significantly so will the cost of equity.

In late 2008/early 2009, and then again from late 2011, the risk free rate fell to a 50-year low. The overall effect is that the regulatory cost of equity has fallen and may underestimate the cost of equity for regulated businesses when the risk free rate is low. Conversely, it may overestimate the cost of equity when the risk free rate is high.”¹⁹²

The outcome from this review was that IPART now estimates the WACC based on two ranges – one that reflects long-run historical averages and one that uses current forward-looking estimates. It has continued to apply this approach since this review was concluded in 2014 and publishes six monthly updates of the market parameters that apply under this approach. For example, in the most recent update published in August 2016, its mid-point estimate of the risk free rate was 3.2% and the mid-point estimate of the MRP was 7.3%.¹⁹³ While based on a different approach, this is similar to the ERA’s most recent estimate of the MRP.

Evidence from the corporate debt market

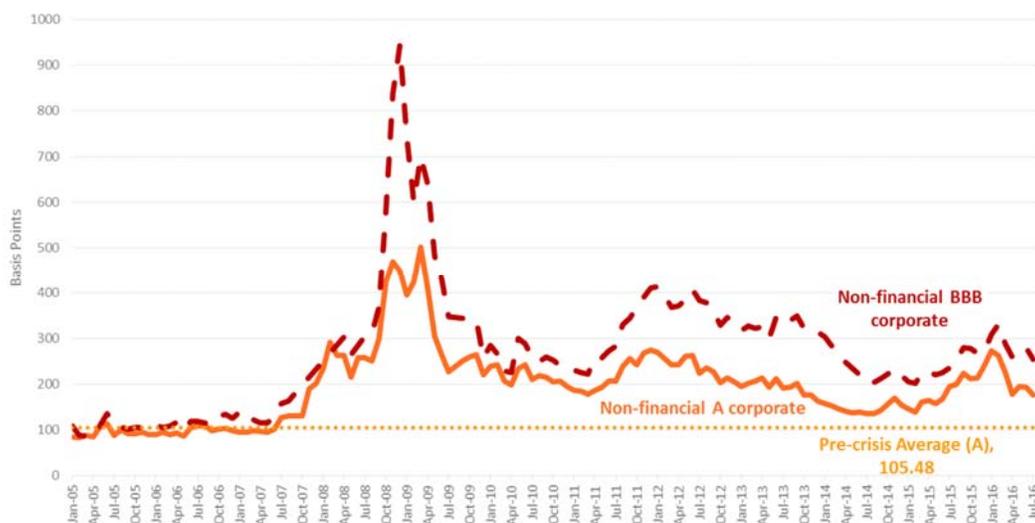
As noted previously, the return on debt is more readily observable via yields on corporate bonds. It is not controversial that debt is inherently less risky than equity given that debt repayments are a contractual obligation, with equity holders only entitled to any residual claims on the firm after debt holders have been repaid.

Aurizon Network has commissioned a report from Brattle (refer Brattle WACC Report) that amongst other things, considers the implications of the low risk free rate for required returns. It observes how the corporate bond spread (that is, the difference between the corporate bond yield and the risk free rate) increased following the GFC and while spreads have contracted, remain above the level that prevailed prior to the GFC.

¹⁹² Independent Pricing and Regulatory Tribunal (2012). Review of Method for Determining the WACC, Dealing with Uncertainty and Changing Market Conditions, Discussion Paper, p.55.

¹⁹³ <https://www.ipart.nsw.gov.au/Home/Industries/Special-Reviews/Regulatory-policy/WACC/Market-Update/Fact-Sheet-WACC-Biannual-Update-August-2016>

Figure 81 Australian 10 year corporate bond spreads



Source: <http://www.rba.gov.au/statistics/tables/>

Brattle Group (2016). Aurizon Network 2016 Access Undertaking, Aspects of the WACC, p.14.

As highlighted by Brattle, regardless of how this is interpreted, it has implications for the return on equity, which is either via the estimation of the risk free rate or the MRP. Aurizon Network considers that the most appropriate way to address this is via the MRP, consistent with the evidence above that suggests that investors are applying a higher risk premium in the current market.

11.4 Aurizon Network’s Proposed WACC for UT5

11.4.1 Overview

Aurizon Network’s proposed WACC for UT5 is set out below. Aurizon Network recognises that the access undertaking for the UT4 period has only recently been finalised, however, rather than simply looking to ‘roll forward’ the UT4 WACC, Aurizon Network has undertaken a comprehensive review of the methodology and parameters from first principles. Aurizon Network considers it imperative to do this given its changing commercial and business risk profile (as defined above), as well as the continuing challenges presented by the financial market environment. Having regard to these drivers, Aurizon Network has an obligation to its shareholders investors to ensure that it proposes a rate of return that will provide it with appropriate compensation for its commercial and regulatory risks, as required under the QCA Act.

While Aurizon Network has undertaken a fresh review, it has done so having regard to recent QCA precedent, including its WACC methodology review concluded in 2014, as well as other relevant regulatory precedent from other jurisdictions. Aurizon Network does continue to have some fundamental concerns with aspects of the QCA’s approach and acknowledges that some of the issues raised in this submission have been raised previously.

Aurizon Network remains firmly of the view that applying the QCA’s current methodology – in the manner in which it has been applied by the QCA – will result in a rate of return that will provide inadequate compensation for its commercial and regulatory risks. This will not satisfy the requirements of the QCA Act, noting that an adequate rate of return is integral to the promotion of the Objects clause, in particular, ensuring efficient network investment. In order to ensure efficient network investment Aurizon Network needs to be able to satisfy the expectations of its existing shareholders, as well as raise additional capital to fund new investment and refinance maturing debt.

In saying this, and ideally with a view to reducing potential areas of disputation, Aurizon Network has applied the QCA's preferred models, being:

- > the Sharpe Lintner CAPM (the SL CAPM) to estimate the return on equity; and
- > the QCA's in-house approach to estimate the return on debt, as originally developed by PwC.

The key concerns relate to the application of these models and how some of the parameters have been estimated, particularly for the return on equity, which is not readily observable. Overall, Aurizon Network considers that having regard to the volatile and uncertain financial market and industry environment, it is imperative that the measures used are capable of capturing prevailing market conditions.

The other important aspect of the approach is testing the reasonableness of the overall WACC estimate, as well as the return on equity and debt, having regard to any relevant market evidence of the return that is likely to be required by an investor for an investment with this type of risk profile. As outlined above, it is also essential to test the impact of the outcome on Aurizon Network's financeability.

Aurizon Network's proposed approach is set out below. A more detailed review of its concerns with the QCA's current approach is presented in section 11.5.

This submission is accompanied by a number of independent expert reports, being:

- > The Brattle Group: Aspects of the WACC
- > Frontier Economics: The Market Risk Premium
- > Frontier Economics: Equity Beta
- > Frontier Economics: Estimating Gamma for Regulatory Purposes
- > CEG: Debt Risk Premium of Coal Transporters
- > CEG: Best Estimate of Inflation – Revaluations and Revenue Indexation
- > Ernst and Young: Market Evidence on the Cost of Equity.

11.4.2 Model to estimate the return on equity

As noted above, Aurizon Network has applied the SL CAPM to estimate the return on equity, consistent with the QCA's preferred approach. However, the SL CAPM does have a number of recognised deficiencies that need to be considered. As highlighted in the accompanying report by Frontier (Frontier Beta Report), these include:

- > the "strong and consistent" empirical evidence that it systematically underestimates the required return on equity for firms that have a beta of less than 1 and overstates the required return on equity for firms that have a beta above 1 – this evidence is further supported by Frontier's own analysis. It is also supported in the analysis presented in the Brattle Report (Brattle WACC Report);
- > that it ignores factors that have been consistently shown empirically to explain returns, in particular, the ratio of the book value of equity to the market value of equity.

The recognised low beta bias issue does not arise where an equity beta of 1 is used, which is the equity beta proposed by Aurizon Network. On the other hand, as Aurizon Network has low book-to-market ratio, Aurizon Network's proposal to continue using the SL CAPM in estimating cost of equity is a conservative approach.

It is recognised that all models have their strengths and weaknesses. However, in order to reduce the risk of estimation error in applying the model, it is necessary and appropriate to consider ways in which those weaknesses can be addressed, or the risk of estimation error reduced. Rather than discard the model, this can be considered as part of the estimation of each of the SL CAPM's parameters.

Aurizon Network's UT5 proposal

Aurizon Network has applied the SL CAPM to estimate the return on equity.

11.4.3 Term to maturity for the risk free rate

Aurizon Network has applied a ten year maturity for the term of the risk free rate. This is supported by the accompanying report by Brattle (refer Brattle WACC Report). Ten years is the longest liquid proxy for the risk free rate available in Australia and is consistent with the long-term horizon of investors in infrastructure that has a long life.

As highlighted by Brattle, a long-term horizon is consistently adopted by all other Australian regulators (the only exception being the ERA) as well as North American regulators and Ofgem. The Australian Competition Tribunal has also observed that the use of ten year term to maturity “is not contentious”.¹⁹⁴ It is also commonly applied by practitioners. Ernst & Young also finds the overwhelming majority (~98%) of valuation experts use a long-term (10-year) risk free rate in independent expert reports.¹⁹⁵

The reasons Brattle cites for other regulators relying on the long-term Government bond yield as the risk free rate (which is ten years in Australia and longer in North America) is that:

- > “long-term government rates, which are commonly used to measure the risk free rate, are less influenced by monetary policy than are short-term rates;
- > regulated assets are long-lived;
- > equity investments have a perpetual horizon, representing a claim on cashflows generated by the company’s assets in perpetuity;
- > the Market Risk Premium (MRP) is often measured relative to a long-term government bond.”¹⁹⁶

Aurizon Network does not consider that the term to maturity should be aligned with the length of the regulatory period, as was applied for UT4. The key reasons for this are set out in section 11.5.1.

Aurizon Network’s UT5 proposal

Aurizon Network has applied a ten year term to maturity for the risk free rate.

11.4.4 Risk free rate

The risk-free rate is the return required by investors when investing in a risk free asset. It is used to calculate both the return on equity and the return on debt. The proxy for the risk free rate that is most widely used by practitioners and regulators, including the QCA, is the relevant sovereign Government bond yield (which in Australia, is the Commonwealth Government bond).

As noted above, one of the key challenges in the current environment is the persistent low risk free rate. This is particularly the case for the return on equity, where combining a prevailing estimate of the risk free rate with a static long-term MRP results in a return on equity that will effectively move with changes in the risk free rate. This has been the QCA’s practice, having consistently applied a MRP of 6% historically and then 6.5% following its 2014 WACC methodology review.

The accompanying report prepared by Brattle (refer Brattle WACC Report) examines the estimation of the risk free rate in the current environment, having regard to the need to estimate an overall return on equity that is reasonable. It identifies two main ways in which analysts can approach this problem, both of which have been used in practice, being:

¹⁹⁴ Australian Competition Tribunal. Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, 26 February 2016, p.190.

¹⁹⁵ Ernst & Young (2016), Market evidence on the cost of equity, p.28.

¹⁹⁶ Brattle Group (2016). Aurizon Network 2016 Access Undertaking, Aspects of the WACC, p.6.

1. 'normalising' the risk free rate by adding a portion of the increase in the spread between Government and corporate bonds, with the change in spread being seen to be representative of factors that are specific to Commonwealth Government bonds (Brattle estimates this spread to be in the order of 70 to 90 basis points); or
2. using the prevailing estimate of the risk free rate and addressing this via the estimation of the MRP. This is the approach that has been adopted by IPART and the ERA, for example.

Aurizon Network proposes to adopt the second approach.

Except for the term to maturity (as per above), Aurizon Network has estimated the risk free rate in accordance with the QCA's approach, which is based on a twenty day average of the Commonwealth Government bond yield for the relevant term to maturity. This has been estimated for a ten year term. For the purpose of this revenue proposal, the risk free rate has been estimated over the twenty day period to 30 June 2016. The resulting placeholder estimate is 2.13%.

Aurizon Network proposes, consistent with QCA practice, that the risk free rate be updated prior to the QCA's Final Decision on UT5. Aurizon Network proposes that this is done by it confidentially proposing the averaging period for QCA approval. The final averaging period and resulting estimate is then published in the UT5 Final Decision.

Aurizon Network's UT5 proposal

Aurizon Network has applied a risk free rate of 2.13% for the purpose of this proposal. This will be updated prior to the QCA's Final Decision on UT5 based on an averaging period to be confidentially agreed with the QCA.

11.4.5 Gearing and target credit rating

Aurizon Network's benchmark gearing ratio has consistently been set at 55% since UT1. Aurizon Network is not proposing to modify this assumption for UT5, noting that it is also consistent with its actual and intended capital management practice and the maintenance of its target BBB+ credit rating (noting that Aurizon Network continues to issue debt to investors who have an expectation that a rating of BBB+ will be maintained).

A notional benchmark credit rating of BBB+ has been applied by the QCA since UT2. During the UT4 process the QCA engaged a consultant (Incenta) to assess the benchmark credit rating for Aurizon Network and it subsequently concluded that a BBB+ rating remained appropriate.

Aurizon Network is currently rated BBB+ by Standard & Poor's and Baa1 by Moody's. In February 2016 Moody's placed Aurizon Network on credit watch with a negative outlook. Moody's has since confirmed a Baa1 rating, but maintained the negative outlook.

"Network's negative outlook reflects Moody's expectation that the company's credit metrics on a standalone basis will fall outside the tolerance level for its Baa1 rating over the next 12-24 months, due to declining regulatory-determined returns."¹⁹⁷

In recognition of the increased likelihood of cash flow volatility (thereby requiring a higher capital buffer), Moody's has set Aurizon Network's tolerance level at a materially higher threshold than equivalently rated regulated energy network utilities. To retain its Baa1 credit rating Aurizon Network needs a funds from operations (FFO) to debt ratio above 18% and FFO interest coverage above 4.5. Aurizon Network notes that in the recent Draft Decision for DBCT Management, the QCA analysed the impact of the regulated revenue parameters having regard to key credit metrics. Aurizon Network considers that the QCA should do this for the UT5 revenue proposal.

For this UT5 revenue proposal Aurizon Network therefore applies a benchmark credit rating of BBB+, on the understanding that the QCA will analyse the resulting credit metrics to ensure that the proposed UT5 revenue

¹⁹⁷ Moody's (2016). Moody's confirms Aurizon Holdings Baa1 rating; outlook negative, available at https://www.moody.com/research/Moodys-confirms-Aurizon-Holdings-Baa1-rating-outlook-negative--PR_346711.

outcome remains consistent with the maintenance of this benchmark rating (as it has done for DBCT Management). Aurizon Network notes that in its analysis of DBCT's credit metrics, Incenta only used the Standard and Poor's thresholds to determine the benchmark credit rating. For example, the FFO/debt threshold for achieving a BBB+ credit rating was only 13%. By comparison the threshold for Aurizon Network to maintain its BBB+ rating has, according to Moody's, increased significantly in recognition of the current higher risks faced (see below). Aurizon Network submits that the QCA must take this into account when assessing the benchmark credit rating for Aurizon Network.

Aurizon Network's UT5 proposal

Aurizon Network has applied gearing of 55%. It continues to target a notional benchmark credit rating of BBB+ and assumes that the QCA will analyse the resulting credit metrics to ensure that the proposed UT5 revenue outcome remains consistent with this.

11.4.6 Market risk premium

The MRP is used in calculating the return on equity. It is the difference between the expected return on the market portfolio and the risk free rate, or the premium required by equity investors to compensate them for bearing risk.

As outlined above, combining a current estimate of the risk free rate with the QCA's preferred MRP, which largely reflects the long-term historical average and has accordingly remained fixed or relatively inflexible over time, results in a return on equity that effectively moves one for one with the risk free rate. As outlined above and detailed further in the accompanying report by Frontier (refer Frontier MRP Report), evidence from market practitioners does not support the view that the return on equity has fallen one for one with the fall in the risk free rate.

Frontier sets out three questions that need to be addressed in order to develop an appropriate estimate of the MRP, which makes use of all of the relevant information that can be used to inform it. These are:

- 1. What is the MRP that we would estimate today if we relied entirely upon past returns information and the current government bond yield?** As Frontier highlights, ideally we should infer estimates for the MRP solely based on information that is relevant today. However, this is vulnerable to estimation error. We therefore need to place some reliance on information from past returns to mitigate estimation error.
- 2. What is the MRP we would estimate today based upon analysis of contemporaneous market information?** As outlined above, this is clearly of importance in arriving at an estimate of the MRP that aligns with investor expectations in the current market environment.
- 3. Given estimates of the MRP based upon contemporaneous market information, and historical returns, how much confidence do we have in the estimate of the MRP from contemporaneous information? Put another way, how much reliance should we place upon the MRP estimate from past returns in order to mitigate the risk of estimation error in the contemporaneous MRP estimate?** Recognising that historical and contemporaneous returns information has been relied upon to arrive at the MRP, this is a clear, logical and transparent way of synthesising this information to determine the MRP estimate that will be applied.

Frontier also makes some specific recommendations as to how the QCA's approach should be adjusted, having regard to the questions above, as set out in section 11.5.2.

Based on these questions, Frontier develops a proposed estimate of the MRP, referring to the following approaches:

- > historical returns:
 - the Ibbotson approach, which is based on the mean of long-term historical excess returns – this is also referred to by the QCA;
 - the Wright approach, which is based on the mean of historical real returns – this is also referred to by the QCA;
- > contemporaneous information:
 - Dividend Discount Model estimates – this is also referred to by the QCA, although Frontier has identified some methodological issues with the QCA's estimates (refer section 11.5.2);

- conditioning information and market indicators (being the earnings yield, corporate bond spread, volatility of the ASX 200 and the term spread) - conditioning information is also referred to by the QCA, although it is not clear if and how this is taken into account.

Frontier places no weight on two approaches referred to by the QCA, being the Siegel approach and survey estimates (refer section 11.5.2).

Aurizon Network considers it extremely important for there to be transparency in deriving the point estimate of the MRP from the various sources of information. The lack of transparency in the QCA's approach remains a key source of concern and also undermines the stability and predictability of the regulatory framework. Frontier has:

- > applied equal weights to the Ibbotson and Wright approaches in arriving at the MRP implied by historical returns;
- > applied equal weights to the Dividend Discount Model and market indicators in arriving at the MRP implied by contemporaneous information; and
- > applied equal weight to the MRP implied by historical excess returns and contemporaneous information.

This arrives at an estimate of 7.55%, as shown in the following table.

Table 74 Frontier Economics: estimate of the MRP

Frontier Economics Estimate	
What would the MRP estimate be based upon past return information?	
Ibbotson Approach	6.40%
Wright Approach	8.87%
Average Historical Estimates	7.63%
What would the MRP estimate be based upon contemporaneous information?	
Cornell Approach	8.09%
Market Indicator Approach	6.85%
Average Contemporaneous Estimates	7.47%
What is the overall MRP estimate?	7.55%

The methodology and estimates produced above differ from the approach applied by the QCA in the UT4 review (which also reflects its preferred WACC methodology). The main differences are:

- > the lack of transparency in the QCA's approach, noting that the weights it has applied are unknown;
- > the QCA's reliance on the Siegel methodology and survey evidence;
- > the way in which some of the key models have been estimated, including the adjustments made to its Dividend Discount Model to reflect the earnings growth expectations incorporated into current share prices.

An explanation of Aurizon Network's main concerns with the QCA's approach is provided in section 11.5.2.

Noting these concerns, and without accepting the relevance of the Siegel methodology or survey evidence, Aurizon Network has also taken the QCA's most recent estimates from its preferred models (from the Draft Decision for DBCT) and examined what the MRP would be if we apply Frontier's decision making framework to the QCA's methods (including the transparent weights Frontier has applied to each method). This is shown in the table below.

Table 75 QCA MRP estimate based on Frontier's decision-making framework

QCA estimate	
What would the MRP estimate be based upon past return information?	
Ibbotson Approach	6.40%

	QCA estimate
Wright Approach	8.87%
Siegel Approach	5.40%
Average Historical Estimates	6.89%
What would the MRP estimate be based upon contemporaneous information?	
Cornell Approach	8.17%
Market Indicator Approach	No specific estimate
Survey Evidence	6.00%
Average Contemporaneous Estimates	7.09%
What is the overall MRP estimate?	6.99%

This demonstrates that when a logical and transparent decision-making framework is applied to the QCA's preferred models, the overall MRP estimate is 7%, reflecting equal weight on the average historical and contemporaneous estimates.

Analysis by the Brattle Group

Aurizon Network has placed primary reliance on the methodology and estimates produced by Frontier. Brattle has also provided an estimate of the MRP (refer Brattle WACC Report). It places reliance on three main methods, being:

- > Credit Suisse's estimate of the historical MRP for Australia;
- > the Wright approach; and
- > Bloomberg's current forecast of the MRP for Australia.

The mid-point of the estimates from the above approaches, adjusted for imputation credits, is 7.7%. This is shown in the following table.

Table 76 Brattle Group MRP estimates

	Before imputation adjustment	After imputation adjustment
Credit Suisse historical MRP	6.6%	6.8%
Wright approach	8.3%	8.6%
Bloomberg's current forecast	7.6%	8.6%
Average	7.5%	8.0%
Mid-point	7.5%	7.7%

Overall, this is generally consistent with the estimate produced by Frontier.

Aurizon Network's UT5 proposal

Aurizon Network considers that the estimation of the MRP should be based on answering the following three questions:

1. What is the MRP that we would estimate today if we relied entirely upon past returns information and the current government bond yield?
2. What is the MRP we would estimate today based upon analysis of contemporaneous market information?
3. Given estimates of the MRP based upon contemporaneous market information, and historical returns, how much confidence do we have in the estimate of the MRP from contemporaneous information? Put another way, how

much reliance should we place upon the MRP estimate from past returns in order to mitigate the risk of estimation error in the contemporaneous MRP estimate?

In answering the above questions, it is essential to be transparent as to the weights that have been applied to the various estimates, including the relative weight placed on historical returns and contemporaneous market data.

Aurizon Network has considered the recommendations made by its consultants and the approach previously applied by the QCA. Transparently applying the above methodology, the resulting estimate produced by Frontier is 7.55%, which is supported by the estimate produced by Brattle. As outlined above, Aurizon Network has applied this same decision-making framework to the QCA's preferred models and estimates, based on the Draft Decision for DBCT Management. This arrived at a MRP of 7%.

As outlined in section 11.5.2, Aurizon Network has concerns with two of the QCA's models, being the Siegel approach and surveys, as well as the approach it has applied to the Cornell method. However, as a practical matter, for its UT5 proposal Aurizon Network has proposed to apply its proposed decision-making framework to the QCA's preferred estimates. This provides a MRP of 7%. This is below the estimates recommended by Aurizon Network's experts and is therefore a conservative proposal.

11.4.7 Equity beta

Relevant risk profile

The equity beta is one of the key parameters that reflects Aurizon Network's commercial and regulatory risks. The first step in the estimation process is to define the firm's risk profile. As outlined above, the WACC is being estimated for a firm that has the following business and industry characteristics:

1. It operates a stand-alone below-rail coal network that has a long economic life and no current or future alternative use.
2. As a capital intensive infrastructure provider, it has high operating leverage (that is, a high proportion of its cost base is fixed).
3. The coal network operates as part of a complex integrated supply chain, servicing multiple export ports and coal systems.
4. The firm's operations are domestic only. However, the nature and scale of these operations require it to raise capital in both domestic and global markets.
5. The ultimate demand for services is derived from the seaborne coal market, in which CQCN producers are price takers. It therefore depends on the relative competitiveness of CQCN producers in that market, which can also be influenced by government policy actions domestically and globally.
6. Particularly compared against other categories of regulated infrastructure such as electricity and water, the user base is highly concentrated.

Aurizon Network's 'core' systematic risk profile is driven by the above characteristics. The implications of the above are that at least in the medium to long term, its risk profile is closely linked to the risk profile of the global seaborne coal industry it services.

Another relevant consideration here is the extent to which there are revenue protection mechanisms that mitigate Aurizon Network's exposure to systematic risk. As previously mentioned, take or pay is generally seen as being one such mitigant, although this is only relevant for the term of the contract and then only while the contract remains on foot. In the context of Aurizon Network's long term exposure, this is a comparatively short period. Once contracts expire, there is a risk that they will either not be renewed or are renewed for a lesser volume.

Revenue protection is also provided for the four year regulatory period via the revenue cap. Again, however, this is comparatively short in the context of the economic life of the asset base. It also only provides protection for the relevant period, after which Aurizon Network's MAR is fully reset based on forecast volumes. It also assumes that the MAR that is set for that period will actually allow it to earn a full return on and of capital on its RAB for that period.

In any case, as highlighted by Frontier (refer Frontier Beta Report), there is no evidence that equity beta depends upon the form of regulation. Hence, Aurizon Network does not agree with the QCA that regulation is the most important determinant of equity beta.

In Aurizon Network's experience, regulation can materially increase its exposure to risk rather than mitigate it. Any protection the revenue cap provides is practically limited by the fragmentation of the RAB. Aurizon Network's RAB is currently fragmented on two dimensions: coal systems and traction choices (i.e. diesel versus electric). For pricing purposes, the RAB is currently broken down into seven separate components. There is no mechanism for Aurizon Network to recover revenue shortfalls between systems.

This similarly applies between electric and non-electric infrastructure. As has been previously submitted by Aurizon Network, it is exposed to the risk that the current pricing arrangements distort traction choice and increase the risk of the bypass of electric infrastructure, which is not subject to take or pay protection. Users have the option to switch between electric and non-electric tractions without any penalties. As a result, electric traction could be stranded even when the demand is strong while the non-electric traction offers a more cost effective transportation solution.

The number of users and RAB values for each of the pricing systems is summarised in the table below. This shows that there are some systems with only two mines, which means that Aurizon Network ends up bearing a similar risk to the mine. If the mine is closed, Aurizon Network is faced with the uncertainty as to whether it will be able to recover its invested capital, which it currently cannot recover from users in other systems.

Table 77 RAB fragmentation in the CQCN

System	RAB Value	Number of Users ^a
Blackwater	2,305.1	12
Blackwater Elec.	435.8	8
Goonyella	1,563.3	21
Goonyella Elec.	248.0	21
GAPE	937.6	6
Moura	266.6	2
Newlands	195.3	2
Total	5,951.8	34

a. The total number of operating users does not equal to the sum of operating users in each system as some users use more than one system.

The revenue deferrals imposed on Aurizon Network by the QCA in the UT4 period is another key example of where regulation has actually increased risk. During the UT4 period, Aurizon Network has invested over \$900 million in the WIRP project at the request of producers, with the expectation that the full amount of this capital expenditure would start to be recovered from the commissioning date. However, with the fall in demand the QCA has deferred recovery of approximately \$260 million of this expenditure. The deferred capital expenditure will be escalated at WACC, which the QCA considers will be NPV neutral for Aurizon Network. However, this ignores the fact that investors are left with the uncertainty about if and when this capital will start to be recovered and if it will be fully recovered. As noted previously, with the QCA's decision to defer revenue relating to WIRP Moura due to the administration of Cockatoo Coal, there were no remaining customers within that system from whom the revenue could be recovered.

The deferral of WIRP capital recovery is also contrary to the QCA's presumption that Aurizon Network bears minimal volume risk. In this case, the QCA has effectively aligned the profile of revenue recovery of WIRP capital costs with the profile of volumes railed. This means that Aurizon Network could face the real risk of not recovering the deferred

capital if WIRP railings do not increase to the level that was originally anticipated when the investment decision was made. Revenue deferrals were also imposed on a portion of GAPE capital expenditure.

In summary, the QCA's decision to impose revenue deferrals has prevented Aurizon Network from recovering capital it has expended on the network on major projects that were approved by users, which materially increases exposure to stranding risk. It also has a significant impact on Aurizon Network's future incentive to invest.

Analysis

Aurizon Network's beta estimate has been informed by the accompanying report from Brattle (refer Brattle WACC Report). Aurizon Network has also commissioned a report by Frontier that focusses on the approach that the QCA has taken to assess Aurizon Network's beta during UT4 (refer Frontier Beta Report). The fundamental difference between Aurizon Network's proposal and the QCA's previous approach is the choice of comparators used to estimate beta. In particular, Aurizon Network remains of the view that it is the commercial and business risk environment that remains the key driver of beta, not the fact that it is subject to regulation. The analysis by Frontier highlights that regulation has not been demonstrated as driving differences in beta estimates in previous research, so we therefore cannot conclude that it should be a primary driver of the beta estimate (as the QCA has previously assumed). Regulation, at most, is just one of the many dimensions that should be considered in determining the appropriate comparator for Aurizon Network. This is discussed further in section 11.5.3.

The Brattle analysis relies on a number of industry sub-samples in its analysis of Aurizon Network's beta. The key priority is identifying samples that have comparable risk characteristics having regard to their business and operating environment. Ideally, these firms will be domestic firms however in the absence of a sufficient number of appropriate domestic comparators, reference needs to be made to overseas firms - indeed given the comparative size of the Australian market this often becomes a necessity. This was also the approach taken by the QCA during the UT4 review where a sample of international firms were included in the beta estimation process.

Brattle considers that based on market structure and operational characteristics, the most appropriate comparators for Aurizon Network are regulated North American oil and gas pipelines. It observes that:

“...pipeline transmission rate regulation and contract cover operate on a business construct that is analogous to Aurizon Network's operation of the CQCN: commercial customers pay for network access to transport a commodity along a fixed route that is generally up-stream of the retail end-use market.”¹⁹⁸

The key similarities of these firms is that they are: single commodity transportation pipelines; servicing a limited number of commercial customers; subject to regulation; and operating under an open access regime. Generally, North America gas and liquid pipelines are underwritten by long-term contracts with customers, some even before construction. In the US, the Federal Energy Regulatory Commission requires natural gas pipelines to submit an “index of customers” on a quarterly basis which lists the duration and contracted capacity. Figure 12 in the accompanying report by Brattle shows that more than three quarters of capacity is under contracts greater than five years while half is more than 15 years. This demonstrates the prevalence of long-term take-or-pay contracts in the natural gas pipeline industry. Brattle considers that the selection of this subsample is consistent with the UT4 approach adopted by the QCA, given these firms are regulated and generally have long-term take or pay contracts with customers. These two characteristics are considered by the QCA and Incenta to be the most prominent determinants of risk.

In addition to this sample of gas and liquid pipelines, Brattle considers that some weight should be given to railway companies as they share similar industry characteristics with Aurizon Network. In particular, it has selected a group

¹⁹⁸ Brattle Group (2016). p.46.

of railways that are exposed to bulk commodity shipping, a characteristic similar to Aurizon Network. In Brattle's view:

"... certain aspects of operating a rail network dedicated to freight transportation are best captured by consideration of comparators that operate in that line of business. Patterns of cash flows related to operating expenses, maintenance and expansion capital expenditures, and working capital balances for freight rail companies are, put simply, likely to be most comparable to those of other freight rail companies."¹⁹⁹

Brattle has also considered the regulated US distribution utilities, including electricity, natural gas and water businesses. However, in contrast to the QCA, Brattle considers the broad utility businesses are not appropriate comparators for Aurizon Network due to the differences in supply risk, demand risk, operating risk and stranding risk:

"The diffuse and geographically diverse nature of the customer base for energy and water distribution companies serves to mitigate their demand risk, since changes in usage by any individual customer has relatively little impact on overall system revenue.

...

distribution utilities benefit from relatively inelastic demand for their service. This is due in part to the features of their customer bases (as discussed above), and in part to the lack of substitutes for their service to those customers.

...

In contrast, demand for access to Aurizon Network's infrastructure fundamentally depends on the ability of its customers to profit from transporting coal from and to the nodes of that network. That in turn depends on regional and global demand for Queensland coal supplies, as well as the price of those supplies."²⁰⁰

Betas are estimated using five years of weekly data. Brattle examines the relative performance of weekly and monthly estimates and concludes that the use of weekly estimates improves statistical precision over that five year estimation window (given there is a higher number of observations). It also demonstrates how weekly estimates provide a better 'fit' to the regression line.

The resulting asset beta range is 0.55 to 0.65, which primarily relies on the most appropriate comparable US pipelines.

Aurizon Network's UT5 proposal

Aurizon Network considers that the beta estimate needs to reflect the key risk characteristics of its industry and market environment. It has still had regard to the impact of other factors that can either mitigate or increase its exposure to risk, including being subject to regulation, which may be viewed by some as a risk mitigant in the short term but has actually increased Aurizon Network's exposure to risk in the medium to long term, as demonstrated by the QCA's decision to defer revenue recovery for key infrastructure projects.

The analysis by Brattle arrived at an asset beta range of 0.55 to 0.65. Aurizon Network proposes the lower bound of this range for this UT5 proposal and therefore submits an asset beta of 0.55. This is considered conservative. Aurizon Network has taken this approach in order to minimise potential areas of disagreement. Using the QCA's preferred Conine re-levering approach, assuming gearing of 55% and a debt beta of 0.12, an asset beta of 0.55 equates to an equity beta of 1.0.

11.4.8 Return on debt

As noted above, Aurizon Network has maintained a benchmark credit rating of BBB+ for the purpose of estimating the DRP. It has also adopted a ten year term to maturity for the purpose of estimating the DRP, which is consistent

¹⁹⁹ Brattle Group (2016). p.46.

²⁰⁰ Brattle Group (2016). p.38-39.

with QCA practice (and also commercial practice), having regard to the refinancing risk faced by infrastructure providers that must fund assets with long economic lives.

For the purposes of estimating the placeholder DRP for UT5 based on the placeholder averaging period, Aurizon Network has applied the QCA's econometric methodology as originally developed by PwC and subsequently updated by Incenta (herein referred to as the 'PwC approach'). However, Aurizon Network is concerned that the PwC approach is very sensitive to the specific econometric technique and sample used and it is only possible to test whether the PwC approach does provide an appropriate estimate of the DRP by analysing the outcome of its application during a specific time period. To this end, Aurizon Network submits that once the actual averaging period has passed, it will be necessary to examine the outcome of the PwC approach during that period and consider whether it provides an appropriate estimate of the DRP.

Aurizon Network has proposed some potential enhancements that could be applied to the PwC approach to improve the reliability of the estimates produced. However, even if these enhancements are adopted, it will still be necessary to review the estimate provided by the PwC approach during the actual averaging period and consider whether that estimate is appropriate. In the event it is determined that the application of the PwC approach does not result in an appropriate estimate for the actual averaging period, consideration will need to be given to the use of independent third party indices.

Application of the econometric approach

The PwC methodology constructs a sample of bonds that encompasses the target credit rating as well as one notch either side of that rating and then applies econometric analysis to estimate the DRP for the desired term of maturity. That is, to estimate the DRP for a target credit rating of BBB+, it uses a sample of bonds rated BBB, BBB+ and A-. In broadening the sample beyond BBB+, the premise is that the higher yields on BBB bonds will be offset by lower yields on A- bonds and that the estimated DRP will therefore provide an unbiased estimate of the yield on bonds rated BBB+.

If, however, the yields on the lower and higher rated bonds do not offset each other, this pooled regression will result in a sample bias and therefore biased estimates. To address this issue Aurizon Network has proposed two alternative methods:

- > dummy variable regression
- > single credit rating regression.

During the UT4 process the QCA and its consultant Incenta rejected Aurizon Network's proposed DRP estimation methodology and retained the decision to use the PwC pooled regression estimate.

However, in recently estimating the DRP to apply to DBCT, Aurizon Network notes that Incenta has applied all three methods – pooled regression, dummy variable regression and single rating regression – in its two reports to the QCA. In its first report Incenta recommended using the PwC pooled regression method for a BBB+ rating with a premium.²⁰¹ In its second report for DBCT's actual averaging period (May 2016), Incenta recommended the use of single rating regression, which is a departure from the PwC method if strictly applied. The reason cited by Incenta for the change in methodology is consistent with the argument previously submitted by Aurizon Network (and rejected by the QCA), which is that the PwC pooled regression method would generate a value that "is unreliable and should not be applied because there is material asymmetry in the change in the debt risk premium either side of the target credit rating, which violates a key assumption of this method".²⁰²

The potential for change in the implementation of the PwC method through time creates doubt as to the predictability and transparency of this method. The QCA has previously cited transparency as the main motivation to depart from independent third party estimates of the DRP. Accordingly, Aurizon Network agrees that in the absence of relying

²⁰¹ Incenta (2016a). DBCT 2015 DAU: Review of WACC Parameters.

²⁰² Incenta (2016b). DBCT – Debt Risk Premium to 31 May 2016, p. 1.

on those independent third party estimates, the method needs to be transparent but also predictable in its application.

For the purpose of this UT5 revenue proposal, Aurizon Network engaged CEG to provide an estimate of the DRP based on the PwC approach, using an averaging period to 30 June 2016 (refer CEG DRP Report). As shown by CEG, the PwC method is very sensitive to the specific econometric technique and sample used. It is also very sensitive to the inclusion/exclusion of particular bonds in/from the sample pool. CEG provides the example of how the inclusion and exclusion of a 7-year bond issued by Jemena has material impacts on the BBB+ DRP.

One of the likely causes of the sensitivity is the small sample size, as it is focussed on Australian domestic bonds. CEG proposes that the inclusion of foreign bonds issued by Australian entities would both increase the sample size and potentially reduce the sensitivity, as would the inclusion of bonds with optionality (with appropriate adjustments, as is applied by the ERA).

Given the sensitivity of the PwC method through time, CEG has advised Aurizon Network that:

“...it would be bad practice to apply the PwC (2013) and Incenta (2016a, 2016b) approaches in a mechanistic way without having had the opportunity to assess the dataset first. It would therefore be appropriate for Aurizon to advise the QCA that it will provide (or reserves the right to provide) its best estimate of the 10 year DRP once the averaging period is over and analysis can be undertaken of the relative merits of each method, and potential modifications to the methods, given the available data.”²⁰³

This conclusion is supported by the following statement by the QCA’s consultant, Incenta:

“We observe that whether the curves for the different credit ratings have a different slope – or are parallel – as well as the magnitude of any differential is ultimately an empirical issue, and it is plausible for any such differentials to vary over time.”²⁰⁴

To enable a comparison of estimation results CEG has applied all three regression techniques to the estimation of the DRP as at 30 June 2016. Sample selection is consistent with the current PwC approach, that is, it does not include foreign bonds and bonds with options. The following table lists the results, along with independent third party estimates from Bloomberg, the RBA and Reuters for the same time period.

Table 78 BBB+ DRP estimates (as at 30 June 2016)

Method	BBB+ DRP Estimate
PwC Pooled Regression	2.29%
PwC Dummy Regression	2.32%
PwC Single Rating Regression	2.47%
Bloomberg BVAL	2.69%
RBA	2.79%
Reuters	2.94%

In the results CEG observed asymmetric margins between adjacent credit ratings and different slopes for each credit rating. To address this sampling issue CEG considered it may be appropriate to carry out a single rating

²⁰³ CEG (2016a). Debt Risk Premium of Coal Transporters: A Report for Aurizon, p. 16.

²⁰⁴ Incenta (2016b). p. 8.

regression.²⁰⁵ This estimate is close to the result of the PwC pooled regression when the Australia Pacific Airports (Melbourne Airport) bond is excluded.²⁰⁶ It is also closer to (although still materially below) the independent third party estimates produced by Bloomberg, the RBA and Reuters (at least compared to the other two approaches). The single rating regression is also consistent with the approach recommended by Incenta in its most recent report for the QCA in relation to the DRP to apply to DBCT.

As noted above, given the sensitivity of the different approaches and the variability in the outcomes observed through time, Aurizon Network proposes that for the purpose of setting the DRP to apply over its nominated (confidential) averaging period, the choice of method needs to be reviewed following the completion of that period. Aurizon Network proposes that this review is undertaken in conjunction with Incenta. The performance of each technique should be evaluated having regard to which technique produces the most robust and reliable estimate of the return on debt over the relevant period, as well as comparisons with the independent third party estimates.²⁰⁷

Aurizon Network also submits that the sample of bonds should be broadened to include foreign bonds issued by Australian entities, as well as bonds with optionality (applying the adjustments for optionality consistent with the ERA). In addition to broadening the sample size and hence reducing the risk of estimation error, the inclusion of bonds issued by Australian entities offshore is consistent with Aurizon Network's actual circumstances, where it needs to issue debt in domestic and global markets in order to efficiently meet its capital needs.

Currently, Aurizon Network issues just under 50% of its debt offshore although as outlined below, this percentage is likely to increase over the next few years. Examples of the proportion of debt that is issued offshore by regulated Australian energy networks include:²⁰⁸

- > ElectraNet (69%)
- > Victoria Power Networks (58%)
- > SA Power Networks (75%)
- > APA Group (90%).

This is consistent with Aurizon Network's own direct experience. As the Australian domestic bond market has limited liquidity for longer maturities, it is a necessary to access offshore markets in order to lengthen Aurizon Network's maturity profile and reduce its refinancing risk (see below).

Independent third party estimates

To avoid the situation where the results are sensitive to the model form and sample used, consideration could be given to reverting to the use of independent third party data sources (for example Bloomberg, the RBA and/or Reuters), noting that with the exception of the QCA and ERA, all other Australian regulators currently rely on these estimates (favouring Bloomberg and/or the RBA).

Aurizon Network notes that during the UT4 process some stakeholders expressed a preference for using third party indices.²⁰⁹ However it also acknowledges that these third party estimates are also variable across time. For example, in its first report on the DBCT DRP Incenta concluded that the Bloomberg estimate was an outlier for the October 2015 averaging period. In relation to the Aurizon Network UT4 averaging period the RBA estimate was considered by the QCA to be an outlier.

²⁰⁵ CEG (2016a). p. 22.

²⁰⁶ CEG (2016a). p. 23.

²⁰⁷ CEG (2016a). pp. 35-37.

²⁰⁸ Data from company annual reports.

²⁰⁹ For example, QRC and Anglo American have expressed their supports for Bloomberg yield curves in the MAR Draft Decision response.

█. The weighted average cost is equivalent to █% per annum given foreign currency debt accounts for two-thirds of total debt.

In conclusion, for UT5 Aurizon Network proposes the following allowances to be included in the return on debt:

- > debt raising costs of █%;
- > cross-currency swap costs of █%; and
- > interest rate swap costs of █%.

Aurizon Network's UT5 proposal

For the purpose of this proposal Aurizon Network has submitted a DRP of 2.47%, which is the estimate produced by CEG using the single rating regression PwC approach as at 30 June 2016. For the purpose of setting its DRP for the UT5 Final Decision, which will be done over the averaging period to be confidentially agreed with the QCA, Aurizon Network submits that:

- > the method to be used (including consideration of independent third party estimates) is reviewed after the conclusion of the averaging period, with the performance of each method assessed having regard to which technique produces the most robust and reliable estimate of the return on debt over the relevant period;²¹³
- > if the PwC method is to be adopted, the sample of bonds should be considered to include foreign bonds issued by Australian entities, as well as bonds with optionality (applying the adjustments for optionality consistent with the ERA); and
- > in recognition of the need for the efficient benchmark firm to raise debt in domestic and global markets, compensation is provided for the efficient costs of transacting cross-currency swaps and the associated interest rate swaps.

In summary, Aurizon Network's indicative return on debt is presented in the following table.

Table 79 Indicative UT5 return on debt

	Estimate
Risk-free rate	2.13%
Debt risk premium	2.47%
Debt raising and hedging costs	0.262%
Return on debt	4.86%

11.4.9 Gamma

What does it represent

Gamma is a measure of the value of imputation credits. Dividend imputation was introduced in Australia to prevent the double taxation of dividends, once at the company level (when a company has paid a dividend out of after-tax profits) and again at the individual level, where an investor is required to include dividends received as part of their assessable income, which will then be subject to tax at the investor's marginal tax rate. When a company pays a franked dividend, the investor is entitled to offset the amount of tax that has already been paid by the company, so that the dividend will only be taxed once, based on their marginal tax rate.

In the post-tax nominal (vanilla) framework (or 'Officer 3' model) adopted by the QCA and the majority of Australian regulators, the effect of tax is modelled in the cash flows, not the WACC. Gamma directly affects the corporate tax building block in the MAR allowance. However, ultimately it is the investor that receives the benefit of the franking

²¹³ CEG (2016a). pp. 35-37.

credits. Accordingly, we are only interested in the extent to which franking credits are valued by investors and how it affects their required rate of return.

The accompanying report by Frontier (refer Frontier Gamma Report) seeks to clearly establish the role of gamma in the regulatory process and how it is viewed by investors. Frontier establishes that the market value of equity has two key components, being:

- > the sum of the present value of the expected cashflows to equity holders, plus
- > the increase in value associated with imputation credits.

This also parallels what happens in the regulatory process. The value of imputation credits is deducted from the tax allowance, which reduces the MAR and ultimately the return that would ultimately be received by shareholders in the regulated business. The total return to investors is therefore assumed to be the present value of the expected cashflows generated by the business, along with the value of the benefits they derive from the franking credits.

If the value of franking credits to the investor is overstated, the reduction to the present value of expected cashflows will be too high and the total return received by the investor will therefore be too low. The converse applies if the value of gamma is understated (that is, the total return received by the investor will be too high). This in turn will prevent Aurizon Network from recovering a return on capital that is commensurate with its commercial and regulatory risks. It is therefore essential that the value of gamma is correctly estimated based on the value in the hands of the investor.

How should it be estimated

Gamma is estimated as the product of:

- > the distribution rate, or the proportion of created credits that are distributed to shareholders; and
- > theta, also known as the value of distributed credits or the utilisation rate.

This is not contentious. However, there have been differences of opinion as to how the parameters should be estimated. This section sets out Aurizon Network's proposal as to how each of the parameters should be estimated, based on the advice provided by Frontier. This differs from the approach that is currently applied by the QCA. The reasons for this difference in approach are explored in more detail in section 11.5.4.

The Distribution Rate

Historically, the value of the distribution rate has not been contentious. This is because unlike the value of theta, it is more readily observable based on data published by the Australian Taxation Office (ATO). In Australia, the approach that has been consistently applied through time is to estimate the distribution rate using data from the ATO on: (1) the total credits actually distributed by companies; as a proportion of (2) the total credits created. This ratio has remained relatively constant through time at 0.7. This value is commonly applied by regulators, practitioners, academics and Aurizon Network. It has also previously been supported by the QRC.

Consistent with this widespread practice, Aurizon Network has applied a distribution rate of 0.7. This should not be controversial. However, the QCA's preferred consultant, Lally, has recommended a different approach, which also reflects his apparent concerns with the ATO data. This is addressed in section 11.5.4, which apart from showing the Lally's concerns are unfounded, demonstrates that his approach to estimating the distribution rate is inappropriate.

Theta

The more contentious issue has been the value of theta. For the reasons summarised above and set out in more detail in the report by Frontier, this must be assessed from the perspective of investors based on market values. This is consistent with the approach that is used to estimate all of the other parameters in the rate of return. It is also consistent with the approach that has been recently adopted by the Tribunal in recent merits review cases (noting that it has arrived at a different decision in the SA Power Networks case, which is discussed further in section 11.5.4).

Based on this approach, Frontier concludes that the best available estimate of theta that reflects market values is the SFG Consulting (SFG) estimate of 0.35 (2011, 2013). This is turn is based on dividend drop-off analysis, which is used to assess the value of franking credits in the hands of investors. As highlighted by Frontier:

“The SFG estimation has been assessed by the Tribunal for its fitness for use in the regulatory setting. The Tribunal concluded that it has confidence in the SFG estimate, that “No other dividend drop-off study estimate has any claims to be given weight vis-à-vis the SFG report value”, and that “the careful scrutiny to which SFG’s report has been subjected, and SFG’s comprehensive response, gives the Tribunal confidence in these conclusions.”²¹⁴

Aurizon Network therefore proposes to apply a value of theta of 0.35. It acknowledges that this reflects a different approach to the one applied by the QCA (which arrives at a theta value of 0.56). This is largely because of differences in the conceptual interpretation of theta, which then determines the method that the QCA applies to estimate it (being equity ownership statistics). Aurizon Network’s fundamental concern, as reflected by Frontier, is that in taking what is largely a theoretical view, the QCA overstates the value of gamma from the perspective of investors. As noted above, if the value of gamma is overstated, the total return to the investor will be understated and Aurizon Network will be undercompensated for its efficient costs. These concerns are explained further in section 11.5.4.

Aurizon Network’s UT5 proposal

Aurizon Network therefore remains of the view that the most appropriate value of gamma is 0.25, which is the product of a distribution rate of 0.7 and a theta of 0.35.

11.4.10 Proposed UT5 WACC

Based on the above parameters, Aurizon Network’s proposed WACC for UT5 is 6.78% (post tax nominal vanilla).

Table 80 Proposed UT5 WACC

Parameter	Proposal	Parameter	Proposal
Indicative Averaging Period	20-days to 30 June 2016	Return on Equity	9.13%
Risk-free Rate	2.13%	Credit Rating	BBB+
Risk-free Rate Term	10-year	Debt Risk Premium	2.47%
Asset Beta	0.55	Debt Raising and Hedging Costs	0.262%
Gearing Ratio	55%	Return on Debt	4.86%
Equity Beta	1.0	WACC	6.78%
Market Risk Premium	7.0%	Gamma	0.25

Aurizon Network considers this to be an appropriate and reasonable estimate of the return required by investors based on the commercial and regulatory risks they bear, having regard to the volatile and challenging industry and financial market conditions. Noting the comparative stability in required returns as outlined at the beginning of this chapter, this is still a material reduction in the WACC over recent regulatory periods and is still nearly 0.4% below the WACC approved for UT4. However, Aurizon Network does not consider it acceptable to suffer a continued deterioration in the WACC in line with the reduction in the risk free rate. As outlined above, this will not meet the expectations of investors and will fail to meet the requirements of the QCA Act.

²¹⁴ Frontier Economics (2016a). Estimating Gamma for Regulatory Purposes, Report for Aurizon Network, pp. 30-31.

11.5 Comments on the QCA's current approach

As outlined above, while Aurizon Network has implemented the QCA's overall methodology to estimate the WACC, it has a number of areas of departure in relation to the estimation of some of the key parameters. These points of difference are addressed on the next page.

11.5.1 The term to maturity for the risk free rate and NPV=0

In setting the risk free rate in the return on equity, the QCA's preferred approach is to match the term of the risk free rate to the length of the regulatory period, which in Aurizon Network's case, is four years. The QCA has stated that the basis for its decision is the 'NPV=0 principle'. That is, the present value of the future regulatory cash flows should equal the value of the RAB. The QCA, largely on the advice of its preferred consultant, Lally, considers that discounting cashflows with a risk free rate that has a longer maturity than the length of the regulatory period will violate this principle.²¹⁵

Aurizon Network does not agree with this approach for two main reasons:

- > it is based on assumptions that do not hold in practice, in particular, that there is perfect certainty as to the value of the assets at the end of the period; and
- > it is contrary to standard commercial practice.

As a consequence, it will under-compensate investors for investment risk, which could undermine future investment in the CQCN.

Validity of the principle

The NPV=0 principle requires the term of the discount rate to reflect the period over which there is cash flow uncertainty. In previous analysis undertaken for Aurizon Network as part of its UT4 submission, SFG illustrates this principle with the following examples, assuming a five year period²¹⁶:

- > If the cash flow uncertainty lasts for only five years (because the year five terminal asset value is known with certainty from the outset), a five year discount rate would be consistent with the NPV=0 principle.
- > If the cash flow uncertainty lasts for the life of the asset, because investors do not know with certainty what the value of the asset will be at any future point in time, a long-term discount rate would be consistent with the NPV=0 principle. This is also consistent with commercial practice.

The QCA has taken the first approach. From the perspective of an equity investor, the QCA has effectively viewed regulatory cash flows as having similar characteristics to an investment in bonds, where regular coupons are received and the principal amount is paid at the end of the period based on the bond's face value. In the case of a bond, the issuer has an obligation to make these payments to the bondholder, that is, it is a fixed and certain obligation, subject to credit risk.

Aurizon Network does not consider that an equity investment in the CQCN has any relevant parallels with investment in a bond. A fundamental difference is that the face value of the bond to be received at maturity is known with certainty. In the case of an investment in a dedicated below-rail coal network, the market value of the asset (or the RAB) is not known with certainty. As an asset servicing a single commodity that trades in a highly competitive global market (and is also subject to substitution risk, as outlined above), there is no certainty that the value of the RAB will be fully recovered over the comparatively long capital recovery period. Based on the above principle, the choice of the discount rate must therefore be for a term that reflects this uncertainty, which is a long-term rate. In Australia, the longest liquid proxy for the risk free rate is the ten year Commonwealth Government bond.

²¹⁵ That is, it is considered that if the term structure of interest rates is upward sloping, then the resulting revenues will be greater than what is required to achieve an NPV of zero.

²¹⁶ SFG Consulting (2014a). The Term of the Risk-free Rate, p.2.

When Aurizon Network and its consultant SFG raised this issue in the UT4 review, the QCA's consultant and key proponent of this argument, Lally, did not dispute the issue of asset value uncertainty at the end of the regulatory period. Lally instead argued:

"These risks are allowed for by adding a risk premium to the discount rate used to value cash flows, and therefore also to the cost of equity allowed by the regulator, not by altering the term for the risk-free rate".²¹⁷

In its UT4 Final Decision the QCA stated:

"... the systematic risk associated with uncertain asset value at the end of a regulatory cycle is compensated through beta, and the use of a risk-free rate with a term that exceeds the regulatory period will therefore overcompensate investors in the regulated entity for interest rate risk that they do not bear when the term structure of interest rates is upward-sloping. It will also under compensate investors when the term structure of interest rates is downward-sloping".²¹⁸

The QCA did not, however, explain if any such premium was added to the beta or MRP, and if it was, what the amount of the adjustment was. Indeed, the benchmarking process resulted in exactly the same risk premium (beta and MRP) as that for comparable firms where investors are using *long-term* risk free rates for valuation purposes.

SFG clearly articulates this conflicting logic.

"The QCA's discussion about compensation for systematic risk is a red herring. The QCA provides compensation for systematic risk via the equity beta, which it estimates with reference to comparable commercial firms. That is, the regulated firm receives the same compensation for systematic risk as do comparable commercial firms. Indeed the only thing that might separate the regulated firm from the comparable commercial firms is the possibility that the regulated firm might have a known market value at the end of the regulatory period whereas a commercial firm does not. If the end-of-period market value of the regulated firm is known with certainty from the outset, there is an argument for aligning the term of the risk-free rate to the length of the regulatory period. If the end-of-period market value is *not* guaranteed, the regulated firm is not materially different from the commercial firm and the regulated firm should use the same long-term risk-free rate that is used by the comparable commercial firms."²¹⁹

Similar observations are made by Brattle (refer Brattle WACC Report). It makes the following comments in relation to Lally's suggestion that the risks associated with asset revaluations can be dealt with via a risk allowance:

"First, it requires that any asset revaluation is handled through risk allowances, which is a difficult requirement as it adds to the number of items that needs to be estimated. Further, the current regulatory entity (i.e., the QCA) and its members cannot ex ante bind future regulators to grant risk allowances should an asset need revaluation. Second, the result requires the regulated price to be reset periodically, which plausibly will be obtainable in the current regulatory environment but may not be in the future. Therefore, it seems that the NPV-0 Principle over a 4-year horizon is only truly feasible if the risk of stranded assets or substantial asset revaluations is minimal. In the case of Aurizon, where certain customers are primarily coal shippers and certain lines serve specific mines, there certainly is some risk of stranding."²²⁰

Aurizon Network contends that the critical point is not whether the difference between the four and ten year risk free rate compensates investors for the uncertainty associated with the asset value at the end of the regulatory period, but rather that investors in its network will be valuing cash flows beyond the short horizon of the regulatory period

²¹⁷ Lally (2015a). Review of submissions on the MRP and the risk-free rate, p.7.

²¹⁸ QCA (2016). Final Decision: Aurizon Network 2014 Access Undertaking - Volume IV - Maximum Allowable Revenue, p. 215.

²¹⁹ SFG Consulting (2014a). p.14.

²²⁰ Brattle Group (2016). pp.9-10.

because the end of period asset value is not certain. A long-term risk free rate is therefore more appropriate. Only for scenarios where the asset value is known with perfect certainty at the end of the four year regulatory period would the use of a four year risk free rate be appropriate.

Departure from commercial practice

As set out above, in order to provide investors with a return that provides them with adequate compensation for the commercial and regulatory risks they bear in the prevailing market, the WACC parameters should be estimated having regard to empirical evidence observed from the market, rather than a theoretical model that may be a far abstraction from reality. The QCA's reliance on Lally's application of the NPV=0 principle is a purely theoretical approach that has no regard to how investors approach this in practice, where there is widespread acceptance of the market's use of a ten year risk free rate to value infrastructure with a long economic life.²²¹ In a 2013 report to the AER regarding the appropriate term of the risk free rate in estimating cost of equity, Incenta stated that:

“...we recommend using a 10 year risk free rate for estimating the cost of equity, and for this rate to be applied consistently to estimate the market risk premium...our view is based on achieving consistency with the practice of valuation professionals for whom the use of a 10 year term for the risk free rate is widespread, and consistency with our observations of how investors actually value regulated infrastructure assets”.²²²

As noted previously, Ernst & Young also finds that the overwhelming majority (~98%) of valuation experts use a long-term (10-year) risk free rate in independent expert reports.²²³

Recent reports by equity analysts on Aurizon Network suggest that investors generally expect a long-term risk free rate to be applied for the regulatory WACC. A Credit Suisse research report stated “in our base case for Aurizon, we assume the risk free rate is estimated from the 10-year government bonds”.²²⁴ Goldman Sachs is forecasting the UT5 WACC based on the ten year Commonwealth government bond yield.²²⁵

The QCA has rejected this accepted commercial practice on the basis that regulators perform a different task to market participants²²⁶ – market participants are valuing assets while regulators are setting the efficient regulatory price. SFG highlights that the consequence of this QCA departure is to set a lower allowed rate of return:

“The QCA argues that its role is not to set the allowed return to mirror the return that would be required by investors in a commercial setting. Rather, the QCA argues that its role is to promote the economically efficient investment in infrastructure and that this requires it to set the allowed return below the return that investors would require in a commercial setting.”²²⁷

This concept is illustrated with the following simple numerical example.

Assume four year and ten year risk free rates are 3% and 5% respectively, the risk premium is 7% and the opening RAB is \$100. For simplicity, assume there is no depreciation over the four year regulatory period.²²⁸ The QCA will allow a return of 10% due to term matching (3% plus 7%). At the same time the market requires a 12% return and uses that rate for valuation purposes. From the perspective of the market, the NPV of the investment will be:

²²¹ SFG Consulting (2014a).p.5.

²²² Incenta (2013).Term of the risk-free rate for the cost of equity, p.13.

²²³ Ernst & Young (2016), Market evidence on the cost of equity, p.28.

²²⁴ Credit Suisse (2016). Focus remains on cost cutting, p. 4.

²²⁵ Goldman Sachs (2016). Challenges on the Aurizon, Exh bit 21, p. 12.

²²⁶ QCA (2016). p. 215.

²²⁷ SFG Consulting (2014a). p.1.

²²⁸ Allowing for depreciation does not affect the conclusion.

$$NPV = -100 + \frac{100 \times 10\%}{1 + 12\%} + \frac{100 \times 10\%}{(1 + 12\%)^2} + \frac{100 \times 10\%}{(1 + 12\%)^3} + \frac{100 \times 10\% + 100}{(1 + 12\%)^4} = -\$6.1$$

It can be shown that NPV = 0 only holds if the regulatory return is set at 12%, matching the market expectation. By setting the allowed return below the market expectation, investment in the business will generate a negative NPV. Investment is therefore not attractive, and this therefore results in a lower, and inefficient, level of investment. Accordingly, even if it is assumed that investors agreed with the QCA's estimation of all of the other parameters in Aurizon Network's WACC, the adoption of a term to maturity for the risk free rate that is below ten years will result in a negative NPV investment because investors use a higher discount rate than that allowed for by the regulator (assuming the yield curve is upward sloping).

Finally, as highlighted in the accompanying report from Brattle (refer Brattle WACC Report), along with practitioners, the application of a ten year term to maturity is applied by the majority of Australian regulators, as well as Canadian, US and several European regulators. In regulatory practice, the QCA is the outlier in the application of its term matching requirement, with the exception of the ERA in energy. It is questioned why the QCA's regulatory task is different to other regulators, particularly Australian regulators, where the overarching legislative frameworks, including the pricing principles, are all very similar, as they all emanated from the *Competition Principles Agreement*, as agreed to by the State, Territory and Commonwealth Governments.

11.5.2 The market risk premium

Aurizon Network has two key concerns with the QCA's approach to estimate the MRP, being:

- > the presumption that the MRP is stable through time; and
- > aspects of the methodology it uses to estimate the MRP.

These are discussed below.

Constant MRP values

The QCA arrived at its current value of the MRP, which is 6.5%, in its 2014 Market Parameters Final Decision. It has consistently applied this value in every decision made since then, including UT4. This is illustrated in Table 81.

Table 81 Recent QCA MRP decisions

QCA Decision	Averaging Period	MRP
Market Parameter Final Decision	December 2013	6.5%
QR Draft Decision	June 2013	6.5%
QR Final Decision	March 2016	6.5%
DBCT Draft Decision	December 2015	6.5%
Aurizon Network Final Decision	October 2013	6.5%

Prior to its 2013/14 review, the QCA applied a MRP of 6%. Since it was established the QCA has only ever applied two MRP parameter values – 6% prior to 2013 and 6.5% since the 2014 Market Parameters review. However, the QCA has itself acknowledged that: “the market risk premium varies over time.”²²⁹

As demonstrated in the accompanying report by Frontier (refer Frontier MRP Report), the principal reason for the stable MRP estimate is the methodology applied by the QCA. Frontier highlights:

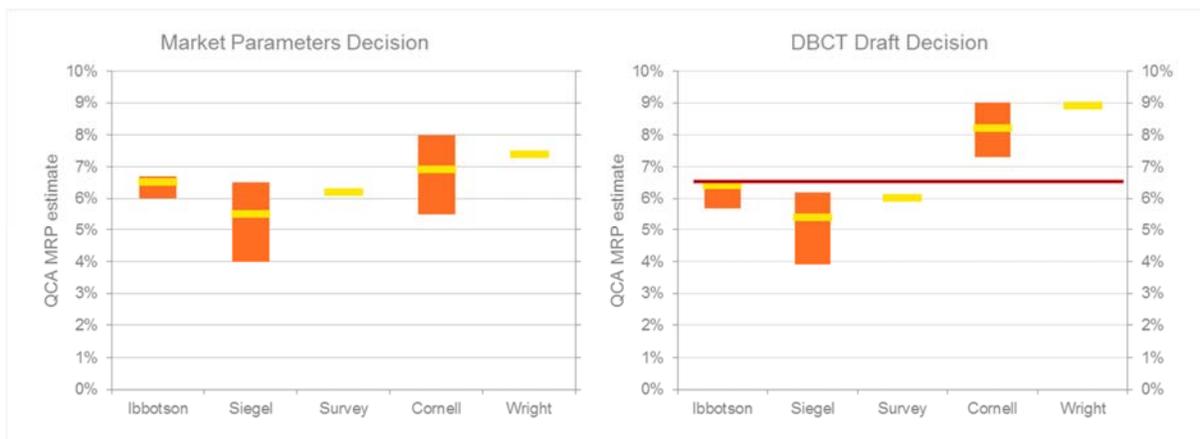
²²⁹ Queensland Competition Authority (2013). Market Parameters Decision, p.81.

“The reason for this constant outcome is that three of the QCA’s methods produce essentially fixed estimates and the two that do vary over time receive negligible weight.”²³⁰

The Ibbotson and Siegel approaches relied upon by the QCA are based on the long-term average of historical excess returns, which does not change materially year to year. The survey evidence (the Pablo Fernandez survey) does not vary with market conditions and is effectively another proxy for the historical average.²³¹ The two approaches that do vary with market conditions are the Wright approach and the Cornell Dividend Growth Model, although it is not clear what weight is assigned to these approaches. Given the fact that the QCA’s MRP has not changed in three years, while the estimates produced by these models have, it can only be inferred that these models are not given any material weight.

Figure 82 below illustrates the MRP range estimated by the QCA in its 2014 Market Parameters decision and its 2016 Draft Decision for DBCT, as presented by Frontier.²³² MRP estimates using the Ibbotson and Siegel methodologies appear stable across the two decisions. The estimate produced from survey evidence has fallen from 6.8% in the Market Parameters decision to 6.0% for the DBCT Draft Decision without any substantiation for the drop. At the same time, the Cornell approach and Wright approach appear to have produced much higher estimates in the DBCT Draft Decision.

Figure 82 QCA estimates of the MRP



Frontier Economics (2016b). The Market Risk Premium, p.24.

The stable MRP suggests that the QCA has placed negligible weights on two approaches that are sensitive to market movements. If the QCA was to continue with the current approach, including the weights it applies to different methods (which are not known), the MRP could not be expected to change over the next five or ten years.

Apart from the fact that this is likely to materially understate the return on equity in the current environment (discussed further below), Aurizon Network has significant concerns with the lack of transparency of the QCA’s approach. In the absence of this transparency, it is not known how the QCA is balancing the estimates produced by the different methods, including the time-varying and non-time varying approaches. Ultimately, this provides Aurizon Network and stakeholders with no certainty regarding the approach that the QCA can be expected to apply through time.

²³⁰ Frontier Economics (2016b). The Market Risk Premium, p.11.

²³¹ Frontier Economics (2016b). p.30.

²³² All the estimates are QCA estimates.

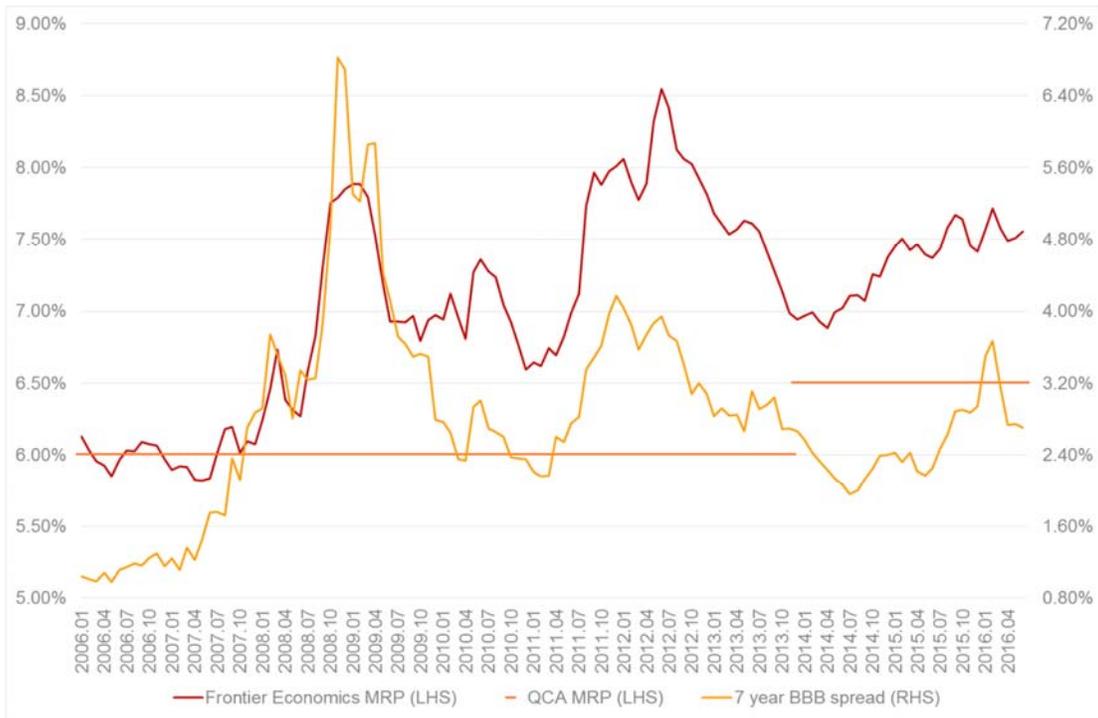
Frontier has summarised the implication of a constant MRP over time:

“The result of stickiness in the estimate of the MRP is volatility in the allowed return on equity, which rises and falls one-for-one with changes in government bond yields.”²³³

If the expected market return does move one-for-one with the change in risk free rate, then a stable MRP is supported. However, this is not supported by market evidence, as presented at the beginning of this chapter.

Aurizon Network’s proposed approach to estimating the MRP, based on the advice of Frontier, was set out in the preceding section. Frontier has also demonstrated that the application of its methodology results in changes in the MRP that are more consistent with changes in corporate bond spreads and earnings yield spreads, compared to the QCA’s static estimates. This is reproduced in the figures below.

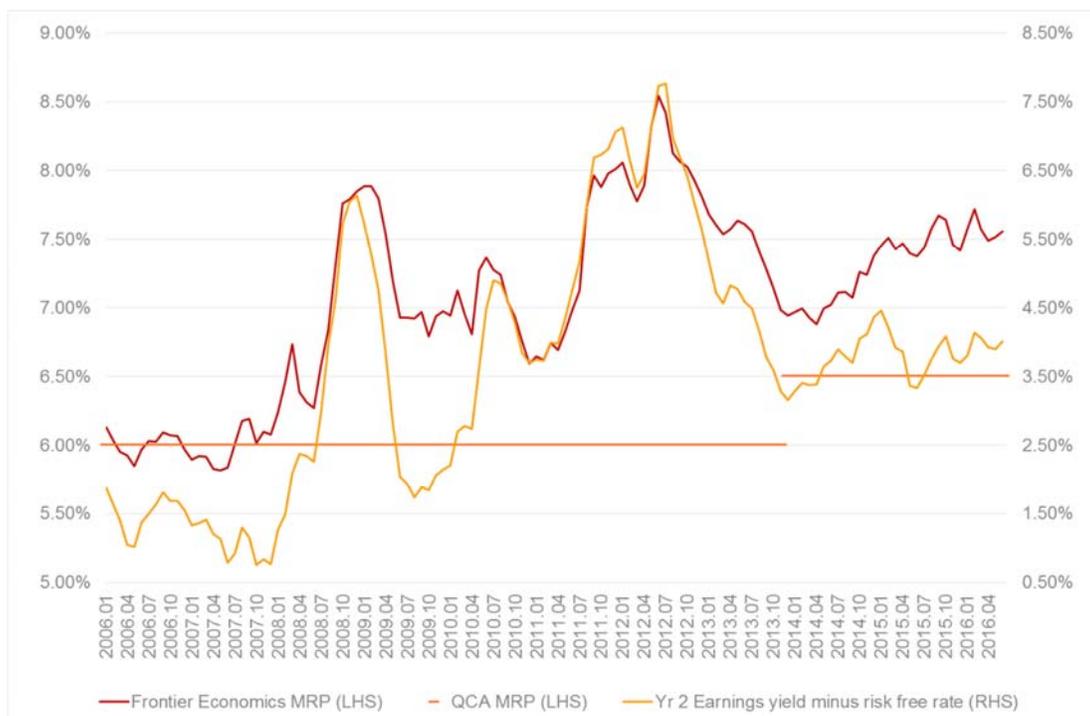
Figure 83 MRP estimates and corporate bond spreads



Frontier Economics (2016b). The Market Risk Premium, p.40.

²³³ Frontier Economics (2016b). p.23.

Figure 84 MRP estimates and earnings yield spreads



Frontier Economics (2016b). The Market Risk Premium, p.41.

This supports the conclusion that the Frontier approach is more likely to produce an outcome that responds to changing market conditions and is also therefore more consistent with investors' expectations.

MRP Estimation Methodology

The QCA adopted four methodologies to estimate the MRP in its Market Parameters Final Decision:

1. Ibbotson approach: the long-term average of historical excess return;
2. Siegel approach: Ibbotson approach adjusted for unexpected inflation;
3. Survey evidence and independent expert reports;
4. Cornell approach: a form of Dividend Discount Model (DDM) that derives a forward-looking estimate of the MRP from current market prices and forecast dividends.

The QCA has previously indicated that it has also considered the Wright approach (the historical real return method) but does not provide detail as to how. In this section Aurizon Network summarises a number of specific issues that have been identified with the QCA's methodology.

Siegel methodology

The QCA is the only Australian regulator to use the Siegel methodology as part of its estimation of the MRP. Brattle (refer Brattle WACC Report) highlights that the Siegel approach is not considered by any regulators outside of Australia and New Zealand, nor in academic or practitioner texts. The QCA has previously stated that the fact that other Australian regulators do not apply the Siegel approach is not relevant as it assesses each method on its own merits. However, the absence of any other regulatory support for this approach should not be ignored.

In Aurizon Network's view, based on the merits of the methodology, the Siegel approach should not be afforded any weight in estimating the MRP. This is addressed in more detail in the accompany reports from Frontier (refer

Frontier MRP Report) and Brattle (refer Brattle WACC Report). In summary, the fundamental concerns with the Siegel approach are that it:

- > is inconsistent with the principle of using long term historical returns; and
- > relies on the strong assumption of a stable expected real government bond return.

The idea of using a long-term historical average MRP is that any upward or downward biases will average out in the long run, thereby providing an unbiased historical MRP estimate. The Siegel approach, however, focuses only on one particular source of perceived bias, for which there is only a downward adjustment made. This results in a persistent downward bias and is inconsistent with the underlying idea of using long term historical returns.

The Siegel approach is also reliant on the strong assumption of the expected real government bond yield being stable over time. The QCA has conducted its analysis over a historical time period commencing in 1958, using the average real Government bond yield from 1987 onwards. In other words, it assumes that the average real yield prevailing from 1987 to 2013 would also have applied from 1958 to 1987 and uses this to make inferences about what investors' expectations would have been regarding inflation over the period from 1958 to 2013. As highlighted by Frontier, "the QCA considers that a short time period with a fundamentally different central bank regime can be used to estimate what expected real government bond yields were over all years."²³⁴

Frontier concludes by saying that:

"In our view there is no basis for assigning any weight to the Siegel adjustment for unanticipated inflation. The adjustment relies entirely on one important assumption – that the average real government bond yield observed since 1986 is the best estimate of what the expected real government bond yield was over all historical periods. This one assumption reduces the MRP implied by past excess returns by a whole percentage point, from 6.5% to 5.5%. This is a very strong assumption to apply to a different regime in terms of economic development, fiscal policy and central bank objectives."²³⁵

Aurizon Network therefore submits to that no weight should be placed on the Siegel approach.

Wright approach

During the UT4 review process the QCA indicated that it had regard to the Wright approach in deriving the MRP point estimate. However, the Wright approach itself did not form part of the MRP range. The QCA noted that "the Wright estimate was one factor considered in arriving at the decision to change our estimate of the MRP from 6.0% to 6.5%."²³⁶

Frontier notes that the Wright and Ibbotson methods sit at either end of a theoretical spectrum:

- > the Ibbotson method assumes that the MRP is fixed and the required return on equity rises and falls one-for-one with changes in government bond yields; and
- > the Wright approach assumes that the real required return on equity is constant and the MRP changes over time to offset variation in government bond yields.

²³⁴ Frontier Economics (2016b). p.29.

²³⁵ Frontier Economics (2016b). p.29.

²³⁶ Queensland Competition Authority (2016). p. 243.

Frontier therefore concludes that “since the truth likely falls somewhere between these two theoretical endpoints, our view is that both should be afforded material weight.”²³⁷ This conclusion is also consistent with Lally’s advice to the QCA:

“I consider that the set of methodologies considered by the QCA should be augmented by one involving estimating the expected real market cost of equity from the historical average actual real return and then deducting the current real risk free rate (or converting the estimate of the expected real market cost of capital to its nominal counterpart and then deducting the current nominal risk free rate).”²³⁸

Lally however rejected the Aurizon Network UT4 proposal to include the Wright approach. One of the key reasons why was because he considers that the Wright approach is designed to address the same issue as the Siegel approach but in a different way.²³⁹

Aurizon Network disagrees with the view that the Siegel and Wright approaches address the same issue. As outlined in the accompanying report by Frontier (refer Frontier MRP Report), it is incorrect to assume that the two approaches address the same issue. The fundamental difference is that:

- *the Siegel approach assumes that there is one particular influence on historical data (unanticipated inflation) that requires an adjustment to correct for perceived bias; while*
- *the Wright approach is saying that at low risk free rates the MRP implied by excess returns is too low because a one-for-one movement between required equity market returns and the risk free rate cannot be expected.*

In any case, for the reasons summarised above (and addressed in more detail by Frontier), Aurizon Network does not consider that the Siegel approach should be provided any weight. Lally has also previously agreed that the Wright approach should be included as one of the methods relied upon by the QCA. Aurizon Network therefore considers that the Wright approach should be considered along with the Ibbotson approach to estimate the MRP from historical information.

Using survey evidence and independent expert valuation reports

In the UT4 decision, the QCA determined a MRP estimate of 6% (excluding the value of imputation credits) from survey evidence and independent expert valuation reports. The survey evidence is from the Pablo Fernandez Survey. This approach has consistently produced a MRP estimate of approximately 6% and accordingly does not reflect prevailing market conditions. As observed by Frontier, “this survey consistently produces an MRP estimate in the order of 6% - in raging bull markets and during the depths of the GFC, it is always close to 6%.”²⁴⁰

As the premise of using survey evidence is to provide a contemporaneous estimate of the MRP and the Pablo Fernandez Survey produces an estimate that does not reflect prevailing market conditions, Aurizon Network does not consider it appropriate to place any reliance on this evidence.

While not specifically a form of survey evidence, Aurizon Network agrees that the QCA also should refer to evidence from independent expert reports. However, based on the advice of Frontier, Aurizon Network does not agree with the actual MRP estimate that the QCA has inferred from these reports. This is because:

- > it is misleading to use a median estimate rather than average, especially when there is no outlier value in the sample to distort the mean; and

²³⁷ Frontier Economics (2016b). p. 34.

²³⁸ Lally (2013), Response to Submissions on the Risk Free Rate and MRP, p. 3.

²³⁹ Queensland Competition Authority (2016). p. 238.

²⁴⁰ Frontier Economics (2016b). p. 31.

- > in response to the low risk free rate, the evidence from these reports shows that the experts tend to pair the MRP with a higher risk free rate (on average 0.5% higher). This is further supported in the analysis prepared for Aurizon Network by Ernst and Young (refer EY Cost of Equity Report), as summarised at the beginning of this Chapter.

Aurizon Network raised concerns over the QCA's use of the median estimate during the UT4 process. In response, the QCA's consultant, Lally, argued that there have been other situations in which averages have been significantly affected by one outlier (and so a median is immune from this).²⁴¹ However, this argument is irrelevant here as there are no outliers in the sample of independent expert reports used. If this data is to be used, the QCA should refer to the mean rather than the median estimate when there are no outliers to skew that mean.

Cornell approach

In the UT4 Final Decision, the QCA applied the Cornell approach in a way that is not commonly applied:

- > a dual rate adjustment is used. That is, rather than apply a single required return on equity, which is consistent with normal practice, the QCA assumes equity holders require a low return for ten years and there is then a step change to a higher rate;
- > the long-term earnings per share growth rate is reduced to be 1% lower than long-term Gross Domestic Product (GDP) growth (the GDP adjustment); and
- > the risk free rate used is different from the risk free rate used in the CAPM model.

Aurizon Network maintains its view that neither the dual rate nor GDP adjustments are justifiable. The detailed reasoning is contained in the SFG report, *Application of the Dividend Discount Model for Estimating the Market Return by the QCA*, which accompanied Aurizon Network's response to the UT4 MAR Draft Decision. Following this process several issues raised by SFG and Aurizon Network were either not resolved or responded to by the QCA. These include the following:

- The dual rate adjustment imposes a term structure of market returns that implies that the dividend yield must increase over the convergence period by 3.3% to 7.8%, if the long-term growth assumption is GDP minus 1.5%. However, this high level of dividend yield is not supported by empirical evidence - even firms with the longest historical records have not had such a high dividend yield.²⁴²
- The dual rate adjustment leads to unnecessary variation in the MRP estimate.²⁴³
- The downward adjustment to the terminal growth rate is inconsistent with the market evidence in Australia and the US over the past 20 to 30 years under the current central bank regime, where the earnings growth rate has approximated GDP growth.²⁴⁴

Aurizon Network further contends that it is unreasonable to make only downward adjustments and preclude adjustments that may result in a higher MRP estimate and therefore a higher rate of return commensurate with the risks that Aurizon Network bears. Brattle highlights the issue of this downward bias in the Cornell MRP estimate (see Brattle WACC Report). It states that this bias is due to the omission of share repurchases in the cash flow calculation and option values that may be inherent in stocks. The magnitude of share repurchases is estimated by Lally to be around 0.5%. However, the current QCA application of the Cornell approach does not make any adjustment to account for the downward bias.

The other problem with the QCA's Cornell estimate is the inconsistency with the term of the risk free rate used in the return on equity calculation (which is discussed below). If a four year term to maturity is assumed for the purpose of estimating the risk free rate, then the Cornell MRP should also be calculated with reference to the same four year risk free rate. The impact of this is material, with Brattle demonstrating that the maturity premium has historically ranged from 0.45% over the period 1991-2016 (June) to currently 0.58%. At the current time, the QCA's Cornell

²⁴¹ Lally (2015a). Review of Submissions on the MRP and the Risk-free Rate, p. 30.

²⁴² SFG Consulting (2014b). Application of the Dividend Discount Model for Estimating the Market Return by the QCA, p. 4.

²⁴³ SFG Consulting (2014b). p. 8.

²⁴⁴ SFG Consulting (2014b). p. 11.

MRP estimate should therefore be 0.58% higher. Aurizon Network notes that if a ten year term to maturity for the risk free rate is adopted there would no longer be any inconsistency.

Weighting applied

It is understood that the final MRP estimate that the QCA produces is a mean estimate where the results of the different estimation methodologies are weighted. For the UT4 Final Decision the QCA indicated it did not use an equally weighted average, and didn't specify what weights were applied to the respective estimates to derive the final point estimate of the MRP. The QCA instead stated that:

“Our view is that applying our judgement to assess the strengths and weaknesses of estimates obtained from several different methods, as well as assessing other relevant information to arrive at a final estimate for the MRP, was appropriate.”²⁴⁵

The advice prepared by the QCA's consultant, Lally, included multiple suggestions that the QCA had adopted the median estimate:

“However, since this estimate is significantly in excess of the QCA's other estimates, the median estimate is not affected.”²⁴⁶

The conflicting statements result in confusion as to how the QCA arrives at the final estimate from the MRP range. It is Aurizon Network's view that it is not sufficient for a regulator to list the evidence that has been considered and then select a point estimate without any explanation as to how its judgment was applied. Good regulatory practice requires some explanation of how the judgement was applied, including explanation of the relative weights applied to each piece of the evidence. This lack of transparency undermines the predictability and certainty as to how the regulatory framework will be applied, which is a source of regulatory risk. Aurizon Network considers that such transparency, predictability and certainty is essential in providing it and other participants with confidence in the future application of the regulatory framework.

Risk-free term inconsistency

As outlined above, the QCA applies a four year term to maturity in setting the risk free rate to apply in the return on equity, whereas the MRP is calculated with reference to methods that assume a ten year risk free rate. This is inconsistent. The QCA is the only Australian regulator to adopt this practice.²⁴⁷

The QCA has previously argued that the inconsistent risk free rate terms in the CAPM is unavoidable and that in making its decision it had regard to the apparent inconsistency by using its judgement to estimate the MRP.²⁴⁸ Aurizon Network does not consider the inconsistency is unavoidable, a conclusion also reached by the QCA's consultant, Lally:

“A possible solution to this conundrum [inconsistent risk-free rate term] is to define the MRP relative to the risk-free rate matching the regulatory cycle.”²⁴⁹

However, Lally's solution is to resolve the inconsistency by requiring only a single (matching term) MRP in the CAPM. This is not a requirement of the CAPM model assumptions. If the CAPM is applied to different investment horizons, then the MRP should reflect that relevant horizon. That is, if the QCA persists in setting the risk free rate in

²⁴⁵ Queensland Competition Authority (2016). p. 243.

²⁴⁶ Lally (2015). Review of submissions on the MRP and the risk-free rate, p. 25.

²⁴⁷ The only other regulator to set the term of the risk free rate to match the length of the regulatory period. The ERA has corrected the apparent error in the latest ATCO gas distribution Final Decision.

²⁴⁸ Queensland Competition Authority (2016). p. 242.

²⁴⁹ Lally (2015). p. 8.

the return on equity based on the length of the regulatory period, it should ensure that the MRP applied to each business it regulates is consistently estimated using a risk free rate for that same term. However, as outlined above, Aurizon Network does not agree with the QCA's practice of setting the risk free rate to match the length of the regulatory period and this issue is better addressed by consistently applying a ten year term to maturity.

The QCA and Lally have previously reasoned that the inconsistent use of the risk free rate in the CAPM would not change the final MRP estimate. In direct contrast to this conclusion, SFG estimated a difference of 0.27% between the five and ten year risk free rate between 1995 and 2014.²⁵⁰ The difference prevailing at the time that analysis was completed (20-day average to 31 October 2013) was even larger at 0.85%. A difference of this magnitude must surely change the MRP estimate if the term inconsistency was corrected. In any case, without clearly defined weights for each of the estimation approaches, it is not possible for Aurizon Network or stakeholders to verify if the impact is material or not.

To ensure the outcome is logical and technically robust, the QCA should correct the term inconsistency, even if it does not believe this will change the final estimate of the MRP.

11.5.3 Equity Beta

In its UT4 Final Decision the QCA determined an asset beta of 0.45 for Aurizon Network. With a 55% gearing ratio this produces an equity beta of 0.8. The QCA's approach:

- > confined the sample of comparable firms to utility businesses; and
- > used the SL CAPM and regression analysis to estimate beta.

Each of these issues is discussed on the following page.

The QCA's comparator sample

The QCA's reliance on energy and water utilities

The QCA has taken a very narrow methodological approach to the estimation of the equity beta and failed to appropriately consider relevant risks Aurizon Network bears that the comparator group does not. Aurizon Network's assessment of the relevant risks, and the comparator groups that can be referenced to estimate a beta consistent with this risk profile, was outlined above.

In estimating the beta to apply to Aurizon Network, the QCA has solely relied on a sample of regulated domestic utilities. The underlying assumption for this approach is that the systematic risk faced by Aurizon Network is most comparable to that faced by these firms. During the UT4 process, the QCA's consultant Incenta advised that:

"Of business categories considered potential comparators for Aurizon Network, regulated energy and water businesses represent the closest comparators, as they:

- Are subject to similar regulation (e.g., cost-based regulation with regular reviews);
- Have their revenue risk buffered by the regulatory framework, with that revenue also being largely uncorrelated with the state of the economy;
- Have relatively low operational cost risk and are generally subject to low stranding risk."²⁵¹

The implication of this is that the dominant firm characteristic that determines Aurizon Network's exposure to systematic risk is the form of regulation. Transportation companies, including railways, are excluded from the sample of comparator firms despite Aurizon Network having similar industry characteristics and being exposed to the similar industry risks. As highlighted in the accompanying report by Brattle (refer Brattle WACC Report), the selection of the

²⁵⁰ SFG Consulting (2014a). The term of the risk-free rate, p. 18.

²⁵¹ Queensland Competition Authority (2016). p. 248.

comparator firms has ignored significant differences between Aurizon Network and utility firms such as the nature of its customer base, the difference in geographic diversification and different demand elasticities.

The logic behind Incenta’s conclusion on comparator firms can be summarised as follows:

- > Queensland’s coal export industry is at the low cost end of international cost curve and therefore long-term export volumes are assured;
- > Any excess capacity will be contracted as there is always demand (if not growing demand) for Queensland coal;
- > As long as the capacity is contracted, Aurizon Network will be able to collect revenue from providing the access service and hence recover the efficient costs, including capital costs, especially when it is under revenue cap regulation;
- > Therefore, all the other factors, such as the industry it serves, the customer base, the demand elasticity and even the risk of customer default do not affect the risk of Aurizon Network.

The QCA and Incenta have applied the same logic for the recent DBCT Final Decision, drawing the conclusion that DBCT’s risk profile is similar to a regulated utility network business. Aurizon Network does not agree that the long-term demand for Queensland coal is fully assured and Aurizon Network is protected from the risk.

Moreover, revenue cap regulation does not guarantee that Aurizon Network will fully recover its invested capital, especially given the fragmentation of its RAB and the QCA’s decision to defer Aurizon Network’s ability to recover revenue on major new projects (as discussed above). Regulated utility network businesses do not face these risks. In the first instance the risks and costs are spread across their large and diverse customer bases. Network demand is comparatively stable and predictable and customers have a low elasticity of demand. Further, the asset bases of regulated utility network businesses are not fragmented, nor are they exposed to risks such as revenue deferrals.

Aurizon Network has provided an overview of its inherently volatile commercial environment at the beginning of this Chapter. This presents a very different risk profile to a regulated energy or water utility. This is reinforced by the position taken by the ratings agencies’, who have drawn some very important distinctions based on business risk profile. In its report to the QCA in relation to DBCT Management, Incenta has observed:

“Standard & Poor’s assesses regulated energy distribution businesses to have an ‘excellent’ business profile owing to their strong monopoly position and stable regulatory frameworks. However, when assessing Aurizon Network, the regulated rail business that is in the same coal chain as DBCT, Standard & Poor’s applies a ‘strong’ (i.e. weaker than ‘excellent’) business risk profile owing to ‘exposure to ongoing competitiveness of Queensland coal in global markets’.”²⁵²

This is reinforced in the marked difference between the benchmark metrics applied to Aurizon Network and utilities in the same BBB+ credit rating category.

Table 82 Different benchmark metrics applied for Aurizon Network and utilities rated BBB+

Agency	Aurizon Network	Utilities
Moody’s	>18% (or Aurizon Holdings downgrade)	>7%-8%
S&P	>13% (or Aurizon Holdings downgrade)	>7-8%%

Source: Moody’s, Standard and Poor’s.

²⁵² Incenta (2016). DBCT: Review of WACC Parameters, p.52.

Aurizon Network does not support the QCA's sole reliance on one industry based on the form of regulation. As SFG concluded during the UT4 process:

"Some firms will be more comparable in one dimension (industry), other firms will be more compatible in other dimensions (form of regulation) and still other firms will be more comparable in other dimensions. Our approach is to apply weight depending on how comparable each firm might be across the range of relevant dimensions."²⁵³

This approach has underpinned the development of Aurizon Network's equity beta estimate, as outlined above.

Other Regulatory Practice

In September 2015, the ERA published its final determination on the WACC methodology to apply to regulated railways in Western Australia, including the Public Transport Authority, Brookfield Rail and The Pilbara Infrastructure (TPI). The ERA continues to use international rail networks as comparators for the WA railway businesses – at no point has it suggested that regulated utility network businesses are relevant comparators. Indeed, in assessing the Brookfield Rail network, the ERA considered that:

"Aurizon is potentially the best comparator company to the Brookfield Rail network, given that it operates in Australia and transports similar freight. In addition, the Authority considered that non-rail operators are a less valid proxy company compared to rail operators."²⁵⁴

This is a view shared by Standard and Poor's, who states in the credit rating report for Aurizon Network:

"The closest is Brookfield WA Rail Pty Ltd. (Brookfield), the rail network operator in the southwest region of Western Australia. Both have similar business models, with each being the leaseholder and operator of a monopoly rail network with significant reliance on customers in the commodities sector—although Brookfield derives a greater portion of revenue from other sectors, such as grain or general goods. Brookfield Rail's slightly weaker business risk reflects the stronger regulatory system in place for Aurizon Network. Brookfield Rail and Aurizon Network have similar financial profiles based on their similar leverage and credit metrics."²⁵⁵

The ERA also considered that the Brookfield Rail network will be of lower risk than American and Canadian railway operators who are exposed to higher degrees of competition from alternative forms of transport. Nevertheless, it still considers that international railroads are useful in informing the beta of Brookfield Rail. Aurizon Network shares this same view.

The ERA assigned an asset beta of 0.7 to Brookfield Rail. This value is at the lower end of the asset beta range for the ERA's sample of overseas railroads, but significantly higher than the asset beta of 0.45 allowed by the QCA, which reflects regulated energy network businesses.

Issues with the SL CAPM

There is extensive evidence that the SL CAPM model produces estimates of the return of equity that are systematically lower than actual returns for stocks with beta less than one and higher than the actual returns for stocks with betas above one. This evidence is presented in the accompanying reports by Frontier and Brattle.

On an industry level, the approach of regressing stock returns against market returns using the SL CAPM is also problematic. Da, Guo and Jagannathan (2012) show that regressing stock returns against market returns does not

²⁵³ SFG Consulting (2014c). Commentary on the Systematic Risk Analysis of Aurizon Network by the Queensland Competition Authority – Report for Aurizon Network, p. 1.

²⁵⁴ Economic Regulation Authority (2015). Review of the method for estimating the Weighted Average Cost of Capital for the Regulated Railway Networks, p. 148.

²⁵⁵ Standard & Poor's, 2016, Aurizon Network Pty Ltd, p. 5.

produce a meaningful estimate of the required return if the SL CAPM model used and that there is no association between the required return and the estimated industry beta.

Frontier analysed 212 Australian listed firms over the period from 1992 to 2012 and drew similar conclusions as to the relationship between returns and the estimated industry beta (refer Frontier Beta Report). The analysis was conducted over three consecutive time periods.

Based on this analysis, Frontier observes that:

“The results show that portfolios with high beta estimates performed no better than portfolios with low beta estimates. The relationship between beta estimates and realised returns is slightly downward-sloping and is not statistically significant. This does not mean that high beta stocks have a lower cost of capital than low beta stocks. In the figures of Fama and French (2004) and Brealey, Myers and Allen (2011) the relationship between beta estimates and returns has a slight upwards relationship. In the figure of Da, Guo and Jagannathan (2011) there is a flat relationship between beta estimates and stock returns. The evidence is simply that regressing stock returns on market returns does not lead to beta estimates which show a reliable, positive association with stock returns.”²⁵⁶

These results highlight the reliability issue of the SL CAPM in predicting returns. As highlighted by Frontier and discussed above, this is likely to be because the SL CAPM fails to consider other factors such as book-to-market ratio that are priced into returns. As Aurizon Network has a high book-to-market ratio, applying the SL CAPM will underestimate Aurizon Network’s cost of equity. As a result, Aurizon Network’s proposal to continue using the SL CAPM in estimating cost of equity is a conservative approach. More detailed discussion is provided in the accompanying report by Frontier (refer Frontier Beta Report).

11.5.4 Gamma

Aurizon Network’s proposed approach to estimating gamma was outlined above. It was noted that it has taken a different approach to the QCA in estimating its two key parameters, being the distribution rate and theta. These differences are explored further below. Reference is made to the accompanying report from Frontier (refer Frontier Gamma Report) for further explanation and evidence.

Distribution rate

As noted above, the most commonly applied assumption for the distribution rate is 0.7, which is readily observable from ATO data. This is the assumption that Aurizon Network has applied in estimating gamma for UT5.

While the QCA has also applied this assumption historically, in completing its 2014 WACC methodology review the QCA departed from this consensus based on the advice of its preferred consultant, Lally, and adopted a distribution rate of 0.84. Lally’s analysis is limited to data from the top 20 firms on the ASX, which are very large multinationals with a material amount of foreign-sourced income.

Aurizon Network maintains its UT4 position that this approach inflates the distribution rate due to the existence of foreign operations of those top 20 firms. This is because this foreign-sourced income can be used to distribute imputation credits, which means that the distribution rate for these firms will be higher than the distribution rate for a firm that does not generate foreign-sourced income to assist in the distribution of imputation credits. Moreover, Aurizon Network considers the QCA’s concerns about ATO data can only be limited to dividend data and, therefore, this data gives a reasonable and appropriate estimate of the distribution rate of 70%. These two issues are discussed further below.

²⁵⁶ Frontier Economics (2016c). Equity Beta, Report Prepared for Aurizon Network, p.11.

Lally's annual report approach

Aurizon Network highlights several methodological issues with the Lally (2016) approach and conclusions:

- > inconsistencies in the definition of the distribution rate
- > flawed assumptions about the relationship between foreign profits and the payout ratio
- > failure to control the dividend payout ratio for sampled firms with different foreign profit ratios
- > very small sample size.

During the UT4 process Aurizon Network highlighted a definitional issue underpinning Lally's ASX top 20 firm approach to estimate the distribution rate. In its UT4 Final Decision the QCA defined the rate as the ratio of distributed imputation credits to company tax paid.²⁵⁷ The Lally definition is the ratio of distributed credits to created credits. Lally's approach is therefore inconsistent with the QCA definition of the distribution rate, as shown below.

Figure 85 Definition of distribution rate

Definition	QCA	Lally
Distribution rate	$\frac{\text{Distributed credits}}{\text{Corporate tax paid}}$	$\frac{\text{Distributed credits}}{\text{Created credits}}$

The QCA and Lally have attempted to answer Aurizon Network's concern by arguing that corporate tax paid is defined as the tax paid only to the ATO rather than the tax paid to both the ATO and foreign tax authorities.²⁵⁸ However, the QCA has failed to give consideration to Aurizon Network's underlying concern, which is that the distribution rate for the ASX top 20 firms is overestimated due to the existence of foreign-sourced income.

It is not contentious that in this case, the benchmark efficient entity receives all revenues in Australia and therefore pays tax only to the ATO since all of its operations are domestic. For such an entity, the maximum distribution rate for imputation credits is the dividend payout ratio and the maximum distribution rate can only be achieved if all dividends are 100% franked.

In Lally's ASX top 20 sample, the average dividend payout ratio is 71% (lower again if the other ASX 200 firms are taken into account²⁵⁹). If there is no foreign-sourced income, it is not possible for the 20 firms in the Lally sample to pay out 84% of the franking credits with a dividend payout ratio of only 71%. An appropriate comparable distribution rate instead requires an estimate of the distribution rate for a benchmark efficient firm that has no foreign-sourced income.

A key concern with the ASX 20 top firm approach is the assumptions concerning foreign-sourced income and the relationship between foreign profits and the payout ratio. Lally supports the use of the ASX top 20 firms by arguing that for seven of the 20 sampled firms there is a negative correlation between the percentage of foreign profits and the distribution rate.²⁶⁰ That is, he seeks to argue that large multinationals do not have higher distribution rates than the average firm. Frontier has responded to this as follows:

"Lally purports to establish this claim in two ways:

²⁵⁷ Queensland Competition Authority (2016). p. 269.

²⁵⁸ Queensland Competition Authority (2016). DBCT Management's 2015 Draft Access Undertaking - Draft Decision, p. 102.

²⁵⁹ Aurizon Network (2014). Response to Maximum Allowable Revenue Draft Decision, p. 221.

²⁶⁰ Lally (2016). Review of the ACT's Gamma Decision, pp. 35-37.

- a. He provides a conceptual example of a firm *beginning* its foreign investment by using retained earnings, noting that the example is irrelevant for firms with established foreign operations – such as those in the sample of 20 that form the basis of the 84% estimate; and
- b. He provides some figures for a group of seven large multinationals. We fail to see how one can determine whether A is larger than B by examining only A. The more logical approach would be to compare A (84%) against B (70%) as we have done above.²⁶¹

Frontier presents an analysis of the distribution rate by NERA based on ATO data, which clearly shows that large multinationals (the ASX top 20) are able distribute a higher proportion of the credits they create relative to the average Australian firm.

Table 83 NERA analysis: distribution rate 2000-2012 by company type

Firm type	Distribution rate
Top 20 ASX listed	0.840
Public, but not top 20 ASX listed	0.693
All public	0.755
Private	0.505
All companies	0.676

Frontier Economics (2016c). Estimating Gamma for Regulatory Purposes, p.34.

Use of the ATO data

The standard approach used by other Australian regulators is to estimate the distribution rate using actual data from the ATO in the form of Franking Account Balance (FAB) data. Concerns in relation to ATO FAB data have been expressed by the QCA as follows:

“We considered that there are major, unexplained discrepancies in that data, which cast doubt upon the reliability of that data. Our view was that these discrepancies have not been adequately addressed by stakeholders.”²⁶²

The QCA has rejected the FAB data due to discrepancies between ATO FAB data and ATO dividend data that it believes are not sufficiently explained. Aurizon Network considers the logic to be flawed. The QCA has not explained its issue with the FAB data series, just that it is not the same as the dividend data series. Aurizon Network submits that it is the ATO dividend data that is the source of the deviations from the FAB data. A suspected problem with one data source does not automatically preclude the reliability of the other.

Frontier has summarised the problem with the dividend data as being due to the difficulty of keeping track of dividends flowing from one company to another.²⁶³ FAB data does not have this problem. Moreover, there is generally no disagreement regarding the reliability of FAB data. In a recent decision the Tribunal provided the following commentary on FAB data and the estimation of gamma:

“The distribution rate was interpreted as “the proportion of imputation credits generated that is distributed to investors”. It was estimated with a cumulative payout ratio approach which uses Australian Taxation Office (ATO) Franking Account Balances (FAB) statistics to calculate the proportion of imputation credits generated (via tax payments) that have been distributed by companies since the start of the imputation

²⁶¹ Frontier Economics (2016a). p.34.

²⁶² Queensland Competition Authority (2016). p. 278.

²⁶³ Frontier Economics (2016a). p. 35.

system. There is no dispute about this definition or the reliability of the ATO FAB data used to determine the distribution rate.”²⁶⁴

The QCA has argued that it has chosen its approach to determine the distribution rate on methodological merits rather than the practice of other regulators. However, the fact remains that despite their similar regulatory objectives, regulatory framework and being presented with the same evidence and methodological choices, the QCA alone has decided to reject FAB data to estimate gamma. Aurizon Network does not agree with the conclusions of the QCA, and has highlighted methodological issues with the QCA’s approach. On the basis that it reflects the approach used by the overwhelmingly majority of the market, as well as other Australian regulators, Aurizon Network’s proposed estimate of 0.7 is more appropriate.

Theta

As noted above, Aurizon Network’s preferred value of theta is SFG’s estimate of 0.35. Based on its 2014 Market Parameters Final Decision, the QCA’s UT4 Final Decision determined a value of theta of 0.56. This gave most weight to the equity ownership approach based on a definition of theta that results in it being based on the redemption rate, rather than the market value of theta in the hands of investors.

As outlined above, Aurizon Network submits that the appropriate interpretation and valuation for theta is based on market values, not the redemption rate. Well established shortcomings of the redemption approach include that it:

- > will result in under-compensation for investors and is inconsistent with section 168A(a) of the QCA Act; and
- > is inconsistent with the way other WACC parameters are estimated.

As discussed above, imputation credits have the potential to increase the market value of equity if investors place some value on them.²⁶⁵ A regulator therefore needs to reduce the revenue allowance to reflect the value of imputation credits to ensure investors are not overcompensated. However, if the value of imputation credits is overstated, investors will be undercompensated.

The key issue for the regulator is how much reduction in cash flow it should apply for each dollar of imputation credits. As highlighted in the accompanying report by Frontier (refer Frontier Gamma Report), a decision to reduce regulated cash flows by one dollar for every dollar of imputation credits investors could redeem effectively assumes investors value them exactly at their face value. However, this is inconsistent with the starting proposition of reducing the regulatory allowance to ensure the increased market value of equity due to imputation credits is reduced but by no more than the extent to which those credits are valued by investors.

The reduction in regulatory cash flow must therefore reflect the market value of imputation credits, that is, the extent to which the value of the imputation credits is incorporated into the market price of equity. For example, if investors value \$1 of imputation credits at \$0.35, then the regulator must reduce the regulatory cash flow by \$0.35 as this is the value reflected in the market value of equity. The current QCA approach, however, is to reduce the regulatory cash flow by \$1, which exceeds the value investors place on imputation credits. This will result in investors being undercompensated.

The AER has considered that factors that reduce the value of imputation credits below their face value to be costs classified as personal costs. Using the market value (which would be net of personal costs) would therefore be inconsistent with the Officer CAPM model, which considers the cost of capital after corporate tax but before personal taxes or transaction costs. In effect, the AER considers \$1 of capital gains, dividends and imputation credits to all have a value of \$1.

²⁶⁴ Australian Competition Tribunal, Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, p. 273.

²⁶⁵ Frontier Economics (2016a). pp. 6-10.

In relation to this valuation issue, and in directly addressing the issue of whether “value” is a market value or face value, the Tribunal has concluded that it:

“...does not accept the AER’s approach that imputation credits are valued at their claimable amount or face value (as it said in the Final Decisions: the measure is what can be claimed). The value is not what can be claimed or utilised, but what is claimed or utilised as demonstrated by the behaviours of the shareholder recipients of the imputation credits.”²⁶⁶

It also states that “the AER’s reasoning ignores the fact that other parameters in the WACC calculations are market values that already incorporate the effects of the differences in investors’ tax positions and transaction costs.”²⁶⁷

The Tribunal further responded to the AER’s position as follows:

“The Tribunal accepts the Network Applicants’ submission that the return on equity is derived from the market prices of government bonds (the risk-free rate) and from the market prices of shares (beta and MRP). The cost of debt is calculated by reference to bond yields. Bond yields are derived directly from the traded market prices of bonds. Further, we accept the Network Applicants’ submission that these market prices reflect every consideration that investors make in determining the worth of shares to them and that the bond prices, and the yields that are derived from them, reflect every consideration that investors make in determining the worth of the asset to them, including “personal costs”. Consequently, placing significant weight on market value studies is, in the Tribunal’s view, consistent with evidence relied on by the AER to calculate the rate of return on capital.”²⁶⁸

Aurizon Network notes that the Tribunal reached a different conclusion on the AER’s value of gamma in a recent decision in response to an appeal by SA Power Networks (SAPN)²⁶⁹. In that decision, the Tribunal did not address the interpretation issue of what the ‘value’ of imputation credits means under the National Electricity Rules, which is essential in determining the appropriate method to apply in valuing theta and the treatment of sources of information that may be relevant to determining that value. In other recent decisions the Tribunal has previously determined that the correct interpretation was a ‘market value’ interpretation, not the AER’s (and the QCA’s) ‘utilisation’ interpretation.

Aurizon Network respectfully submits that the interpretation of the relevant legislation is a critical matter for the Tribunal to consider and that if it had done so, it would have concluded that the correct approach was a market value interpretation, consistent with its previous decisions. Aurizon Network therefore does not consider that any regard should be given to the Tribunal’s SAPN decision. Aurizon Network also notes that a further appeal of the AER’s value of gamma lodged by the Victorian network businesses is currently being heard by the Tribunal.

The key question to be answered in determining an appropriate value for gamma is what interpretation and calculation of theta allows Aurizon Network to earn a return on investment commensurate with the regulatory and commercial risks involved. The options available all fall into one of two categories: one that relies upon a theoretical model (the QCA’s approach) or one which uses actual market evidence (Aurizon Network’s approach).

Frontier Economics highlighted the deficiency of the QCA’s theoretical approach as follows:

The QCA approach would be to announce to investors that, even though the investors valued the credits at \$X, their returns would be reduced by more than \$X because that is what the QCA has estimated the

²⁶⁶ Australian Competition Tribunal, Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, p. 284.

²⁶⁷ Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, p. 282.

²⁶⁸ Applications by Public Interest Advocacy Centre Ltd and Ausgrid [2016] ACompT 1, p. 289.

²⁶⁹ Application by SA Power Networks [2016] ACompT 11.

theoretical weighted average to be – that if the investors had behaved in accordance with the theoretical assumptions they would have placed a higher value on the credits, in which case the reduction in the allowed return would have been fair.²⁷⁰

In Aurizon Network's view, it is not the role of the regulator to determine what it considers the market *should* have priced according to a theoretical model. Rather, a more appropriate way would be to infer what *is* required by the market from traded market prices and provide a return that aligns with the market's expectations. Only in this way will the requirements of the QCA Act be satisfied.

The only appropriate way to ensure investors are appropriately compensated is to determine the required rate of return with regard to investors' perceived value of imputation credits and not merely the proportion that is redeemed. The value of imputation credits can therefore only be appropriately estimated through market-based valuation methods, such as dividend drop-off analysis. This is consistent with the approach used to estimate all of the other parameters in the WACC.

²⁷⁰ Frontier Economics (2016a). p. 21.

Return of Capital

12. Return of Capital (Depreciation)

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.

The methodology applied for calculating depreciation depends on the year in which the assets were approved for inclusion into the RAB.

For example, an asset approved for inclusion into the RAB prior to FY2009 – that is, during the UT1 or UT2 regulatory periods - will be depreciated on a straight line basis, in accordance with a QCA approved schedule of asset lives.

For assets included into the RAB from FY2009 onwards, an accelerated depreciation approach applies, using a 20-year rolling life.

This is summarised in Table 84 below:

Table 84 Depreciation methodologies in different regulatory periods

Undertaking	Methodology
UT1 and UT2 (Up to and including FY2009)	Straight line depreciation; physical asset lives set in accordance with QCA approved schedule
UT3, UT4 and UT5 (FY2010 to FY2021)	Accelerated depreciation profile – rolling 20 year life. This approach reflects straight line depreciation, where the physical asset life is capped at 20 years for depreciation purposes, and resets at the commencement of each new regulatory period.

Aurizon Network's UT5 proposal has retained the rolling 20-year asset lives depreciation methodology consistent with UT4. Aurizon Network will continue to review the appropriateness of the current depreciation methodology and will consult with stakeholders and seek QCA approval if the current mechanism introduces additional risk or does not allow for recovery of the invested capital.

The depreciation values shown in Table 85 are proposed by CQCN System for UT5.

Table 85 Proposed depreciation by system for UT5

	FY2018	FY2019	FY2020	FY2021	Total
Blackwater	160,735	154,922	156,412	156,963	629,032
Goonyella	111,648	110,298	112,605	106,007	440,559
Moura	12,663	13,187	13,685	14,147	53,682
Newlands	11,438	12,781	14,131	15,521	53,871
GAPE	60,831	61,573	62,324	63,079	247,808
Total	357,315	352,761	359,157	355,717	1,424,952

Reference Tariffs

13. Reference Tariffs Proposal

13.1 Introduction

Reference Tariffs are the mechanism by which Aurizon Network recovers the revenue it is entitled to earn each year by providing regulated access to its regulated assets of the CQCN. The Reference Tariffs are applied for a series of different operational metrics, and are based on approved volume forecasts.

The approach to modelling tariffs remains unchanged from the method approved by the QCA in its Final Decision in relation to tariffs for UT4, and remains consistent with the pricing principles in the QCA Act. No smoothing factor has been applied to tariffs.

13.2 Reference Tariffs for UT5

The proposed UT5 Reference Tariffs are a function of the proposed MAR and forecast volume profile over the UT5 regulatory period. The proposed Reference Tariffs by System for UT5 are shown in Table 86.

The tariffs increase by 11% from FY2017 (UT4) to FY2018 (UT5) on average across the CQCN, based on forecast volume of 226mtpa. If the FY2018 tariffs were assessed on the system capacity, i.e., 308mtpa, the tariff would fall 26%. The increase in the MAR reflects the requirements of the pricing principles of the QCA Act which ensures that Aurizon Network generates expected revenue in line with its efficient costs and return that is commensurate with its commercial and regulatory risk.

Figure 86 MAR per forecast net tonne – Nominal and Real (FY2015\$) and Capacity

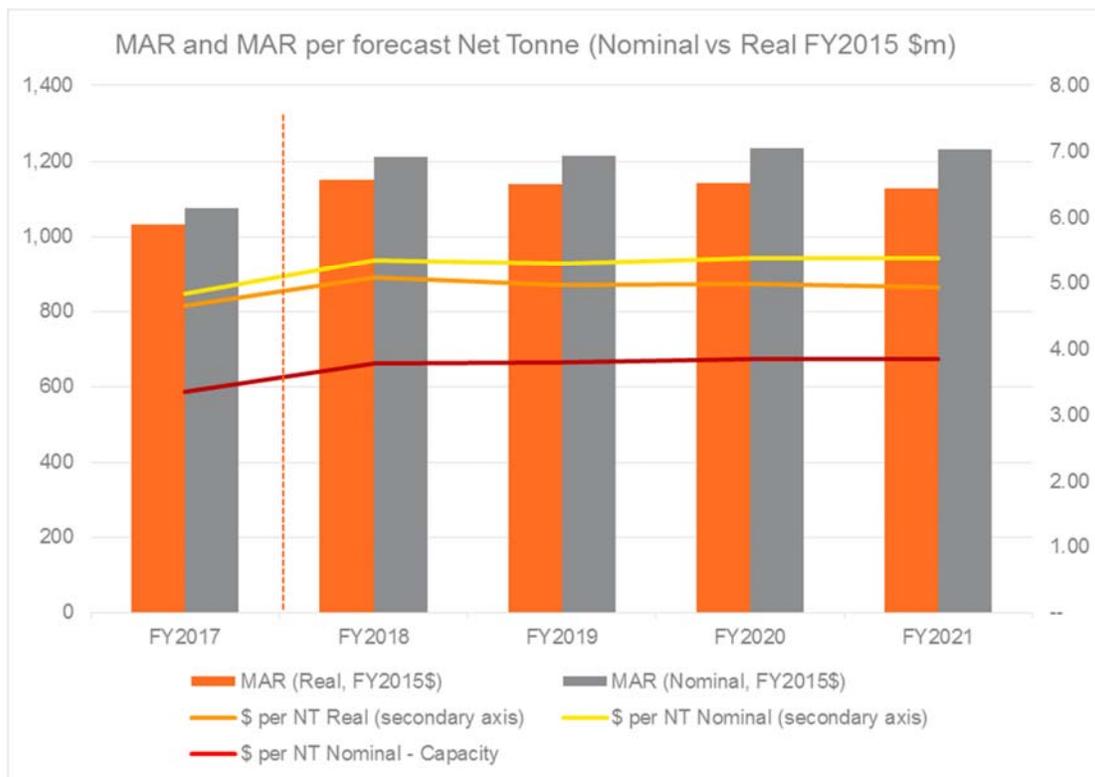


Table 86 Reference Tariffs by System over UT5

ATI	2017/18	2018/19	2019/20	2020/21
Blackwater	0.93	0.95	0.97	0.99
GAPE (INC GSE)	1.45	1.48	1.51	1.54
Goonyella	0.65	0.66	0.67	0.68
Moura	1.73	1.77	1.80	1.83
Newlands	1.80	1.84	1.87	1.91
WIRP_Blackwater	0.93	0.95	0.97	0.99
WIRP_Rolleston	0.93	0.95	0.97	0.99

AT2	2017/18	2018/19	2019/20	2020/21
Blackwater	2,188	2,214	2,241	2,269
GAPE (INC GSE)	13,601	13,767	13,935	14,105
Goonyella	1,386	1,403	1,420	1,437
Moura	655	663	671	680
Newlands	293	297	300	304
WIRP_Blackwater	2,188	2,214	2,241	2,269
WIRP_Rolleston	2,188	2,214	2,241	2,269

AT3	2017/18	2018/19	2019/20	2020/21
Blackwater	7.71	7.53	7.48	7.43
GAPE (INC GSE)	1.93	1.91	1.76	1.77
Goonyella	5.92	5.97	6.34	6.19
Moura	11.57	11.81	12.13	12.29
Newlands	11.31	12.15	12.84	13.74
WIRP_Blackwater	7.71	7.53	7.48	7.43
WIRP_Rolleston	9.00	7.82	7.73	7.43

AT4	2017/18	2018/19	2019/20	2020/21
Blackwater	2.62	2.57	2.55	2.61
GAPE (INC GSE)	4.59	3.86	3.64	3.50
Goonyella	1.24	1.25	1.32	1.29
Moura	1.88	1.92	1.97	2.00
Newlands	1.62	1.74	1.83	1.96
WIRP_Blackwater	2.62	2.57	2.55	2.61
WIRP_Rolleston	2.62	2.57	2.55	2.61

AT5	2017/18	2018/19	2019/20	2020/21
Blackwater	3.31	3.26	3.26	3.26
Goonyella	2.01	2.01	2.05	2.08
WIRP_Blackwater	3.31	3.26	3.26	3.26
WIRP_Rolleston	3.31	3.26	3.26	3.26

EC	2017/18	2018/19	2019/20	2020/21
Blackwater and Goonyella	0.77	0.79	0.80	0.81

13.3 WIRP Pricing

In its WIRP Draft Decision the QCA suggested the need for a revenue deferral mechanism to address the tariff impact on expanding users that arose from the underutilisation of WIRP capacity over the remainder of the UT4 period.²⁷¹ Following this the QCA's CDD²⁷² and UT4 Final Decision²⁷³ required Aurizon Network to defer revenue associated with WIRP train services not expected to rail for the remainder of the UT4 period. This resulted in a lower Capital Indicator²⁷⁴ for Aurizon Network and thereby lower capital base on which WIRP tariffs were derived.

Aurizon Network in its response to CDD disagreed with the QCA proposal, particularly its decision not to include a sunset date on the deferral. Aurizon Network affirmed in its response to CDD²⁷⁵ that, on 1 July 2017, the WIRP revenue deferral will cease to apply. The affected capital expenditure will be included in MAR and Reference Tariffs from this date onwards. A more detailed discussion of the revenue deferral issue is provided in Chapter 6.

The WIRP pricing proposal for UT5 accordingly now incorporates a majority of the WIRP deferrals, giving due consideration to the impact on customers.

13.3.1 Allocation of the WIRP deferral amongst WIRP users

Based on actual capex, Aurizon Network has calculated a capital deferral of \$235²⁷⁶m to be included in the opening balance of the UT5 RABs of raiing WIRP user groups in the Blackwater system.

The situation (and therefore treatment) for WIRP Moura deferrals is different as it relates to a single user, Cockatoo Coal. Cockatoo Coal was placed into voluntary administration on 16 November 2015 with the mine, Baralaba placed into care and maintenance in February 2016. The voluntary administration process ended May 2016 following a successful recapitalisation of Cockatoo Coal and implementation of a Deed of Company Arrangement. Baralaba mine continues to be in care and maintenance but Cockatoo Coal is currently progressing its mine development and has announced its intention to restart the mine in 2017.

However as there is no certainty on the exact commencement date of railings, Aurizon Network's UT5 proposal continues to defer WIRP capital relating to Moura system, for the full term of UT5. Aurizon Network solely bears the revenue risk and is not compensated for this risk by WACC. Aurizon Network will however continue to monitor the recovery of this portion of the RAB and engage with the QCA when a viable recovery option is identified.

²⁷¹ WIRP Draft Decision - Chapter 6 Pricing Arrangements for WIRP Train Services – page 56

²⁷² CDD Chapter 18 – Reference tariffs for WIRP train services Decision 18.10– page 203

²⁷³ Final Decision Chapter 18 - Reference tariffs for WIRP train services Decision 18.10 – page 249

²⁷⁴ CDD Chapter 26 – RAB and Capital expenditure – page 169

²⁷⁵ Aurizon Network's response to CDD, Chapter 18 – Reference Tariffs for WIRP Train Services, page 251

²⁷⁶ Converted to start year terms and includes capital cost and UT4 WACC escalation to compensate Aurizon Network for foregone revenue recovery over deferred period. This amounts relates to WIRP Blackwater and does not include WIRP Moura.

The following steps and Figure 87 detail the methodology followed to allocate the WIRP deferral to raiing WIRP pricing groups.

WIRP Pricing groups

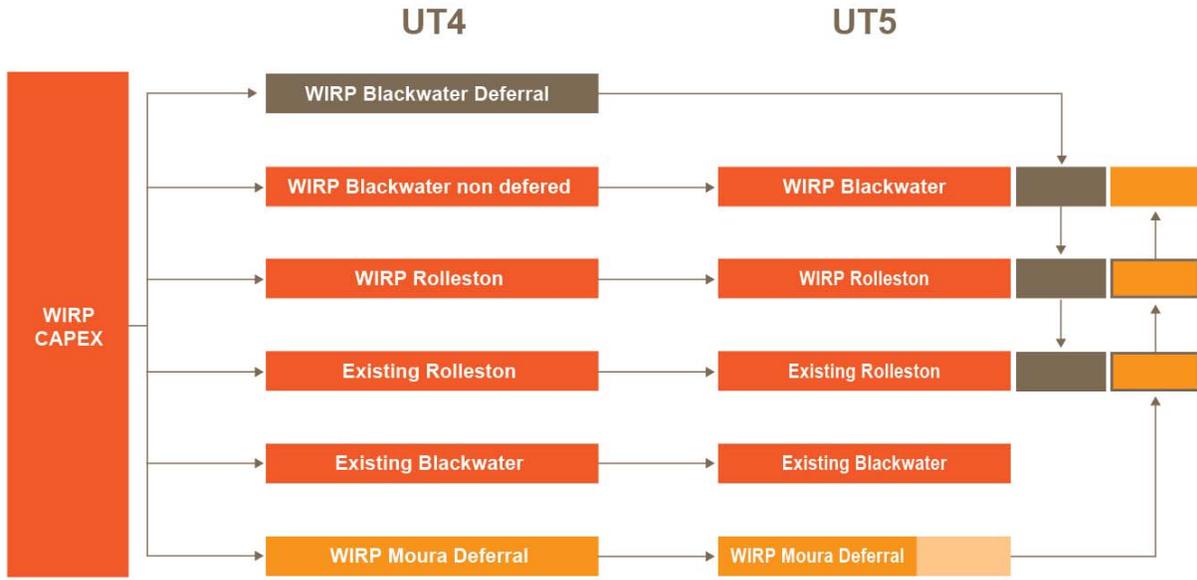
WIRP related capital expenditure has been allocated among the following WIRP user groups, consistent with UT4 Final Decision groupings and capital expenditure allocations.

WIRP Pricing groups	Description
WIRP Blackwater	Customers who have contracted Train Services under WIRP arrangements and are geographically located in the Blackwater system
WIRP Rolleston	New contracted Rolleston Train Services under WIRP arrangements
Existing Rolleston	Existing Rolleston Train Services (Gladstone Power Station), who have contracted Train Services under WIRP arrangements
WIRP Moura	Customers who have contracted Train Services under WIRP arrangements and are geographically located in the Moura system
WIRP NCL	A customer who has contracted Train Services under WIRP arrangements, originating from the Colton mine to WICET
Existing Blackwater	Customers geographically located in the Blackwater system, who have not contracted Train Services under WIRP arrangements
Existing Moura	Customers geographically located in the Moura system, who have not contracted Train Services under WIRP arrangements

Deferral allocation methodology

Process step	Methodology
Step one	Allocate total WIRP capital expenditure based on the Final Decision allocations. The capex allocators were applied to actual capital expenditure for FY2015 and forecast expenditure for FY2016 and FY2017
Step two	Calculate the deferred capital expenditure relating to non-railling mines based on Final Decision methodology, applied to actual capital expenditure FY2015 and forecast for FY2016 and FY2017
Step three	<p>The deferrals are then allocated among WIRP users expected to rail during the UT5 period.</p> <p>The deferral relating to WIRP Blackwater is allocated among WIRP Blackwater, WIRP Rolleston and Existing Rolleston subgroups based on Final Decision allocations. This is due to the fact that irrespective of certain mines not raiing, the infrastructure is used by all raiing WIRP users in Blackwater. No allocations of the deferral were made to Existing Blackwater users as this subgroup has no WIRP contractual obligations</p> <p>The allocations in the UT4 Final Decision made from the WIRP balloon loop to the WIRP Moura system has been reallocated among WIRP Blackwater, WIRP Rolleston and Existing Rolleston subgroups. The deferral relating to WIRP Moura, is now only reflective of the WIRP infrastructure built specifically in the Moura system (i.e. Moura East and West upgrades)</p>
Step four	<p>Over UT4, the deferred capital expenditure was escalated at 7.17% WACC but was not incorporated for pricing purposes. The UT5 opening RAB balances, for the WIRP subgroups, WIRP Blackwater, WIRP Rolleston and Existing Rolleston include the capitalised deferrals</p> <p>The treatment for WIRP Moura deferrals is different as it relates to the single WIRP user. Cockatoo Coal was placed into administration on 16 November 2015. With no new information on Cockatoo, WIRP Moura deferrals relating specifically to the Moura system is continue to be deferred in UT5. Aurizon bears the sole revenue risk associated with WIRP Moura and is not compensated through WACC or Revenue Cap.</p>

Figure 87 Allocation of deferrals



Note: Figure is not to scale

13.3.2 Pricing for WIRP trains services

The socialisation tests have been re-applied for WIRP using forecast UT5 volumes together with the inclusion of the revenue deferrals to the relevant WIRP pricing groups.

The pricing arrangements applicable to WIRP Train Services are structured in such a way as to ensure that WIRP customers are responsible for meeting the incremental costs of the WIRP expansion. This ensures that existing (i.e. non-WIRP) Blackwater system users will not see a tariff increase as a direct result of this proposal.

Pricing Summary

WIRP Pricing groups	WIRP Pricing outcomes
WIRP Blackwater	Socialised Blackwater Reference Tariff (non-electric and electric) through all four years of UT5
Existing Blackwater	Socialised Blackwater Reference Tariff (non-electric and electric) through all four years of UT5
Rolleston	System premium from FY2018 to FY2020, and the Blackwater system Reference Tariff in FY2021, for non-electric train services. Socialised Blackwater Reference Tariff for electric train services through all four years of UT5
WIRP Moura ²⁷⁷	No Tariff determined as capital is proposed to be deferred over UT5
Existing Moura	Not impacted by WIRP
WIRP NCL ²⁷⁸	Individual Tariff based on incremental WIRP costs consistent with UT4 approach

²⁷⁷ Customers who have contracted Train Services under WIRP arrangements and are geographically located in the Moura system

²⁷⁸ A customer who has contracted Train Services under WIRP arrangements, originating from the Colton mine to WICET

WIRP Blackwater pricing

Method

Access charges (excluding costs allocated to WIRP train services) were established for the base Blackwater system and compared against the incremental costs associated with WIRP Blackwater. All costs were expressed on a \$/ntk basis.

The WIRP Blackwater incremental costs applied for the socialisation test.

- > the allocation of the WIRP capital non-electric and electric, attributable to the additional access rights for train services unloading at WICET;
- > Incremental maintenance costs associated with WIRP infrastructure;
- > the allocations of the revenue deferrals; and
- > the QCA's UT4 Final decision, on WIRP pricing arrangements stated that "zero Contribution to Common Costs (CCC) from expanding users is generally acceptable"²⁷⁹. Consistent with that decision, a minimum CCC was not imposed on WIRP train services for the purpose of the socialisation test, as these costs are not incremental to WIRP train services.

Outcome

As highlighted in Table 87 and Table 88, the incremental costs for WIRP Blackwater train services on a \$/ntk basis is lower than the \$/ntk for the base Blackwater system (excluding WIRP). Charges recoverable from WIRP Blackwater train services are sufficient to meet all incremental costs attributable to them and, by virtue of socialisation, their volumes will make a positive contribution to the common costs of the Blackwater system. This creates a benefit for all users of the Blackwater system. As a result, it is appropriate that a socialised outcome apply to WIRP Blackwater train services, with the Blackwater system tariff applied to both non-electric and electric WIRP Blackwater train services.

Table 87 WIRP Blackwater: Comparison of average non-electric access charges (\$/ntk, nominal)

	2017/18	2018/19	2019/20	2020/21
Blackwater system reference tariff (excluding WIRP)	19.96	19.62	19.58	20.09
WIRP Blackwater non-electric incremental costs	18.66	18.44	18.22	17.24
	Pass	Pass	Pass	Pass

Table 88 WIRP Blackwater: Comparison of average electric access charges (\$/ntk, nominal)

	FY2018	FY2019	FY2020	FY2021
Blackwater system reference tariff (excluding WIRP)	3.82	3.87	3.89	3.93
WIRP Blackwater electric incremental costs	1.77	1.75	1.72	1.64
	Pass	Pass	Pass	Pass

Rolleston pricing

Method

In line with QCA's UT4 Final decision, the socialisation test was applied, combining both WIRP and non-WIRP Rolleston train services.

²⁷⁹ QCA FD Chapter 16 - Decision 16.6

Access charges (excluding costs allocated to WIRP and Rolleston train services) were established for the base Blackwater system and compared against the incremental costs associated with running all Rolleston train services. All costs were expressed on a \$/ntk basis.

- > the total of Rolleston mine-specific spur line costs plus a minimum CCC for the access rights for train services unloading at non-WICET destinations;
- > the allocation of WIRP capital non-electric and electric, attributable to the additional access rights for train services unloading at WICET;
- > incremental maintenance costs associated with WIRP infrastructure ;
- > the allocations of the revenue deferrals; and
- > Rolleston electrification costs.

Outcome

As highlighted in Table 89 below, the incremental costs for Rolleston train services on a \$/ntk basis is higher than the \$/ntk for the base Blackwater system (excluding WIRP and Rolleston) from FY2018 to FY2020. This means that Rolleston trains services would need to pay a premium above the Blackwater system tariff to meet all incremental costs attributable to them. Socialisation of the Rolleston volumes would not make a positive contribution to the common costs of the Blackwater system, which justifies the need for system premium for Rolleston. The premium is reflected via an increase in AT3 tariff as shown in Table 86. This outcome is largely driven by the relevant volume forecasts for Rolleston Train Services, which are (initially) insufficient to cover all incremental costs associated with Rolleston Train Services

In FY2021 the incremental costs for Rolleston train services on a \$/ntk basis is lower than the \$/ntk for the base Blackwater system (excluding WIRP and Rolleston). This means that the access charges recoverable from Rolleston train services are sufficient to meet all incremental costs attributable to them. Socialisation of their volumes will make a positive contribution to the common costs of the Blackwater system in FY2021.

Table 90 shows a socialised outcome for electric train services and Rolleston pays the Blackwater AT5 tariff. This is driven by the increased electric volumes from Rolleston over the UT5 regulatory period.

Table 89 Rolleston: Comparison of average non-electric access charges (\$/ntk, nominal)

	FY2018	FY2019	FY2020	FY2021
Blackwater system reference tariff (excluding WIRP and Rolleston)	16.91	16.62	16.59	17.03
Rolleston non-electric incremental costs	18.12	16.84	16.76	16.24
	Fail	Fail	Fail	Pass

Table 90 Rolleston: Comparison of average electric access charges (\$/ntk, nominal)

	FY2018	FY2019	FY2020	FY2021
Blackwater system reference tariff (excluding WIRP and Rolleston)	3.82	3.87	3.89	3.93
Rolleston electric incremental costs	2.52	2.30	2.26	2.21
	Pass	Pass	Pass	Pass

Appendix R.1 Opening RAB values by System

Blackwater UT4 RAB Roll-forward and UT5 opening asset value

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	1,660,798	1,714,283	2,034,346	2,481,178	2,740,880
Capital expenditure	105,671	60,917	568,232	114,630	
Inflation	56,872	26,846	38,772	64,895	
Depreciation	(108,786)	(113,638)	(160,172)	(155,358)	
Closing asset value	1,714,555	1,688,408	2,481,178	2,505,346	

Note: variance between opening and closing RAB's

FY2015 difference- relates to disposals approved under FY2014 RAB Roll-forward submission

FY2016 difference- relates to the inclusion of WIRP capex (excluding deferrals) for pricing purposes in FY2016 consistent with UT4, while part of the capex was incurred in FY2015

FY2018 difference – relates to WIRP deferrals incorporated to UT5 opening RAB

Blackwater UT4 RAB Roll-forward UT5 opening asset value – Non Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	1,376,758	1,444,672	1,764,528	2,058,895	2,305,098
Capital expenditure	100,557	60,331	384,660	108,278	
Inflation	47,562	22,760	32,018	54,179	
Depreciation	(80,205)	(84,743)	(122,311)	(130,879)	
Closing asset value	1,444,672	1,443,020	2,058,895	2,090,474	

Blackwater UT4 RAB Roll-forward UT5 opening asset value –Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	284,040	269,611	269,818	422,283	435,782
Capital expenditure	5,114	586	183,572	6,352	
Inflation	9,309	4,086	6,754	10,716	
Depreciation	(28,580)	(28,895)	(37,861)	(24,479)	
Closing asset value	269,883	245,388	422,283	414,872	

Goonyella UT4 RAB Roll-forward and UT5 opening asset value

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	1,593,616	1,725,699	1,722,912	1,772,151	1,811,323
Capital expenditure	180,522	80,818	139,684	117,884	
Inflation	57,119	27,320	27,748	47,251	
Depreciation	(105,133)	(110,925)	(118,193)	(125,962)	
Closing asset value	1,726,123	1,722,912	1,772,151	1,811,323	

Note: variance between opening and closing RAB's

FY2015 difference- relates to disposals approved under FY2014 RAB Roll-forward submission

Goonyella UT4 RAB Roll-forward UT5 opening asset value – Non Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	1,358,649	1,489,537	1,501,272	1,511,029	1,563,283
Capital expenditure	165,271	76,897	78,923	111,194	
Inflation	49,063	23,689	23,541	40,556	
Depreciation	(83,446)	(88,851)	(92,707)	(99,496)	
Closing asset value	1,489,537	1,501,272	1,511,029	1,563,283	

Goonyella UT4 RAB Roll-forward UT5 opening asset value –Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	234,967	236,162	221,639	261,122	248,041
Capital expenditure	15,250	3,920	60,762	6,690	
Inflation	8,056	3,631	4,207	6,695	
Depreciation	(21,687)	(22,074)	(25,486)	(26,466)	
Closing asset value	236,586	221,639	261,122	248,041	

GAPE UT4 RAB Roll-forward and UT5 opening asset value

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	954,495	934,793	892,298	982,189	937,625
Capital expenditure	5,659	511	--	--	
Inflation	30,912	14,144	13,293	24,555	
Depreciation	(56,274)	(57,151)	(58,002)	(69,119)	
Closing asset value	934,793	892,298	847,589	937,625	

Note: variance between opening and closing RAB's
FY2017 difference- relates to Byerwen GAPE incorporated to the RAB for pricing. Consistent with UT4

Moura UT4 RAB Roll-forward and UT5 opening asset value

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	251,089	252,647	251,561	259,548	266,605
Capital expenditure	3,689	5,364	15,754	12,952	
Inflation	8,203	3,902	3,982	6,812	
Depreciation	(10,334)	(10,791)	(11,750)	(12,706)	
Closing asset value	252,647	251,122	259,548	266,605	

Note: variance between opening and closing RAB's
FY2016 difference- relates to the inclusion of WIRP NCL capex for pricing purposes in FY2016 consistent with UT4, while part of the capex was incurred in FY2015. NCL is combined with Moura for presentation only. Existing Moura system tariffs are not impacted by WIRP. WIRP NCL has its own reference tariff

Newlands UT4 RAB Roll-forward UT5 opening asset value – Non Electric

	FY2014	FY2015	FY2016	FY2017	FY2018
Opening Asset Value	186,422	190,431	187,607	192,484	195,342
Capital expenditure	7,361	3,720	12,116	8,746	
Inflation	6,239	2,936	2,975	5,031	
Depreciation	(9,591)	(9,480)	(10,215)	(10,918)	
Closing asset value	190,431	187,607	192,484	195,342	

Appendix R.2 Establishing the required maintenance scope

In this section on establishing the required scope and efficient cost the following structure is followed:

- A. Determine the required scope
- B. Refining that scope
- C. Establishing the efficient cost for delivering that scope

A. Determining the required scope of the maintenance activity

Critical amongst these factors in determining the scope of the maintenance task are Aurizon Network's legislative and regulatory obligations, and the scope and scale of the asset base to be maintained.

Aurizon Network's legislative obligations underpin decisions around safety & maintenance tasks

Aurizon Network's safety management system

- > Section 168(A)(a) of the QCA Act (Pricing Principles) provides that the price of access should be sufficient to allow Aurizon Network to generate enough revenue that is at least enough to meet the efficient cost of providing access to the service.
- > access to the service is provided by Aurizon Network in respect of the 4 coal systems identified at section 250 (3) of the QCA Act being the:
 - Blackwater;
 - Goonyella;
 - Moura; and
 - Newlands system (**Systems**).
- > the provision by Aurizon Network of the declared service, is “prescribed railway operations” for the purposes of the *Transport (Rail Safety) Act 2010* (Qld) (**TRSA Act**).
- > Aurizon Network is the accredited rail infrastructure manager of the rail transport infrastructure comprising the declared service under the TRSA Act for the Systems.
- > Section 39 of the TRSA Act provides that Aurizon Network must be accredited by the Queensland Rail Safety Regulator in order to undertake the task of rail infrastructure manager for the Systems.
- > Section 63 of the TRSA Act provides that Aurizon Network can only undertake rail infrastructure manager activities in accordance with a safety management system approved by the Rail Safety Regulator (**SMS**).
- > Schedule 1 of the *Transport (Rail Safety) Regulation 2010* (QLD) (**TRSA Regulation**) specifies those matters for which the SMS must provide. In particular, the SMS must include:
 - systems and procedures for eliminating, or reducing, the risks to safety caused by railway operations (see section 13 (1) (a) of the TRSA Regulation); and
 - a documented set of engineering standards for monitoring, maintaining and repairing rail infrastructure (see section 16 (4) (d) of the TRSA Regulation).
- > Aurizon Network must comply with its SMS. To fail to do so is an offence under section 67 of the TRSA Act. In addition, any contractor performing railway operations on behalf of Aurizon Network must also comply with Aurizon Network's SMS and a failure to do so is an offence under the TRSA Act (see section 68 of the TRSA Act).
- > Aurizon Network's SMS is reviewed at least annually by Aurizon Network (see section 65 of the TRSA Act) and is subject to regular audits by the Queensland Rail Safety Regulator.

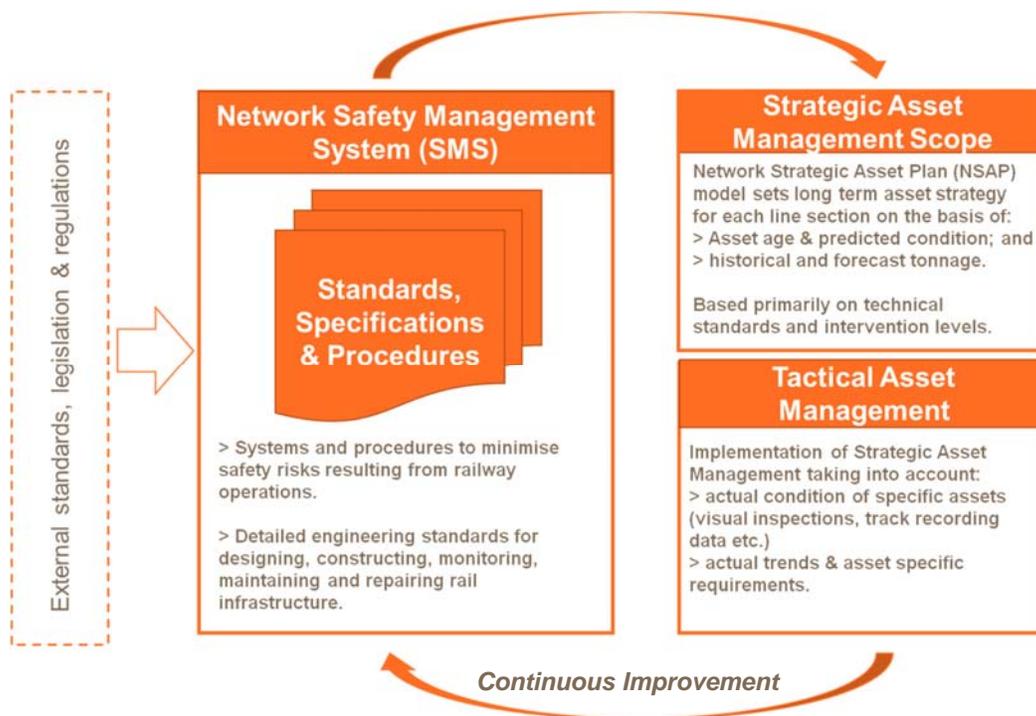
Aurizon Network's duty to ensure safety

- > Aurizon Network is subject to general and specific safety duties under the TRSA Act and TRSA Regulation. Aurizon Network's SMS in part provides the mechanism to meet its specific safety duties under the TRSA Act and TRSA Regulation for example the requirement to create and maintain a set of engineering standards in relation to the maintenance of rail infrastructure as discussed above;
- > in terms of general safety duties the TRSA Act obligates Aurizon Network to ensure, so far as is reasonably practicable, rail safety is not affected by the carrying out of Aurizon Network's prescribed railway operations (see section 24 of the TRSA Act).

- > this general safety duty requires Aurizon Network to eliminate risks to safety or if it is not reasonably practicable to do so, reduce risks to safety so far as is reasonably practicable (see section 23 (2) of the TRSA Act);
- > the TRSA Act at section 23 (3) prescribes those matters to which Aurizon Network should have regard to in determining an appropriate course of action in dealing with risks to safety. Those relevant matters include the following:
 - the likelihood of the risk eventuating;
 - the degree of harm that would result if the risk eventuated;
 - what the person concerned knows or ought reasonably to know about the risk and any ways of eliminating or reducing the risk;
 - the availability and suitability of ways to eliminate or reduce the risk; and
 - the cost of eliminating or reducing the risk.

The following figure graphically illustrates how external engineering standards and legislative and regulatory obligations are fundamental to the determination of the scope of Aurizon Network’s asset management.

Figure 88 Legislative and regulatory obligations set the strategic asset management scope

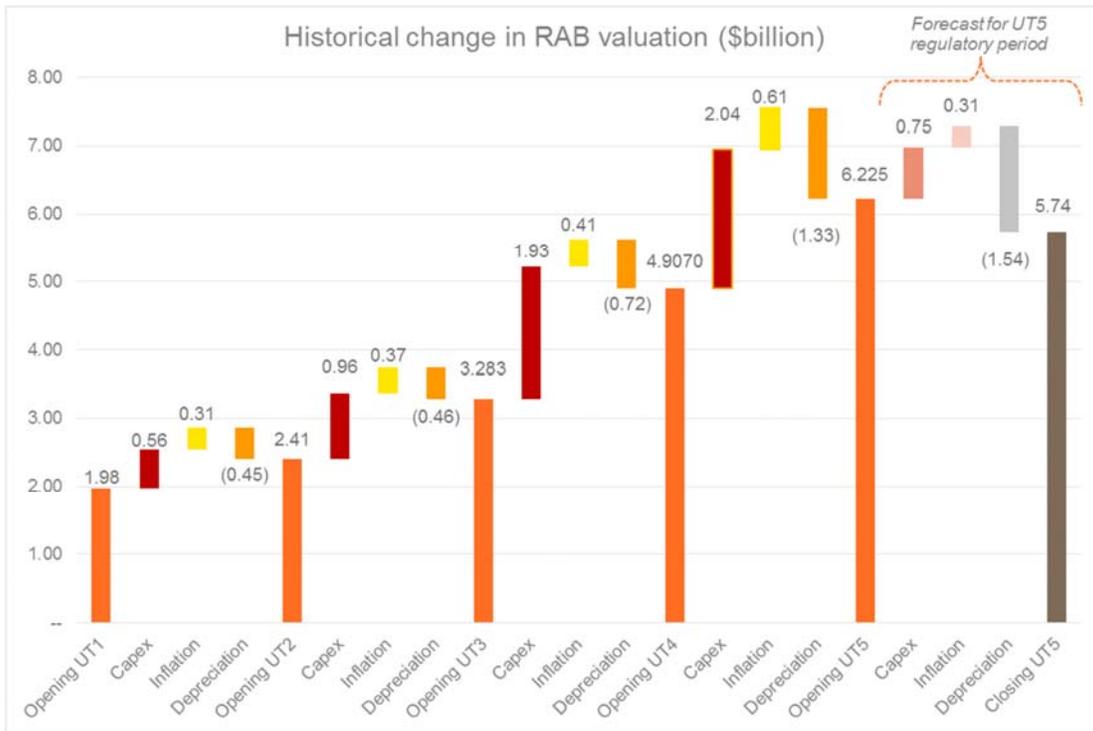


The scale of the maintenance task

Aurizon Network is a capital infrastructure intensive business as is reflected by RAB. The RAB reflects the prudent value of Aurizon Network’s capital commitments to the CQCN to facilitate the efficient provision of the declared service. As the size and value of the RAB increases, so too does the maintenance task required to efficiently maintain the value of the RAB.

Aurizon Network’s RAB has grown substantially in recent years. During the mining boom that spanned the UT2, UT3 and UT4 regulatory periods, Aurizon Network made substantial capital investments in the RAB at the request of the coal industry. The costs of these investments were subject to the QCA’s ex-post review process, and following their approval their value they were added to the RAB. The change in the RAB valuation since the regulatory period of UT1 is illustrated in the Figure below.

The growth in RAB



Essentially, an increase in the RAB means that Aurizon Network is responsible for managing and maintaining more rail infrastructure in a given year. As a direct result, the scope of the maintenance task required will also increase.

Though relatively new infrastructure, recent additions to the RAB (for example GAPE and WIRP expansions) still require maintenance and so increase the overall size of Aurizon Network's maintenance task. For example,

- > rail-grinding (which must be completed every 10-20 million gross tonnes depending on curve radii);
- > resurfacing;
- > SMS-mandated inspections; and
- > vegetation management.

This are but a selection of maintenance tasks that are required from an early stage in rail asset life. This is particularly true in the case of WIRP, where infrastructure constructed as part of this programme of works (for example, the seven Blackwater duplications) are fully integrated into the Blackwater mainline and are utilised by both WIRP and non-WIRP train services.

Consequences of an inadequate maintenance allowance

Ongoing delivery of an effective maintenance regime is critical to the provision of access for any supply chain and for minimising the whole of life cost of infrastructure. For the CQCN, failure to deliver the required maintenance activities will result failure events and additional costs due to the unplanned, corrective nature of the reactive repairs. These events and reactive repairs in turn mean poorer capacity and reliability performance, with negative impacts on the supply chain and for Access Holders.

The rail network assets of the CQCN are subject to extreme weather variations, forces and impacts. In the absence of proactive and preventative maintenance these conditions will accelerate the rate at which the network asset degrades and ultimately require premature and costly asset replacement. In comparison to maintenance activities, asset replacement generally has a more disruptive impact on the supply chain and typically results in track closures and interruptions to revenue train services within the CQCN.

An inadequate maintenance allowance has longer term implications across the whole supply chain, the costs of which will ultimately be borne by operators and miners:

- > reduced operational performance due to an increase in network delays and below-rail transit times;
- > increased operator costs due to:
 - greater crewing requirements, increased fuel and other variable costs; and
 - accelerated wear on wheels and bogeys, leading to greater capital requirements through a more frequent replacement regime.

Asciano highlighted these concerns during the UT4 process, stating that:

“...reductions in maintenance costs have the potential to impact on track quality and hence train operations and coal train efficiency.”²⁸⁰

Aurizon Operations expressed similar sentiments in its response to the QCA’s Draft Decision on Queensland Rail’s Access Undertaking, commenting that any reduction in the maintenance allowance with a subsequent reduction in track quality simply pushes these additional costs through to the train operators.²⁸¹

Commenting on the Queensland Rail Access Undertaking process, the Queensland Resources Council’s Chief Executive Officer recently commented that a railway access provider’s core business is:

“...improving the performance and long-term utilisation of its railways...”²⁸²

Aurizon Network is continuously investigating and introducing initiatives to improve the efficiency and effectiveness of the maintenance regime through:

- > improved planning and coordination of maintenance track possessions in conjunction with the requirements of the supply chain; and
- > innovative changes to work processes and harnessing new technology, which enables maintenance tasks to be performed concurrently with train operations.

The outcome of these initiatives is a safe and reliable network that can meet its contractual obligations while minimising the whole of life cost of the network infrastructure.

Deriving the strategic maintenance scope

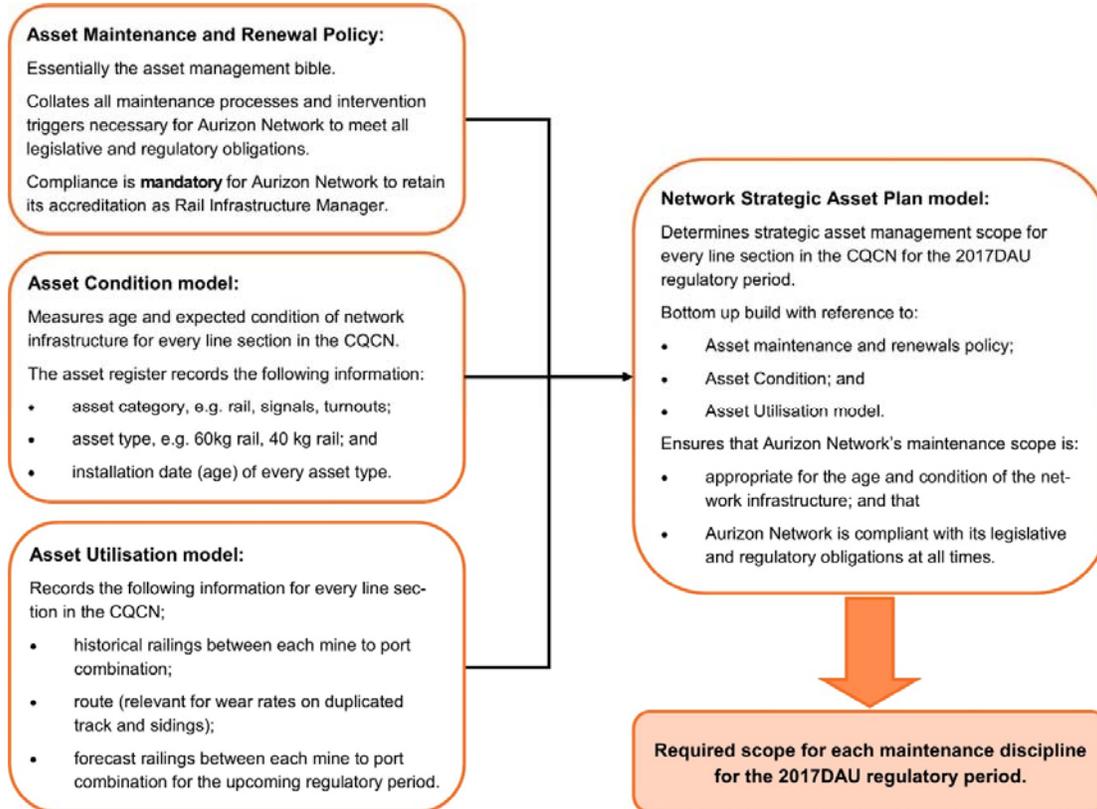
Aurizon Network’s approach to determining the strategic maintenance scope for the UT5 regulatory period is illustrated on the next page. Central to that approach is the Network Strategic Asset Plan (NSAP).

²⁸⁰ Asciano, Submission to the Queensland Competition Authority Draft Decision on the Maximum Allowable Revenue Component of the Aurizon Network Draft Access Undertaking, December 2014, Part 2, Page 7

²⁸¹ Aurizon Operations, Response to Queensland Competition Authority Draft Decision on the Queensland Rail 2015 Draft Access Undertaking, 22 December 2015, Section 3, Page 28

²⁸² Queensland Resources Council, Industry call on QR to accept umpire’s final decision, 23 June 2016, Michael Roche, <https://www.qrc.org.au/media-releases/industry-calls-qr-accept-umpires-final-decision/>

Derivation of strategic maintenance scope



Network Strategic Asset Plan

In addition to Aurizon Network's safety management system, the Network Strategic Asset Plan (NSAP) is the basis for Aurizon Network's determination of the scope of all of its major maintenance products, with the exception of unplanned, corrective maintenance activities and mainline ballast undercutting.²⁸³ The cornerstone of the NSAP modelling process is Aurizon Network's Asset Maintenance and Renewals Policy. All preventative maintenance activities and resulting asset operating parameters must conform to this policy, which was developed in accordance with the engineering standards and technical specifications necessary to ensure Aurizon Network's compliance with its regulatory and legislative obligations. As noted above, the maintenance tasks performed are regularly audited by the Rail Safety Regulator to ensure compliance with this policy. Aurizon Network must comply with these obligations to retain its accreditation as Rail Infrastructure Manager.

Furthermore, the policy provides the rationale for the intervention levels necessary for each maintenance discipline. These intervention levels are defined for Aurizon Network's assets in each individual coal system and are used to estimate the planned renewal life of the various assets.

Intervention levels can be:

- > usage-based, e.g. track resurfacing is required every 50 million gross tonnes;
- > time-based (for example, turnouts require weekly visual inspections and a detailed annual inspection);
- > age-based (for example, replace 22.5 tonne axle load PSC concrete sleepers every 40 years); or
- > fix on failure.

²⁸³ The scope of mainline ballast undercutting is developed using ground penetrating radar data analysis, a process extensively discussed in Aurizon Network's responses to the QCA's draft decisions on UT4 and outlined in this submission in relation to that maintenance product.

In determining the scope for each maintenance discipline, a strategic asset plan for each individual coal system is prepared, drawing on two detailed input models:

1. “Asset Condition” model – contains detailed information about each class of asset (including type and installation date) that exists within all line sections; and
2. “Asset Utilisation” model – maintains a historical record of all tonnes railed across each line section, and the forecast railings for the regulatory period.

Together these models provide a strategic view of the age and forecast utilisation of every line section in the CQCN.

The NSAP model then takes this information and overlays the relevant intervention levels specified in the Asset Maintenance and Renewals Policy to determine the scope of preventative activities for each maintenance discipline. The NSAP model for the CQCN is essentially the aggregation of the individual strategic asset plans for each system.

As unplanned maintenance activities by their nature are difficult to forecast, the scope of this maintenance expected for UT4 has been estimated based the rate of corrective activities historically undertaken during each year of the UT4 period to date.

B. Refining the maintenance scope

The NSAP model determines the strategic scope of maintenance activities required for each class of asset, but at a line section level. The relevant asset managers and asset engineers further refine the strategic scope for target specific areas that which require attention due to localised, accelerated degradation. This is particularly relevant when actual volumes railed differ from forecast, or where forecasts are updated.

Once asset engineers have confirmed that the scope complies with the Asset Management and Renewal Policy, they are required to sign-off on the final scope in their capacity as an RPEQ, which as outlined above, creates personal liability.

Asset renewal activities have also been taken into consideration when setting the scope for corrective maintenance activities. In practice, this means that Aurizon Network has reduced the scope and cost of corrective maintenance activities expected to be required during the UT5 regulatory period.

C. Establishing the efficient cost for delivering that scope

This maintenance cost proposal seeks the recovery of at least Aurizon Network’s efficient costs incurred in the provision of the declared service. Aurizon Network’s efficient costs have been defined in the 2010AU and 2016AU 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, having regard to any matters particular to the environment in which Aurizon Network operates, 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.”²⁸⁴

Following methodologies to identify, cost, and verify the efficient costs Aurizon Network would reasonably be expected to incur by adopting efficient work practices in the provision of CQCN rail infrastructure to the required service standard, having regard to the specific environment in which Aurizon Network operates, this maintenance costs proposal is consistent with both the requirements of the QCA Act and Aurizon Network’s Access Undertaking.

²⁸⁴ Aurizon Network 2016 Access Undertaking, Part 12, Definitions and Interpretations, p. 262

Identifying the relevant attributable costs

The primary drivers of Aurizon Network's maintenance costs fall into the following categories:

Costing methodology: cost categories

Cost category	Description
Labour costs	Aurizon Network requires a flexible, highly skilled workforce who can perform maintenance tasks in a timely manner and in accordance to the standards required by the Asset Maintenance and Renewals Policy
Consumables	Quality materials and inventory must be on hand, or on location when required to deliver the scope to the necessary standard
Plant maintenance and asset charges	Assets must be appropriately maintained for optimal performance Investment in new technology/processes increases efficiency Investment in additional assets, increases production capability and reduces downtime

The below rail maintenance costs attributable to the CQCN are identified by reference to specific work orders, which settle to the Network Maintenance Plan (NMP) within Aurizon Network's enterprise resource planning system (SAP). The NMP records the costs associated with each maintenance discipline, which enables a 'bottom-up' cost build for the UT5 regulatory period. The types of costs captured include:

- > labour costs;
- > labour-related costs, e.g. travel and accommodation;
- > heavy plant and machinery costs;
- > materials, e.g. such as rail, ballast, sleepers, grindstones, tools and machine components;
- > fuel for plant, trucks and motor vehicles;
- > professional and technical advice and services, together with licensing/certification fees
- > utility charges, i.e. power, water, telecommunications, local authority charges; and
- > consumables, e.g. office supplies, medical supplies.

This process remains unchanged from UT4. The actual maintenance costs are compared against the approved costs, and the resulting Maintenance Cost Report (which Aurizon Network must produce in accordance with the undertaking) is subject to an annual review by an external, QCA appointed, auditor.

Costs associated with maintenance activities on third party private infrastructure, capital renewals and review events (such as extreme weather events where losses exceed \$1 million) are separately captured via timesheets and have been excluded in their entirety from this maintenance cost proposal. This ensures that the maintenance costs which Aurizon Network is seeking to recover are solely related to the provision of the declared service, are neither incorporated into Aurizon Network's capital indicator nor recoverable through review events.

The scope and costs of Aurizon Network's maintenance activities that can be delivered in a given year are impacted upon by external events, such as prolonged or extreme weather events. Given the uncertainty surrounding the occurrence and impact of such events, Aurizon Network has not included any form of weather-related cost contingency to its maintenance cost proposal for the UT5 regulatory period.

Costing methods

Different costing methods have been applied to determine the costs relevant to the various maintenance disciplines. The appropriate method varies according to the maintenance product. The methodology for the main mechanised maintenance products is summarised in the following table. Preventative and corrective maintenance costings are then outlined. Further costing detail is provided in the section *Direct maintenance costs*.

Costing methodology: mechanised maintenance

Maintenance product	Costing methodology
Mainline ballast undercutting	QCA UT4 unit rate of \$400,000 (\$FY2015) per km. Same unit rate applied, escalated at MCI
Turnout ballast undercutting	Unit rate calculated by Aurizon Network using QCA approved UT4 Final Decision scope and FY2015 allowance, escalated at MCI
Rail grinding	Service provider competitively tendered costings based on works required by NSAP. Efficiency of costs further demonstrated costs being comparable to price tendered by the same service provider when recently being awarded rail grinding contracts for other rail infrastructure managers in Queensland and NSW through a competitive tender process.

For the remaining maintenance activities, costs have been determined as follows:

Preventative maintenance activities:

The costs of preventative maintenance activities have been developed with reference to a base year, selected within the current regulatory period. Aurizon Network has chosen FY2015 as the base year, as it represents the most recent year of audited costs at the time of preparing this submission.

To establish an efficient level of recurrent maintenance expenditure (in real terms) for each year, Aurizon Network reviewed the costs booked to each work order in the NMP to identify below-rail costs attributable to the CQCN. Controllable maintenance expenditure categories have been forecast with reference to:

- > efficient maintenance costs for FY2015 (as assessed and approved by the QCA in UT4 Final Decision);
- > actual costs incurred during FY2015 (captured for each maintenance activity at a work order level and independently audited with QCA oversight);
- > adjustments to account for 'one-off' or 'non-recurrent' costs (such as the impact of decommissioning end of life machines and the impact of cost saving initiatives);
- > MCI escalation consistent with indices approved by the QCA in UT4 Final Decision;
- > forecast scope changes, as required by the NSAP models; and
- > Aurizon Network's safety management system.

Corrective maintenance activities:

Aurizon Network has estimated the costs for corrective maintenance activities with reference to:

- > historical activities and costs captured over the UT4 period to date;
- > the extent to which forecast asset renewals are expected to reduce the requirement for corrective activities; and
- > MCI escalation using the forecast MCI for the UT5 regulatory period.

Appendix R.3 Description of CQCN maintenance activities

Ballast Undercutting

What is ballast undercutting?

Ballast is comprised of angular particles of crushed rock which interlock to form a resilient bed beneath and around the sleepers. Ballast is therefore a core track component and is essential for maintaining track integrity and retaining the correct track alignment and geometry. Ballast laid in accordance with Aurizon Network's standards exhibits the following optimal characteristics:

- > distributes the weight of trains evenly over the track formation, reducing stresses on the formation;
- > assists in maintaining track stability, through interlocking;
- > maintains voids between the ballast to provide effective drainage, thus preventing water from pooling beneath the track thereby enabling the formation to retain its optimal performance characteristics; and
- > facilitates effective and efficient track maintenance practices to ensure optimal track geometry.

Over time, impact-induced movement generated by the passage of heavy trains progressively deteriorates the ballast, which fractures and pulverizes into smaller pieces. It loses its angularity (which significantly reduces its ability to interlock) and the space between the ballast becomes contaminated with "fines" (which include degraded ballast, dirt and eroded formation²⁸⁵) rising from the surface that the ballast is laid on. In the CQCN, the primary cause of this contamination is coal fines spilt or coal dust blown from wagons, which rapidly exacerbates the contamination cycle.

- > Ballast undercutting refers to the excavation of ballast to remove contamination and restore its optimal characteristics. This task is carried out through a combination of:
 - Ballast Cleaning Machines (BCM) – primarily used on longer sections of mainline track to mechanically excavate and screen the contaminated ballast;
 - excavator undercutters – used primarily for turnouts and shorter sections of track; and
 - manual labour – used primarily on bridges where track has to be deconstructed and reconstructed.

Aurizon Network's mainline undercutting program is delivered in accordance with internationally recognised techniques, methods and standards, and aligned to global best practice. The type, extent and location of the contamination determines how the ballast undercutting task is carried out. Depending on the ballast cleaning methodology utilised, the introduction of new ballast may be required via a separate ballast train or through more manual methods. After ballast cleaning (and the inclusion of new ballast where required), track resurfacing, track stabilisation and finally, ballast regulation restores track to its optimal performance characteristics.

Track closures are necessary to carry out the ballast undercutting scope. As a consequence, this discipline is predominantly a preventative maintenance activity.

Why is this ballast undercutting important for the supply chain?

Ballast contamination progressively inhibits the performance characteristics of track, which may result in track defects that then give rise to temporary speed restrictions. If allowed to progress unchecked, short term track closures will be required to mitigate the risk of train derailment. Contamination also has the effect of significantly restricting the free draining properties of the ballast. If water is retained it:

- > acts as a lubricant between ballast particles, causing track movement and further accelerating both:
 - ballast degradation; and
 - wear rates of adjacent assets such as formation, sleepers, fasteners and rail;

²⁸⁵ The capping layer and sub-grade are collectively considered 'formation'.

- > accelerates the formation of mudholes, which damages the track formation, leading to the development of clay holes; and
- > undermines the strength and stability of the track, ballast and formation.

An effective, proactive ballast undercutting regime is therefore a critical infrastructure maintenance activity. It promotes the efficient cost and operation of the supply chain by:

- > avoiding premature replacement of formation, sleepers, rail and fastenings;
- > minimising track related speed restrictions;
- > reducing the risk of train derailment;
- > improving Aurizon Network's ability to reuse/recycle ballast material where appropriate; and
- > extending the overall service life of all track components.

The veneering program was rolled out progressively from 2012 onwards, until the majority of mines were completing this task. Veneering has proven to have benefits to the reduction of both airborne coal dust along with coal fines entering into the ballast, requiring it to be undercut earlier. As the veneering program was rolled out before the completion of the first GPR run, the exact benefits to the ballast undercutting program are difficult to quantify. However, as the GPR program is 100% data based, the results that will be sourced from all subsequent GPR run's, will inherently take into account the reduction in coal dust, attributable to veneering and other programs.

Determining the ballast undercutting scope

Ballast undercutting is necessary for on both mainline and turnout track. The scope of each is discussed in turn and summarised in a consolidated table.

Mainline ballast undercutting

The scope of the UT5 mainline ballast undercutting program is determined by a comprehensive analysis of the condition and contamination level²⁸⁶ of the ballast using Ground Penetrating Radar (GPR) data²⁸⁷. Ballast cleaning is required once void contamination breaches a depth dependant intervention trigger of between 30-50%. Aurizon Network analyses the GPR dataset using an integrated software platform, which not only accounts for current fouling levels and past maintenance practices, but also develops projected fouling rates on the basis of forecast railings over the term of the regulatory period. Deterioration rates are determined using objective data, which directly leads to a robust mainline undercutting scope that is:

- > sustainable in the long run;
- > can be delivered for the lowest whole of life cost; and
- > scheduled around the demand requirements of the supply chain.

It is essential to note that the required scope of the ballast undercutting program is aligned with Aurizon Network's Rail Infrastructure Manager (RIM) obligations and the judgement of its RPEQ engineers.

If the required scope of this maintenance activity is not approved by the QCA, Aurizon Network will be constrained in its ability to recover to the sustainable level based on its RIM obligations and engineering standards requirements without major capacity impacts. Due to the nature of the work, any one track possession will impact the available capacity for the whole system.

GPR measurements indicate that to sustain the current condition of the track, Aurizon Network is required to undercut 140km of ballast cleaning per annum. This scope was validated by the QCA's consultant (CMT) in its independent review of Aurizon Network's ballast undercutting proposal for UT4. Despite the recommendation of its

²⁸⁶ The contamination level measures the percentage of void contamination.

²⁸⁷ The same GPR data set assessed by the QCA's consultant (CMT) in its review of the UT4 ballast undercutting scope.

consultant, the QCA's final decision on UT4 recommended a sub-optimal mainline ballast undercutting scope. This scope variance is outlined in the table below.

UT4 mainline ballast undercutting scope

UT4 Mainline ballast undercutting scope (km)	FY2015	FY2016	FY2017	Total
QCA scope	129	133	140	402
CMT's GPR scope	140	140	140	420
Variance	(11)	(7)	--	(18)

Aurizon Network proposes to 'catch-up' on the 18km shortfall during the UT5 regulatory period and recognising the cost pressures currently faced by its customers, further proposes that this additional scope be delivered in FY2020 and FY2021.

In FY2020 Aurizon Network's existing undercutter (the RM900) will be decommissioned, and a new ballast undercutter (the RM902) will enter production. The RM902, operating in conjunction with the additional spoil wagons procured over the UT4 period, will enable a greater rate of production during maintenance access windows.

Aurizon Network intends to procure additional GPR data during the UT5 regulatory period, which will be used to adjust and refine the mainline undercutting scope for FY2020 and FY2021. If the updated GPR data indicates that an adjustment to scope is necessary, Aurizon Network will propose a subsequent adjustment to the variable component of the mainline ballast undercutting allowance.

The scope of mainline ballast undercutting for the UT5 regulatory period is outlined in the consolidated table below.

Turnout undercutting

The scope of Aurizon Network's turnout ballast undercutting has been determined using the NSAP model and by reference to Aurizon Network's safety management system. Due to the extra steel prevalent in turnout infrastructure it is not possible for GPR to adequately measure void contamination directly beneath a turnout and so is not used to determine the scope for turnout undercutting. Given this, and in light of the relatively flat forecast tonnage, Aurizon Network's proposed turnout undercutting scope of 42km for each year of the regulatory period is in-line with the scope approved by the QCA in its UT4 Final Decision.

Undercutting scope

Undercutting Scope (km)	FY2018	FY2019	FY2020	FY2021
Mainline ballast	140	140	149	149
Turnout ballast(km)	42	42	42	42

Determining the efficient cost

The cost determination of the efficient costs of mainline and turnout ballast undercutting is discussed in turn.

Mainline ballast undercutting

The QCA's Final Decision on UT4 for mainline ballast undercutting approved a unit rate cap of \$400,000 per kilometre (in \$FY2015). As outlined in its response to the QCA's Consolidated Draft Decision, Aurizon Network believes that the QCA's unit rate cap failed to account for the costs associated with a number of important operational activities, which would reasonably be required to operate an effective ballast undercutting program. These include:

- > pre-earthworks, including walkouts;
- > clipping up of sleepers;
- > rail stress testing post production;

- > removing and refitting, crew change pads; and
- > undercutting through level crossings and reinstatement of associated level crossing infrastructure (such as cabling, road surfaces, flangeways and drainage).

Aurizon Network does not agree with the unit rate cap applied by the QCA's Final Decision within UT4. However, in the interests of an expedited regulatory approval process, Aurizon Network has chosen not to challenge this rate in the context of UT5. This imposes a very significant cost challenge for Aurizon Network (even with the introduction of the RM902 and longer closures) and therefore makes it critical that this rate is not adjusted further downwards during the UT5 approval process.

Aurizon Network has applied escalation at MCI to express the FY2015 unit rate in nominal terms for the UT5 regulatory period.

Aurizon Network's mainline ballast undercutting allowance is materially aligned to the QCA's final decision on UT4 and, by extension, is reflective of its efficient costs. In the event that the updated GPR data indicates that an adjustment to scope is necessary, Aurizon Network will propose a subsequent adjustment to the variable component of the mainline ballast undercutting allowance for FY2020 and FY2021.

Turnout undercutting

In its UT4 Final Decision the QCA approved an allowance that was reflective of Aurizon Network's forecast costs. The QCA deemed that the unit rates proposed by Aurizon Network for turnout ballast undercutting were efficient.

To help facilitate the timely assessment of UT5, Aurizon Network has simply escalated the FY2015 allowance for turnout undercutting (as approved by the QCA); converted to a unit rate and escalated at the forecast MCI for the UT5 regulatory period. Aurizon Network's turnout ballast undercutting allowance is materially aligned to the QCA's Final Decision on UT4 and, by extension, is reflective of its efficient costs.

Rail Grinding

What is rail grinding?

Rail grinding is internationally recognised as a best practice maintenance function, proven to prolong the life of rail infrastructure and the wheel life of rolling stock²⁸⁸. It achieves this by removing irregularities such as cracks and surface defects from the rail surface, thereby restoring a rail head profile that spreads the rail-wheel contact band and positions it for better wheel set tracking around the curves.

The point where train wheels meet rail is the critical contact point between rolling stock and track infrastructure. Every coal train consist creates approximately 800 individual and unique contact points, each of which exerts a significant amount of force on even modern high performance rail steel, subjecting the rail to:

- > yielding (metal flow);
- > high surface shear in traction; and
- > steering and braking;

These effects are further influenced by contamination from lubricants, environmental contamination and temperatures.

Over time then the rail profiles deform from its specified design profile and contact stress is exacerbated. This can cause a number of issues, which may ultimately can cause the rail to spall (that is, crack), potentially leading to train derailments.

²⁸⁸ International Heavy Haul Association, Guidelines to Best Practice for Heavy Haul Railway Operations, Management of the Wheel and Rail Interface, June 2015.

Preventive rail grinding reduces the rail wheel interface stress, allowing the track superstructure and substructure (rail, sleepers and fastenings supported by a layer of consolidated ballast on a well-drained formation) to perform its intended design function.

Mainline rail grinding is a mechanised production process which is completed by high-speed rail grinders that run across the impacted section. Using a series of 80 cylindrical grinding stones, the rail head is profiled back to the optimal profile on mainline track and turnouts. Turnout rail grinding is also performed using a smaller, 24 stone grinder.

Why is this activity important for the supply chain?

The Transportation Technology Center, the world's premier rail research facility, considers rail grinding to be the most effective maintenance practice to control the effects of rolling contact fatigue, to restore rail profile and maximise value from the rail asset. A preventive or cyclic grinding strategy will increase the life of the rail²⁸⁹ with the added benefits of safety improvements, reduced wear and degradation of both track and rolling stock components.

Rail grinding produces optimal benefits where cracks are removed when they are still small and a preventative regime can "[...] lead to a substantial improvement in the life of the rail along with considerable savings in maintenance and replacement costs." (Dikshet *et al*, 1991)

Failure to control the contact patch between the rail and the wheel through a preventive rail grinding strategy directly leads to excessive wear/degradation of track and rolling stock components. This ultimately increases rail maintenance costs and the probability of track or rolling stock failures, resulting in:

- > reduced network reliability;
- > reduced usable track access;
- > increased risk of broken rails; and an
- > increased risk of derailment.

Rail grinding is a maintenance activity which creates direct benefits for all rail operators operating within the CQCN. By correcting the rail head profile, rail grinding:

- > improves efficiency in the rail-wheel contact interface;
- > promotes efficient bogie steering;
- > reduces turnout resurfacing cycles; and
- > reduces surface stresses that initiate cracking which can lead to rail defects and ultimately, rail breaks.

The correct use of rail grinding enables a substantial increase in the life of the rail asset including both the rail along with those assets that are used to support it. Research has established a clear link between rail grinding and a reduction in corrective maintenance²⁹⁰. In the absence of an effective rail grinding programme, the rate (and costs) attributable to rail replacement would significantly increase.

Determining the rail grinding scope

The rail grinding scope for the UT5 period has been developed using the NSAP model and by reference to Aurizon Network's safety management system.

The rate of rail wear depends on a number of different factors including:

- > topography;
- > curve radii;
- > tangent track (straight track);

²⁸⁹ Kalousek *et al*, 1989; Epp, 1992 & 1993; Zarembski *et al*, 1995.

²⁹⁰ Kalousek and Magel, 1997.

- > grade;
- > tractive forces; and
- > usage.

While the scope of the grinding task is influenced by the number of gross tonnes over a track section, it is critical to note that this is not the sole determining factor of the rail grinding task. Other relevant factors include:

- > train speed;
- > axle loads;
- > rail size and type;
- > track curvature; and
- > wheel metallurgy.

The frequency of grinding activity in the CQCN is carried out in accordance with the intervention rates contained in Aurizon Networks Asset Maintenance and Renewals Policy, which is supported by Civil Engineering Track Standards (CETS). In general, rail wears faster in curved sections of track than on straight track. Rail grinding is currently performed every:

- > 10 million gross tonnes (MGT) on curves less than 1,000 m radius;
- > 20 MGT on curves between 1,001m and 2,500m radius; and
- > 40 MGT on other track.

These intervention rates are included in the NSAP model, which is used to establish the rail grinding scope for the UT5 period.

A summary of the scope and proposed allowance is detailed in the following table:

Rail grinding scope

Rail grinding	FY2018	FY2019	FY2020	FY2021
Mainline Scope (km)	4,139	4,139	4,139	4,140
Turnout scope (number)	748	757	781	782

Resurfacing

What is resurfacing?

Resurfacing is a maintenance activity performed after any track disturbance works, including initial track construction, a rail replacement, sleeper renewal or ballast undercutting activities. Under normal operating conditions, ballasted track displaces slightly out of its original position as a result of forces, stemming from:

- > the movement of heavy trains within the CQCN;
- > seasonal ground movement; and
- > ballast degradation.

These forces are exacerbated by higher train speed and axle load combinations and affect the horizontal and vertical positions of the track. If allowed to progress unchecked, these geometric variations lead to significant impact forces that accelerate the fatigue of track components and increase the risk of train derailments.

Resurfacing is generally a preventative maintenance treatment the primary function of which is to ensure that the track remains within operational geometry parameters. It ensures correct level and line (that is, “smooths out” any geometry variations) of the track by manipulating the track to the appropriate position and compacting the ballast beneath the sleeper to assure safe running.

Mechanised resurfacing is completed using machines that collectively tamp, align and shape the track to improve track alignment, overall track quality and remove top and line issues. The different machinery typically used include:

- > tamping machines;
- > Dynamic Track Stabilizers (DTS); and
- > ballast regulators.

Why is this activity important for the supply chain?

Resurfacing is an effective means of minimising the whole of life costs of the network infrastructure in managing risks associated with track geometry, misalignments and ultimately train derailments. Preventative resurfacing reduces the need for unplanned, reactive maintenance tasks and, most significantly, reducing the detrimental effects that poor track geometry has on ancillary track components; such as the rail, sleepers, fasteners, ballast and formation.

If track geometry is not corrected to a standard fit for the traffic task, the rate of deterioration of these track components is accelerated, leading to a marked increase in the need to perform other maintenance activities on the track²⁹¹. Examples of deterioration include:

- > surface irregularities and defects may develop on the rail;
- > fastenings may fatigue and break;
- > sleepers may skew, degrade or break; and
- > degradation of ballast and the underlying formation.

These effects are cyclical, meaning that accelerated deterioration of track components will exacerbate the variation in track geometry, which ultimately contributes to poor track quality. If left unchecked, Aurizon Network would have no choice but to impose speed restrictions²⁹², which limit network capacity and increase train transit time.

A further factor that has a considerable impact on the ability of the track to hold its line and structure is rainfall and the ability of the track to drain. In areas of heavily fouled ballast due to coal contamination, it may be necessary to treat areas of poor top and line through repeat resurfacing of relatively short lengths until such time that the ballast cleaning operation is able to remediate the ballast profile and associated track drainage.

Determining the resurfacing scope

The scope of the resurfacing for the UT5 regulatory period has been based on a basis consistent with the methodology approved by the QCA in its UT4 Final Decision. In determining the scope resurfacing maintenance operations are broken into two distinct products:

- > Mechanised Resurfacing – Mainline; and
- > Mechanised Resurfacing – Turnouts.

The strategic scope of these two resurfacing products has been forecast using Aurizon Network's NSAP model and is generally driven by the:

- > volumes railed across the track;
- > standard of track construction (for example, rail size, sleeper type);
- > current condition of the track components (informed by data collected from track recording cars or by rail inspectors); and
- > historical performance of the infrastructure in service.

Track geometry recording outputs, along with asset performance parameters such as the Overall Track Condition Index (OTCI), percentage of track under speed restriction, and transit time delays are used to determine the amount

²⁹¹ Selig and Waters, 1994.

²⁹² Martin et al, 2005.

of resurfacing planned for delivery each year. Furthermore, track inspections allow locations where track condition is deteriorating to be identified and corrective maintenance work programmed, ideally before the locations become unsafe for normal speed train operations and require speed restrictions.

Seasonal weather events also have the potential to greatly influence the occurrence of track geometry faults which are repaired via resurfacing.

Determining the efficient cost

The cost base for resurfacing was calculated on the basis of the detailed bottom-up costing model. FY2015 unit rates were selected and escalated at MCI.

In the UT4 Final Decision the QCA approved Aurizon Network's forecast costs for resurfacing and deemed that the unit rates proposed by Aurizon Network for resurfacing were efficient. To help facilitate the timely assessment of the UT5 Revenue Proposal, Aurizon Network has escalated those same QCA approved efficient FY2015 unit rates for resurfacing at the forecast MCI for the UT5 regulatory period. Aurizon Network's resurfacing allowance is substantively aligned to the QCA UT4 Final Decision and, by extension, is reflective of its efficient costs.

General Maintenance

What is general maintenance?

General Maintenance is the second largest maintenance cost category. The category covers a diverse range of primarily non-mechanised maintenance activities that are required to ensure the safety and reliability of the CQCN. In comparison with mechanised maintenance, the general maintenance activities are relatively labour-intensive, and involve both preventative (based on inspections) and corrective (for example fault repairs) tasks.

The General Maintenance category is made up of approximately 20 different products, of which the main ones are:

- > fire and vegetation management;
- > rail flaw detection;
- > track inspections;
- > rail stressing; and
- > rail lubrication.

Why is this activity important for the supply chain?

General maintenance costs are related to periodic inspection and fault rectification works carried out in the day-to-day operation of the CQCN. There is an inverse relationship between general maintenance and preventative maintenance activities, that is, a reduction in the allowance and/or scope of a preventative activity will directly lead to an increase in the general maintenance requirement. The category therefore includes a number of fix-on-fail incidents, which would increase in number if preventative maintenance activities were not completed.

General maintenance is also important due to its role in the management of a range of third party risks that are outside of Aurizon Network's control. Examples of these risks include community reputation through effective vegetation/bushfire management risk and fencing with assist in limiting both humans and livestock from entering the corridor.

In some instances, Aurizon Network is best placed to manage the risks associated with general maintenance activities and can deliver the service at a lower cost than another party. One such example is rail lubrication; in terms of reducing friction and wear at the rail/wheel interface, a lubricated wheel flange creates considerable benefits for both rolling stock operators, and rail infrastructure managers.

Determining the scope of general maintenance

The scope of general maintenance is varied, and is comprised of both preventative and corrective activities.

The preventative scope of general maintenance activities is determined by Aurizon Network's NSAP model. The scope of expected corrective activities is based on historical trends assessed over the UT4 period.

Interventions can be based on time, for example, through periodic inspections, or based on the life of the asset coupled with historical data with respect to the expected level of faults given the tonnage. Periodic inspections are key to understanding asset condition and performance and to find faults in advance of them causing system disruptions.

The maintenance tasks are carried out in accordance with Aurizon Network Asset Maintenance and Renewals Policy by general maintenance staff, located in six major depots across the CQCN.

Aurizon Network has seen an increase in vegetation management costs as a result of a significant increase in rainfall events over the UT4 period. Aurizon Network's proposed vegetation management allowance for the UT5 regulatory period reflects the increased scope of this activity.

Determining the efficient cost

The cost of corrective activities is based on average annual costs incurred over the UT4 regulatory period, and refined by overlaying asset renewal activities. The refined costs are then escalated for the relevant period.

In its UT4 Final Decision the QCA approved Aurizon Network's forecast efficient costs for general maintenance, which were reflective of at least its efficient costs.

To help facilitate the timely assessment of the UT5 Revenue Proposal, Aurizon Network selected actual costs incurred during the base year (FY2015), which have been independently audited with QCA oversight, converted to unit rate and escalated at the forecast MCI. Aurizon Network's proposed general maintenance allowance is substantively aligned to the QCA UT4 Final Decision, and by extension, is reflective of its efficient costs.

Signalling

What is signalling?

Signalling maintenance consists primarily of:

- > periodic inspection and servicing of components, which is largely a function of elapsed time; and
- > unplanned, corrective servicing of faults, such as signal failures, which directly affect operations.

The degradation of many signal components (such as electronic relays) is driven by chemical and physical ageing and these components are inspected and renewed on a time-based maintenance schedule. Track-based equipment (such as track circuits for train detection and shunt signals) are subject to many of the same sources of degradation as track components and a portion of their maintenance costs also varies with usage.

In addition to the signalling and power systems that are required to control the movement of rolling stock on the CQCN, the signalling maintenance product also captures costs associated with:

- > train protection systems;
- > signal cabling infrastructure;
- > track circuits and axle counters;
- > weighbridges;
- > level crossing protections; and
- > wayside monitoring systems.

Why is this activity important for the supply chain?

Signalling provides the mechanism for issuing train movement authorities, which is essential for the safe movement of trains on the network.

Collectively, Aurizon Network's signalling infrastructure ensures that the Network Control Centre can monitor the location of all rolling stock operating on the CQCN (including trains, items of rolling stock and on-track vehicles) at any given time. This ensures that:

- > safe distances between trains can be maintained (train separation);
- > braking distances of different consist types are appropriately accounted for; and
- > that the presence of a train on a specific section of track can be clearly identified.

A reliable signalling system is, therefore, essential for promoting the safe and efficient operation of the CQCN.

Determining the scope of signalling maintenance

The scope for each of these activities comprises both preventative maintenance and a forecast of unplanned, corrective maintenance activities. The scope for preventative activities is determined using the NSAP model. The scope for unplanned corrective activities is determined on the basis of historical trends, which is then refined by depot and asset maintenance managers. The proposed scope also factors in forecast asset renewal activities, which are likely to reduce the probability of an unplanned corrective fault from occurring in the short term.

Determining the efficient cost

To help facilitate a timely assessment of UT5, Aurizon Network has converted actual costs incurred in the base year (FY2015), which have been independently audited with QCA oversight, into unit rates and escalated at MCI. These unit rates were then applied to the required UT5 scope. The resulting labour costs were then adjusted to account for the EBA savings and then subsequently escalated by the forecast MCI for the UT5 regulatory period. Using this approach Aurizon Network's proposed signalling allowance is substantively aligned to the QCA's UT4 Final Decision, and by extension, is therefore reflective of at least Aurizon Network's efficient costs.

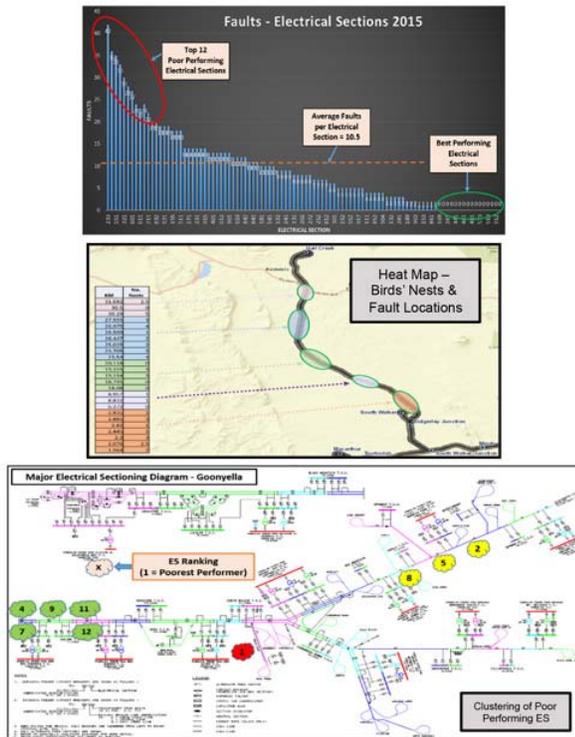
Appendix R.4 Innovative asset management activities

This section provides a brief overview of a number of innovative asset management practices, which have been implemented by Aurizon Network. The implementation of these practices creates benefits to the supply chains by:

- > extending asset lives;
- > reducing in closure hours; and
- > reducing asset renewal and maintenance costs.

Electrical Assets – Using Data to Deliver a Step Improvement in Electrical Section Performance

(September 2016)



The Opportunity

- CQCN ~2000km of exposed overhead line, configured into 97 electrical sections (ES)
- Overhead faults affect safety, operational and cost outcomes, and asset service life
- In 2015 ~1000 faults on the overhead system, ie. average of 10.5 faults per ES
- Poorest performing ES - 42 faults (1 fault every 9 days and 4 times the average)
- Best performing ES - 0 faults (at 15 ES)
- Most of poorest performing ES found to be clustered with adjacent ES (see below)
- Birds, birds nests and wildlife identified as the main contributor to ES performance

The Deep Dive – Poorest Performer

- ES233 South Walker to Hail Creek
- Over calendar year 2015 - 42 faults (**1 every 9 days**)
- In the 3 months Jan-Apr 2016 - 40 faults (**1 every 3 days**)
- Crows confirmed as the primary cause

The Response

- Recent Track Recording Car video enabled location of birds nests in the lattice masts
- TSMS and SCADA data used to produce a geographic heat map of identified birds' nests which correlated with fault locations
- Birds' nests removed and nesting deterrents installed in mast heads, covering most masts over the entire 45km length of ES233

The Outcome

- The targeted ES233 has had **ONLY 3 faults** over the past 140 days (**1 every 47 days**), compared with 1 fault every 3 days earlier this year
- A step improvement in fault performance of ES233 South Walker to Hail Creek line

The Next Step

- Learnings gained from this exercise will be applied to improve the other 'clustered' poorly performing ES's in the system eg Bolingbroke - Balook - Black Mountain and Peak Downs - German Creek

Civil Assets – Rubber Flangeways Saving Money and Improving Safety

(JUNE 2016)

An initiative to install rubber flangeways at level crossings in the Central Queensland Coal Network (CQCN) is a great example of innovation delivering multiple benefits to our Company.

The rubber flangeways have significantly improved the 'travel' of the lubricating grease that is applied to our track to minimise wear on our rail and on rollingstock wheels, as it prevents the grease from accumulating after it makes contact with bitumen or dirt at level crossings.

Aside from the cost savings, the rubber flangeways have improved the safety of maintenance staff by reducing the need to regularly clean and maintain the road surface at level crossings. The new initiative removed the requirement for maintenance employees to removed up to four 20 litre buckets of grease.

The safety benefits extend to all level crossing users, as the rubber flangeways will minimise the transfer of grease to the wheels of passing motorists.

Since the program began in September last year, Aurizon Network has installed the rubber flangeways at 12 high priority level crossings in the CQCN.

Over time Aurizon Network intends to progressively install the rubber flangeways at all 750+ level crossings in the CQCN, beginning at those where grease accumulation is most problematic.



Civil Assets– Wandoo VAM16150 Turnout Pilot (D&C by VAE)

(June 2016)

- The Wandoo VAM16150 Turnout Pilot will be used to:
 - Test VAE package equipment on a VAE designed turnout using their latest advances
 - This will moves the risks of design, defects, warranties and machine to rail mismatch onto a single supplier
 - VAE will provide 24/7 support and hold duplicates of unique components during the one year evaluation phase.
- The turnout was installed at Wandoo 12C/D on the 25th May 2016.
- Preliminary modelling predicts 10% saving on whole of life cost over 10 years.
- The turnout will be monitored over the first year for defects and performance.
- A review of technology and procedures with the turnout will be completed.
- The tangential 1 in 16 asymmetrical SNX turnout on concrete bearers is our most common new type and therefore this pilot will test the most important turnout specification we have.

Changes to standard practice:

- In-sleeper Ecostar points (mechanised tamping)
- Long-wing SNX (mechanised tamping)
- Cast in shoulders (pandrol clips) for the chairplates (no screws) with more resilience and faster replacement.
- Spherolock switch locking with improvements
- Piroll switch rollers with Ecogliss sliding plates
- KGO (Kinematic Gauge Optimisation) on switches to improve wheel set motion and increase switch life
- Rotary (torsion) backdrive rodding (no cranks, less re-adjustments)
- Built-in pressure sensors for condition monitoring
- Wheel profiled in-factory to reduce wear and improve rail life



Crossover now is current monitored and has split detection to reduce delays.



CIVIL – LASER CREEP MONITORING INSTALL

- The Laser Creep Monitoring System will be used to:
 - Monitor changes in rail stress
 - Help to determine high risk buckle zones
 - Identify overall track movement so remedial rectification works can be carried out proactively before critical safety issues are encountered
- Network wide installations will commence in the coming weeks at locations where the stress free temperature (SFT) has been established.
- The system consists of three parts:
 - A bracket attached to track monuments or overhead masts
 - A measuring strip attached to the side of the rail
 - A hand held distometer laser
- This laser is placed in the bracket and measures:
 - Longitudinal rail creep
 - Lateral track movement
 - Vertical track movement
- The benefits of this system are:
 - SAFETY:** inspections are completed from outside the danger zone
 - ACCURACY:** longitudinal and vertical +/- 3mm and offset to +/-1mm.
 - SPEED:** Measurements can be made within seconds



Civil Assets – New Standard Culvert Design

(MAY 2016)

The standard culvert base slab has been redesigned:

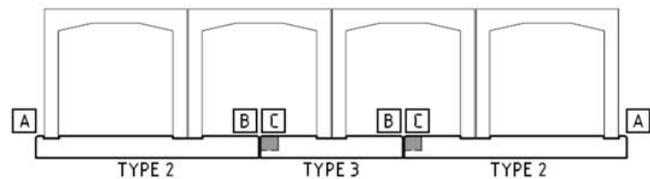
- Levelling pads removed
- Much thinner concrete slab
- Adjacent slabs made integral with stitch-pour
- Load capacity increased

The new standard design will commence implementation from April 2016

The design upgrade cost was approximately \$40k. It was included in the yearly culvert renewal design project which reduced the cost.

Benefits of the new design are:

- Construction time and cost reduction of 10-15%
- Shorter closures required – culvert replacements are a main driver for full system closures
- Simpler and safer to construct
- Smaller cranes requires
- More work can be completed outside of closures
- Reduced excavation depth
- Fewer materials required
- Less environmental footprint
- Increased resistance to pumping and settlement



Civil Assets – Access Upgrade

(MAY 2016)

The Access Upgrade will improve safety of structures inspections on Black Mountain

- Black Mountain has many "Drop structures" that are at significant depth under the track
- These concrete "Drop structures" allow water to fall vertically over 10 metres without causing scouring and undermining of the track
- Previously, structures inspectors faced steep embankments and poor ladder access
- This upgrade allows our inspectors to safely access the structures on Black Mountain

The Access Upgrade was completed in early FY 15/16

The Access Upgrade cost of \$150k

The benefits of this initiative are:

- **SAFETY:** Access to the structures is compliant with Australian Standard requirements for safe access
- **COST SAVING:** Structures inspector can inspect safely alone and no longer require a second person to accompany them



Improvements in reported Track Buckles & Track Misalignments



First half FY 16 - Image showing previous problem locations on the left (first half FY 15) and the current status on the right hand side.

Historically throughout Central Queensland track buckles have been a major maintenance obstacle to continuing train services and a continuous flow of transportation of goods and materials.

On average 10% of track buckles in Australia cause derailments during the hot summer months which in turn lead to loss of service.

FY 16 first half statistics show a substantial decrease from FY 15 in reportable track buckles and track misalignments.

33% improvement in track buckles due to more effective management and planning of track disturbance works which affect the stress of the rail.

Improved methods of rail stressing techniques, stress restoration, better management, and mentoring of staff have all had a direct impact on positive results.

52% improvement in reported track misalignments due to a more stable track asset and known stress free temperatures of critical highly maintained locations.

Improvements have been made as a direct result of better more sustainable stress management methods of the track asset

Prior to the wet season, Aurizon Network undertakes a number of activities to prepare the CQCN for extreme weather conditions

NETCON enables monitoring and initiation of actions to protect the Network, Operators and staff

Prior to the wet season Network undertake preparation activities in the CQCN to protect the network in the event of an extreme weather.

CQCN moved to NETCON 2 phase on 1 September, Preparation works for annual wet season include:

- Vegetation Management
- Drainage and culvert cleaning
- Structures inspections
- Systems checks (Weather Stations inc rainfall, air temp, rail stress, wind speed. Rock Fall and Slip detectors)
- Maintain inventory for flood recovery levels - ballast, flood rock and track materials
- Stockpile materials in strategic locations

Extreme weather event monitoring on the network

- Weather station monitoring (rail stress, air temp, rainfall, wind speed)
- Rock fall detectors
- Slip detectors
- Flood cut-out
- Video surveillance systems (monitoring likely flood locations)
- Creek and river height monitoring systems



Tropical Cyclone Marcia Flooding in CQCN in 2015

**Innovative Delivery in FY16 - Culvert Solution
MAY 2016**

Current State

- Culverts are placed in the wettest part of the track formation to direct water flow and prevent formation damage and washout
- Corrugated metal pipes have been commonly used for culverts, while cost effective, are only 2mm thick and rust in damp conditions with significant risk of catastrophic failure
- Culvert replacements are relatively expensive (~\$300 – 400k for 3 pipes) and require significant network closure time due to the impact on formation, ballast and track



Corrugated metal culvert showing extensive corrosion

Future State

- Berolina system is a corrosion resistant fiberglass sock with 12mm thick UV-light cured polyester resin that coats the inside of the existing pipe
- Designed and manufactured in Germany to suit specific pipe geometry, represent a collaboration between Aurizon and contractor ITS Pipetech
- Maintains existing hydraulic performance, 50 year design life (RPEQ Certified)

Advantages

- **Track remains undisturbed and lines remain open— no possession or post work speed restrictions required!**
- At least 30% cheaper than traditional culvert replacement
- The potential to save Aurizon up to \$100 million in direct CAPEX costs over the next 20 years
- Supports 30t axle load for potential future load increases



Trains running while resin installation in progress



Culverts after completion of resin and fiberglass liner

Cooling Channel Bridge Ballast-Less Track MAY 2016

In July 2015, Cooling Channel Bridge was converted from a ballast deck bridge to a ballast-less track bridge in a 94 hour closure.

- Previously, ballast on the bridge was required to be replaced every 18-24 months due to coal fouling.
- The new track slab has an expected life of 50 years
- The project pay back period is 8-10 years compared
- Less closures associated with maintaining the track over the bridge will be required.
- The design will looked to be implemented on other critical bridges

Design features:

- Precast panels encased by super workable high strength concrete
- Delkor rail fastenings pre-attached to precast slabs for quick installation
- Self cleaning drainage system retrofitted to treat run-off before discharge

For further info contact Reannan Moodie



Appendix R.5 Description of functional responsibility and activities

Network Control, Safe working and Operations

Network Operations comprises three core teams: Network Day-of-Operations; Network Planning; and Network Performance.

1. Network Day of Operations:

This team is directly responsible for executing the agreed plan, which involves coordinating all activities that take place on the CQCN (includes managing train movements and system closures for planned and unplanned events, including emergency response and recovery).

Aurizon Network's network control function for the CQCN is based at the Rockhampton Control Centre, a specialised facility, which operates 24 hours a day, seven days a week. An additional functional back-up facility is located in Mackay and is used for disaster recovery and training activities.

The network control function is responsible for controlling the movement of trains, light engines and track machines as well as the safe working of these vehicles as they traverse the rail infrastructure. This activity is coordinated via the operation of nine network control boards and two electrical control boards, which have been optimised to facilitate the efficient operation of the coal supply chain.

System control boards in the Network Control Centre

System	Control Boards
Blackwater	West board – Springsure to Nogoia and Dingo (including branches) Near west board – Dingo to Rocklands South board – Rocklands to Callemondah Electrical control board
Goonyella	Far west board – Broadlea to Blair Athol, North Goonyella and GAPE West board – Hatfield to Broadlea Ports board – Hatfield to Hay Point and Dalrymple Bay Gregory board – Ingsdon to Burngrove Electrical control board
Moura	Moura to Callemondah
Newlands	Newlands to Abbot Point

Given the criticality of maintaining business continuity and mitigating operational risks, the network control function must comply with Aurizon Network's Safe working and Governance framework. This ensures that operational plans comply with Aurizon Network's safety obligations and can be executed in a safe manner.

2. Network Planning:

The Network Planning team negotiates, develops and optimises the plan for the efficient delivery of contracted train paths, while balancing the track possession requirements for maintenance and renewal activities. This is achieved through the development of comprehensive network utilisation plans, which encompass:

- > long-term planning (horizon of three months to two years);
- > short-term planning (horizon of forty-eight hours to three months); and
- > Day-of-Operations planning.

Each plan incorporates expected maintenance activities, supply chain constraints (including demand requirements) and are developed in consultation with stakeholders across the whole supply chain, including operators, producers

and coal export terminals. This process ultimately helps to create more stable scheduling outcomes, which balance the needs of Aurizon Network and its customers.

By providing timely intelligence about future network activity to its customers, Aurizon Network promotes the efficient operation of the CQCN by facilitating better alignment across the supply chain. This provided all stakeholders with an opportunity to realise the benefits of increased asset and resource utilisation.

3. Network Performance:

The primary responsibility of the Network Performance team is to continually improve operational outcomes across the CQCN. It achieves this by identifying and assisting the implementation of operational improvement initiatives, while ensuring supply chain and asset lifecycle planning and execution activities continue to deliver contracted outcomes, maintenance and renewal requirements. The benefits of such initiatives are tracked, measured and reported by key performance indicators and subsequently used to continually improve supply chain performance across the CQCN.

Infrastructure Management

The core objective of this team is to maximise the performance and reliability of Aurizon Network's rail infrastructure through engineering solutions, for the lowest whole of life cost, while maintaining safety. In doing so, this team promotes the economically efficient operation of, use of and investment in the CQCN.

Network Assets comprises six core teams:

1. Civil Assets;
2. Control System Assets;
3. Electrical Assets;
4. Asset Assurance;
5. Asset Business; and
6. Asset Systems.

Civil Assets

- > Manages the civil and track related assets throughout the CQCN.
- > Civil assets include rail, sleepers, formation, ballast, turnouts, fencing, access roads and level crossings;
- > also manages Aurizon Network's comprehensive asset inspection regime, which is used to develop plans, policies and strategies to optimise asset management processes; and
- > these activities support Aurizon Network's long term planning and program forecasting activities, critical to optimise the performance and reliability of the network, while simultaneously maintaining safety.

Control System Assets

- > manages Aurizon Network's control systems assets, principally on the rail corridor but also at major sites such as Rockhampton Control Room and associated equipment rooms;
- > control systems assets include signalling and radio systems, network control systems and operational telecommunications and transmission systems.

Electrical Assets

- > manages the high voltage electrical assets on the network corridor and maintaining Aurizon Network's Electrical Entity Safety Accreditation; and
- > works to maximise the performance and reliability of the electrical assets whilst maintaining network safety.

Asset Assurance

- > delivers Aurizon Network's engineering assurance program, which provides expert advice on rail systems and operational issues;

- > ensures Aurizon Network's operational Safety Management Systems and processes are robust and effective in managing the operational risks of the network; and
- > the team's assurance findings help improve existing practices to assist in delivering the most efficient outcome.

Asset Business

- > manages Network Assets' supplier contracts, including internal and external contracts and governance matters with respect to asset planning;
- > manages third party connections and works within the rail environment, capital and cost governance for the Assets division and the development and tracking of asset performance and operational data; and
- > conducts risk management reviews; provides infrastructure change management; facilitates train and consist registration.

Asset Systems

- > maintains the broad Asset Management Framework (which includes a commitment to continuous improvement through the delivery of major projects including Network Asset Management System (NAMS) and the Asset Management Improvement Program);
- > provides strategic planning initiatives (including the management of modelling tools and processes);
- > develops scope of maintenance and renewals for Undertaking Agreements; and
- > responsible for the management of the risk register review process; continuous improvement in processes, standards and associated documentation; Master Data Governance; Master Data Quality and Completeness; data and systems services; and the Document Management Framework.

Business Management

Business Management comprises four core teams: Commercial; Network Finance; Network Legal and Regulation.

Commercial Team

The responsibilities of the commercial team are directly attributable to the provision of Access to the CQCN for coal carrying train services:

- > primary interface between Aurizon Network and its customers;
- > manages key relationships with current and prospective customers;
- > negotiates and manages commercial agreements for Access, infrastructure and interface requirements across the CQCN;
- > identifies and coordinates customer focused initiatives, including operational and process improvement;
- > undertakes CQCN capacity modelling and master planning; and
- > assesses strategic growth projects including port developments and major expansions.

The Commercial team comprises:

- > CQCN Commercial:
 - negotiates and manages various customer contracts, including access, infrastructure, interface and property agreements;
 - manages implementation of major expansions, including GAPE and WIRP;
- > Commercial Development and Governance
 - drives operational and process improvement initiatives across customers and suppliers;
 - responsible for the development of the network electrification strategy;
- > Planning and Development:
 - design and development of access including operational analysis of access seekers requests and long term planning of the CQCN;
 - ensures the network is designed and capable of meeting existing demand and future growth opportunities across the supply chain;
- > Major Projects
 - Implement regulatory processes, for example the Standard User Funding Agreement (SUFA);

- liaise with, and coordinate services for strategic growth projects.

The Commercial team is involved in a small number of non-regulated activities. In recognition of this Aurizon Network has applied a 10% deduction from the proposed commercial cost base. This amount is consistent with the deduction applied in FY2017, which was approved by the QCA in its UT4 Final Decision. The Commercial Major Projects team is an exception to this; a 50% deduction has been applied in recognition of their involvement with prospective growth projects.

Network Finance

The responsibilities of the Network Finance team are directly attributable to the provision of Access to the CQC for coal carrying train services. The team ensures Aurizon Network's access billing and financial accounting processes are accurate, credible and compliant with its statutory and regulatory obligations. The network finance team's responsibilities are essential for the efficient operation of the below-rail business:

- > accurate billing of access charges;
- > producing reports and statements using financial and non-financial data (including those that are required for regulatory purposes); includes the below-rail Financial Statements and reviewing and maintaining Aurizon Network's Costing Manual;
- > produces reports for senior managers including the development and maintenance of Aurizon Network's financial and operational performance reports;
- > manages the development and implementation of management accounting and costing systems to ensure appropriate decisions can be made relating to capital budgeting and planning, and repair versus renewal decisions;
- > reviews business cases and Board submissions from across the business in consultation with financial, economic, legal and taxation advisers, senior Aurizon Network Managers and other stakeholders as appropriate;
- > coordinates the annual capital and operating plans, including detailed profit and cost centre budgets; includes twice yearly forecasting reviews; and
- > completes the monthly general ledger procedures and the development, production and analysis of detailed monthly financial reports and variance analysis for senior managers
 - monthly invoicing to customers;
 - take or pay calculations;
 - accounting for the application of new tariffs;
 - recording of traction expenses;
 - accounting for Access Facilitation Deeds;
 - lease accounting; and
 - depreciation calculations including accruals.
- > Production of reports and statements using financial and non-financial data and key operational metrics:
 - statutory financial reports;
 - below-rail regulatory financial statements;
 - review and maintenance of the Costing Manual;
 - revenue cap calculations and yearly submission to the QCA;
 - internal and external maintenance reporting;
 - capital program.
- > coordination of the annual capital, cashflow and operating plans and Capital Indicator and continuous reforecasting;
- > monitor customer credit risk and support relationships with key customers;
- > financial support to transitional tariff setting, tariff resetting and review even submissions (eg floods);
- > administer maintenance of systems to provide information on financial performance for capital programs; and
- > provision of strategic financial support to Aurizon Network projects including development of the Access Undertaking and the associated pricing models.

During the UT4 regulatory period, the costs of the network finance team were approved as part of Aurizon Network's corporate overhead allowance. Corporate overheads generally reflect an allocation of costs which are incurred

outside of the Aurizon Network legal entity (Aurizon Network Pty Ltd), but would reasonably be required to operate a standalone, regulated below-rail business. The network finance team is, however, part of the Aurizon Network legal entity, and independent from the finance function of the Aurizon Holdings Limited Group. As a result, network finance costs are a direct cost of Aurizon Network and have been treated as such in this UT5 operating expenditure proposal.

Aurizon Network has not proposed a non-regulatory deduction for the proposed costs of the network finance team as costs that would be attributed to non-regulated revenue are offset by costs of the Group Accounting, Planning and Reporting team within Group Finance that would be attributed to Aurizon Network but have not been included in corporate overhead. Refer to the 'Finance' section under 'Corporate Overhead'.

The finance team's involvement in non-regulatory activities is negligible.

Network Legal

The primary role of the Network Legal team is to ensure that Aurizon Network complies with its legislative and contractual obligations and manages legal risk appropriately. Shaping that role are the complex regulatory and tenure arrangements of the Aurizon Network business.

Aurizon Network is subject not only to complex economic regulation, but also to multifaceted operational regulation. Where most businesses may be subject to one or two safety regulators, Aurizon Network is subject to the requirements of regulators for: Work Health and Safety; Rail Safety; Electrical Safety; and Mining Safety.

The legal environment for Aurizon Network is characterised by complex tenure arrangements for both its rail corridor land and rail infrastructure. Two infrastructure leases from two separate lessors, and two rail corridor subleases (one of which is concurrent with another rail operator), give rise to tenure arrangements that, when overlaid with existing access and regulation arrangements, result in relatively complex legal structures and considerations.

The responsibilities of the Aurizon Network Legal team include:

- > legal preparation, interpretation, amendment and enforcement of access undertakings, amended access undertakings, access agreements and associated documents;
- > preparation, negotiation, interpretation, amendment and enforcement of rail infrastructure construction agreements and associated documents;
- > preparation and negotiation of transfer facility licences and interface agreements;
- > advising in relation to safety related matters including interpretation and review of safety legislation (rail, work health and safety, electrical) and application, interpretation and review of safety management system;
- > advising on complex tenure arrangements such as rail corridor and rail infrastructure leases and tenure related issues;
- > assisting in relation to unanticipated events such as safety incidents, counterparty issues such as restructure, administration and insolvency; and
- > advising generally in relation to legal matters, governance and compliance.

During the UT4 regulatory period the costs of the Network Legal team were approved as part of Aurizon Network's corporate overhead allowance. Like the Network Finance team, Network Legal is part of the Aurizon Network legal entity, and independent from the legal function of the Aurizon Holdings Limited Group. As a result, Network Legal costs are a direct cost of Aurizon Network and have been treated as such in this operating expenditure proposal.

The Network Legal team is involved in some non-regulated activities. In recognition of that, and in accordance with the level of non-regulated activities, Aurizon Network made a 10% deduction from the proposed Network Legal cost base. This amount is consistent with the deduction applied in FY2017, which was approved by the QCA in its UT4 Final Decision.

Network Regulation

The provision of rail access is a regulated service, and Aurizon Network incurs costs to effectively manage and ensure compliance with the regulatory framework. The responsibilities of the Network Regulation team include:

- > monitoring and reporting compliance with the Access Undertaking;
- > assisting other areas within Aurizon Network to comply with their undertaking obligations;
- > providing advice to other areas within Aurizon Network on regulatory policy and issues;
- > liaising with the QCA on behalf of Aurizon Network;
- > liaising with customer and industry bodies on regulatory matters;
- > development of access undertakings and associated amendments, including consideration of regulatory policy and preparation of public submission material;
- > preparation of regulatory financial modelling and associated reference tariffs;
- > managing audits and associated allowances; and
- > fulfilling the duties of the Regulatory Affairs Advisor and Compliance Officer.

The Network Regulation team is concerned solely with the regulated below-rail network. In compliance with the requirements of UT4, the Network Regulation team is not expected to undertake any activities that are not related to the regulated below-rail network during the UT5 regulatory period.

The costs of this area reflect the complex nature of Aurizon Network's regulatory framework and the growth in the volume of tasks required to ensure compliance with this framework on an ongoing basis. The skill sets required for these functions are generally of a specialised nature, and as such, higher labour costs are associated with retaining staff. Given the dynamic nature of the industry environment and the complexity of the regulatory framework, there is no expectation that the demands on this team will moderate.

Audit cost allowances, including those required for the network condition based assessment are also included within this function to account for the QCA's required audits.

Appendix R.6 Corporate overheads – responsibilities by functional area

This Appendix provides detail on the responsibilities of and activities undertaken by functional areas.

Finance

Treasury and Tax

Provides specialist advisory support for the finance function and the business focusing on providing assurance for the business in relation to its financial and governance needs.

Key responsibilities and activities:

- > establishment of Treasury Policy and credit policies;
- > develop cash flow forecasts and manage liquidity;
- > manage and oversee banking relationships (of syndicated facility with multiple banks);
- > process and oversee electronic fund transfers between banking facilities;
- > establish and manage debt facilities;
- > process and oversee debt and investment transactions, including foreign currency;
- > manage financial risks (interest rate, liquidity, foreign exchange);
- > develop and execute hedging transactions and evaluate and refine hedging positions;
- > develop tax strategy and plan;
- > calculate current and deferred income taxes and prepare income tax returns;
- > monitor tax compliance and address tax inquiries; and
- > provide specialist advice to the business on potential and executed transactions.

Finance Shared Services – Accounts Receivable, Accounts Payable, Payroll Services

Provides standardised transactional processing including: Accounts Payable, Accounts Receivable, Payroll, and Corporate Cards. Services include centralised administrative support for Finance and management of the conference centre facilities for the Group.

Key responsibilities:

- > establish policies and procedures for payroll and vendor payments;
- > process payments including employee reimbursements, investigate/resolve exceptions and queries;
- > establish policies and procedures for processing of payroll;
- > analyse and report paid and unpaid leave and employee utilisation;
- > maintain and administer employee earnings, superannuation and applicable deductions information;
- > process payroll and associated payments, including payroll taxes;
- > produce annual employee tax statements and respond to queries;
- > file regulatory payroll tax forms;
- > maintain customer master files, generate and transmit billing data to customers, resolve billing enquiries;
- > receive/deposit customer payments;
- > produce credit/collection reports;
- > post accounts receivable and accounts payable activities to the general ledger; and
- > maintain/manage electronic commerce.

Enterprise Real Estate

Services the following portfolios:

- > Corporate – all commercial office and other work place accommodation;
- > Operational – land (excluding the rail corridor), depots, yards, huts, buildings and other structures used to house, accommodate, or support operational activities; and

- > Residential – all housing, quarters and camp accommodation for use by Aurizon staff and contractors.

Services provided:

- > Real Estate Management – including acquisition, disposal, planning, asset strategies, leasing and portfolio management;
- > Facilities Management – including hard services (building and structural services such as fire and air conditioning) and soft services (for example, cleaning, security), safety and compliance monitoring, risk management, asset management, capital upgrades, repairs, maintenance and minor works;
- > Housing – including allocation, standard lease terms and staff responsibilities; and
- > Workplace Management – including allocation of office space, cost allocation and management of space planning on operational sites.

Group Accounting, Planning & Reporting

The Group Accounting, Planning & Reporting division is the business advisor to the Group. Staff from this division provide insight, analysis and support for commercial and strategic decisions for the enterprise. This also includes:

- > preparation of all external reporting for the Group to the Australian Stock Exchange and internal financial reporting, including reporting to the CEO and Board;
- > accountability for the financial drivers of value for the Enterprise;
- > providing insight to the business on forward looking trade-offs and opportunities through the Planning, Budgeting and Forecasting cycles; and
- > manage the investment process for the business.

Human Resources

The Human Resources division comprises the following functional groups.

Business Partner teams (Operations and Network and Support Functions)

Partners with senior management and their teams to deliver a HR program that supports a safety and performance-driven culture to enable the achievement of functional and enterprise objectives.

Accountable for the delivery of an efficient, effective HR generalist service to leaders across the organisation with a focus on coaching and supporting them.

Enterprise Support

Drives enterprise-wide Remuneration and Employee Relations programs that support the achievement of the enterprise strategy and a safety and performance driven culture.

Organisational Capability

Leads the overall strategic framework, system development and ongoing monitoring and evaluation of components of the employment life cycle to drive a safety and performance-driven culture and address the issues critical to the future organisation.

Brand and Communications

Drives a national internal and external communication program, incorporating stakeholder relations, corporate affairs, organisational communications, community engagement and communications policy and development.

Accountable for building a market leading brand for the company.

Enterprise Services

Safety, Health & Environment

Incident investigation and management:

- > manages routine rail investigations;
- > leads rail safety investigations;
- > monitors the incident/accident reporting and investigation system;
- > undertakes trend analysis in events on the network;
- > provides updates on investigations being undertaken;
- > provides interim reports to the Department of Transport and Main Roads;
- > manages reports and recommendations;
- > undertakes special investigations on request and in response to trends;
- > provides Accident Investigation training;
- > undertakes and provides advice on Workplace Health and Safety investigations;
- > provides support to conferences and workshops to ensure the transfer of safety learnings; and
- > provides support for the undertaking of safeworking audits.

Emergency and safeworking systems:

- > management of Emergency Response processes;
- > Signal Passed at Danger (SPAD) management;
- > management of changes to safeworking systems;
- > recommendations management and tracking;
- > operational risk management;
- > coordination of recommendation actions for network safety; and
- > safeworking/operational project management.

Operation safeworking:

- > safeworking standards integration;
- > national rules and procedures (safeworking);
- > provides safeworking expertise;
- > safeworking standards development;
- > reviews training;
- > manages SWK standard amendment process; and
- > services agreements.

Operational safety:

- > safeworking standards and interface risk;
- > Interface Risk Management Plan (IRMP) audit; and
- > overall divisional audit coordination network systems and capability.

Network Safety Advisor:

- > provides Workplace Health and Safety advice and support to all staff in Aurizon Network;
- > key contact for employee accident/incident reporting, recording and investigations including monitoring of processes;
- > contact for Zero Harm/DuPont initiatives & activities;
- > Workplace Health and Safety business instructions that apply to Aurizon Network;
- > Aurizon Network representative for Aurizon Workplace Health and Safety forums; and
- > facilitates internal and external Workplace Health and Safety audits.

Glossary

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
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
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 Tax 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
bn	billion
Brattle WACC Report	The Brattle Group report – Aurizon Network 2016 Access Undertaking Aspects of the WACC
BRTT	Below Rail Transit Time
CAA	Connection Access Agreement
CAPM	Capital Asset Pricing Model
Capex	Capital Expenditure
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

Term	Definition
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
CRIMP	Coal Rail Infrastructure Master Plan
CSR Obligation	Capacity Shortfall Rectification Obligation
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
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
ESA	Electrical Safety Act
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

Term	Definition
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
IDC	Interest During Construction
IEA	International Energy Agency
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
MRP	Market Risk Premium
Mtpa	Million tonnes per annum
NAMS	Network Asset Management System
NAPE	Newlands Abbot Point Expansion
NCL	North Coast Line
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
NPV	Net present value
NSAP	Network Strategic Asset Plan
nt	Net tonnes
ntk	Net tonne kilometres
OAV	Opening Asset Value
Opex	Operational Expenditure

Term	Definition
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
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
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

Term	Definition
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

Appendix P.1 – Explanation of Drafting Changes within the 2017 Draft Access Undertaking (UT5) relative to UT4 base document.

Part 3: Ringfencing

Clause	Amendment	Rationale	Change Type
3.14(b)	Amended Aurizon Network's obligation in relation to the submission of the proposed structure and level of detail of the Confidential Information Register	The obligation of Aurizon Network to submit the proposed structure and level of detail of the Confidential Information Register should only apply if the QCA has not already approved the form of the Confidential Information Register under UT4.	Workability

Part 4: Negotiation Framework

Clause	Amendment	Rationale	Change Type
4.5(e)(i), 4.5(e)(ii),	Removed references to clause “4.5(j)” and replaced it with references to clause “4.5(i)”.	Correcting clause references	Clarification
4.5(f)(i)	Removed references to clause “4.5(h)” and replaced it with references to clause “4.5(g)”. Removed references to clause 4.5(j) and replaced it with references to clause “4.5(i)”.	Correcting clause references	Clarification
4.6(f)(iii)	Removed references to clause “4.5(i)” and replaced it with references to clause “4.5(k)”.	Correcting clause references	Clarification
4.8(d)	Inclusion of the words “ <i>or where an Access Application is received by Aurizon Network in respect of Access Rights which can only be provided by an Expansion</i> ”.	Clarifies that the process in clause 4.8(d) also applies where an Access Application is received by Aurizon Network in respect of Access Rights which can only be provided by an Expansion.	Clarification
4.10.1(c)(iii)	Removed the words “ <i>under clause 4.10.1(a)</i> ” and replaced with “ <i>to take over the Customer Access Seeker’s Access Application and replace the Customer Access Seeker as the Access Seeker for that Access Application</i> ”.	Clarifies that at any time during the negotiation of Access Rights a Customer Access Seeker may nominate a Railway Operator to take over the Customer Access Seeker’s Access Application and replace the Customer Access Seeker as the Access Seeker for that Access Application.	Clarification

Part 6: Pricing Principles

Clause	Amendment	Rationale	Change Type
6.13.1	Modified to align with revised definition of "Access Conditions".	Ensure only material Access Conditions (or those the contracting Access Seeker believes to be material) are the subject of review process by QCA. Reflects the primacy of commercial agreements.	Workability
6.13.2	Removal of requirement to prepare Access Conditions report, and inclusion of simplified approval process.	As described in Aurizon Network's policy position in relation to Access Conditions, approval process redesigned to recognize revised definition of Access Conditions and to better reflect the range of transactions which could constitute Access Conditions. Allows for a more flexible and timely approach to approval, while retaining approval role for QCA. Aligns test to be applied by QCA, with the requirements of the QCA Act.	Power, workability.

Clause	Amendment	Rationale	Change Type
6.13.3	Refinement of prohibited access conditions.	Removal of strict prohibition on “varied WACC” Access Conditions, as there is no basis for such prohibition, and the definition of Access Conditions now more accurately captures the transactions or variations which would require QCA consideration and approval.	Power; Workability

Part 7: Available Capacity Allocation and Management

Clause	Amendment	Rationale	Change Type
7.4.2(h)(iv)	Inclusion of the word “ <i>the</i> ” before “ <i>Transferee’s nominated Access Agreement</i> ”	Correcting grammar.	Minor clarification
7.4.2(k)	Inclusion of the words “ <i>or clause Error! Reference source not found. applies</i> ”	Clarifies that, in addition to short term transfers that take place under clauses 7.4.2(f) or 7.4.2(g), where a transfer of access rights takes place in accordance with Part 4 of the Access Undertaking the Nominated Access Rights must be removed from the Access Agreement that was entered into first in time and added to the Access Agreement that was entered into last in time.	Workability
7.4.2(s)	Deletion of the words “ <i>lesser of or the remainder of the term of the relevant Access Agreement or the</i> ”	Corrected a drafting error in UT4. The Transfer Fee is calculated based on the amount equivalent to the present value, calculated at the Discount Rate, of the payment of the aggregate TOP Charges for the relevant Train Service Types that would have been payable for the Transfer Period assuming the Nominated Access Rights were not transferred; and the Train Services were not operated for the Transferor for a reason other than Aurizon Network Cause	Workability
7.4.3(e)	Inclusion of the words “Subject to clause 7.4.3(k)”	Clarifies that the requirement to calculate and pay a Relinquishment Fee must be read subject to clause 7.4.3(k). This clause provides that no Relinquishment Fee is payable where Aurizon Network reduces the Nominated Monthly Train Services of an Access Holder under clauses 7.3.4(f) or clause 7.3.4(i).	Workability

Clause	Amendment	Rationale	Change Type
7.4.3(f)-7.3.4(k)	Inclusion of new clauses to describe the process by which Access Holders may reduce their Nominated Monthly Trains Services in certain circumstances under the Standard Access Agreement and Standard Train Operations Deed	<p>These clauses have been included to reflect the inclusion of the proposed Relinquishment Provisions in the Standard Access Agreement and Standard Train Operations Deed whilst the standard resumption provisions that apply to all access agreements are included in Clause 7.4.3 of the Access Undertaking. The Relinquishment Provisions provide for how Train Paths in a Standard Access Agreement may be reduced for three distinct reasons:</p> <ol style="list-style-type: none"> 1. where an Operator consistently over a 12 month period exceeds the Maximum Payload; 2. where an Access Holder requests an increase to its Maximum Payload; and 3. where an increase to Maximum Payload is the preferred option to increase capacity. 	Drafting
7.4.3(f)	Renumbered to "7.4.3(l)" after the addition of 7.4.3(f)-7.3.4(k)	Correction section numbering	Minor

Part 7A: Capacity

Clause	Amendment	Rationale	Change Type
7A.1(b)	Inclusion of the words <i>‘to a reasonable degree’</i> and <i>‘to the extent reasonable’</i>	Aurizon Network should not be required to comply with an absolute obligation to participate in Supply Chain coordination. A reasonable endeavors obligation is sufficient.	Drafting
7A.1(c)	Removed the reference to a Baseline Capacity Assessment	As the Baseline Capacity Assessment is being carried out under UT4, no Baseline Capacity Assessment will be required under UT5.	Alignment
7A.3(a)	Inclusion of the words <i>‘to the extent it is reasonable to do so’</i>	Amendments reflect the policy that involvement by Aurizon Network in Supply Chain coordination should not be mandatory.	Drafting
7A.3(a)(i) and 7A.3(a)(ii)	Removed “in respect of reasonable requests”	Amended due to the amendment made to clause 7A.3(a) above.	Drafting
7A.3(b)	Add “if it has capacity to do so and believes the request is reasonable” after “must”	Amendments reflect the policy that involvement by Aurizon Network in Supply Chain coordination should not be mandatory and should only occur where Aurizon Network has the capacity to do so and requests are reasonable,.	Drafting
7A.3(c)	Removed the words <i>“act in a way that”</i> . Amended to clarify Aurizon Network’s obligations when dealing with Supply Chains	Clarifies Aurizon Network’s obligations in relation to Supply Chains and links to its obligations under Part 2.	Clarification

Clause	Amendment	Rationale	Change Type
7A.3(d)	Amended drafting to reflect Aurizon Network's policy position in relation to how requests for operational changes to create capacity will be dealt with	Removed the absolute obligation to undertake operational changes but includes the obligation to provide reasons for not implementing operational changes which have been identified by a particular Supply Chain Group, as more particularly described in section 5 of the Policy Submission.	Drafting
7A.3(e)(ii)	Deleted the old clause 7A.3(e)(ii) and re-numbered clause accordingly.	Consequential change following the amendment to clause 7A.3(d).	Clarification
7A.4.1	Deleted entire clause.	As the Baseline Capacity Assessment is being carried out under UT4, no Baseline Capacity Assessment will be required under UT5.	Clarification
7A.4.2(a)(i)	Minor drafting amendments	Amended drafting to reflect that the Baseline Capacity Assessment is being carried out under UT4.	Clarification
7A.4.2(b)(i) and 7A.4.2(b)(iii)	Minor drafting amendments	Amended to clarify that Aurizon Network must consider the outcomes of any consultation, not the consultation itself.	Workability
7A.4.2(b)(vi)	Deleted reference to the Baseline Capacity Assessment Report	As the Baseline Capacity Assessment is being carried out under UT4, the reference to the Baseline Capacity Assessment Report is no longer relevant.	Clarification
7A.4.2(d)	Drafting changes to reflect policy position that the expert review will be an audit.	Please refer to section 8 of the Policy Submission in relation to the process for Capacity Review.	Drafting
7A.4.2(d)(iii)	Deleted reference to parts of the Baseline Capacity Assessment	As the Baseline Capacity Assessment is being carried out under UT4, the reference to this is no longer relevant.	Clarification
7A.4.2(d)(v)	Amendment in relation to the provision of the Expert's final audit report	This amendment is consistent to the amendments made, at the QCA's request, to various parts of the UT4 Access Undertaking where confidential information in relation to Access Holders is being provided.	Alignment

Clause	Amendment	Rationale	Change Type
7A.4.2(e)	Inclusion of an obligation for Aurizon Network to respond to the reasonable recommendations of the auditor within specified timeframes.	Clarifies the process when Aurizon Network responds to the reasonable recommendations of the auditor.	Clarification; drafting
7A.4.2(f)	Inclusion of an obligation to amend the Preliminary Capacity Assessment Report to the extent required to take account of any modifications to the modelling process considered reasonable under clause 7A.4.1(e)	Clarifies the process.	Clarification; drafting
7A.4.2(j)	Included reference to the Approval Date of the 2016 Undertaking and fixed numbering.	To clarify that the confidentiality obligations in relation to the Condition Based Assessment are split between access holders who hold pre-UT4 access agreements and access holders who hold post UT4 access agreements.	Clarification
7A.4.3(a) and (b)	Inclusion of drafting amendments because the Baseline Capacity Assessment is being carried out under UT4 and it is necessary to clarify how a capacity deficit is appropriately determined initially and every year thereafter.	<p>Aurizon Network has clarified the process to be followed where:</p> <p>(a) Aurizon Network has not published a Capacity Assessment Report under UT5, a capacity deficit has been identified under UT4 and Aurizon Network has not completed all consequent actions required prior to UT5 being approved. In that circumstance, Aurizon Network undertakes to complete the required actions under the UT5 process; and</p> <p>(b) the most recent Capacity Assessment Report under UT5 reveals that there is a deficit in the Capacity for that Coal System.</p> <p>This clause also clarifies what constitutes a preliminary report in respect of the Capacity Deficit (to be provided within 20 Business Days of the Publication Date) and a detailed report in respect of the Capacity Deficit (to be provided within 6 months of the Publication Date).</p>	Workability; drafting

Clause	Amendment	Rationale	Change Type
7A.4.3(c)	Removed " <i>its analysis of a Capacity Deficit</i> " and replaced it with " <i>the report specified in clause 7A.4.3(a)(v) or 7A.4.3(b)(iii) (as applicable)</i> "	Clarification.	Clarification
7A.4.3(c)(i)(A)	<p>Removed "<i>the assumptions which it utilises in the</i>"</p> <p>Inclusion of the words "<i>practices, as set out in the assumptions used in the applicable Capacity assessment, in respect</i>"</p> <p>Removed "<i>identify</i>" replaced it with "<i>ascertain whether</i>"</p> <p>Removed "<i>assumptions</i>" and replaced it with "<i>practices</i>"</p>	Clarified that Aurizon Network's obligation is to undertake a review of the practices used by it, as set out in the assumptions, rather than just a review of the assumptions used in the applicable Capacity assessment.	Clarification; Workability
7A.4.3(c)(i)(B) and 7A.4.3 (c)(ii)	Removed " <i>Supply Chain Groups and Terminal operators</i> "	Amended the absolute obligation for Aurizon Network to consult with Supply Chain Groups and Terminal operators so that Aurizon Network must use reasonable endeavors to do so. An absolute obligation should only arise in relation to Access Holders, Customers and, if applicable, Train Operators.	Drafting]
7A.4.3(e)	Removed reference to affected Access Seekers in this clause.	A Deficit is only relevant to Access Holders who hold Access Rights, not an Access Seeker whose Access Application is governed by Part 4 and Part 8 (to the extent an Expansion is required).	Drafting

Clause	Amendment	Rationale	Change Type
7A.4.3(e)(ii)	<p>Removed "<i>in good faith</i>" and replaced it with "<i>act reasonably</i>"</p> <p>Removed "<i>individually and as required</i>"</p> <p>Removed "<i>(but any dispute regarding who will fund or proportion will be determined in accordance with Part 11 only if all parties agree to the Dispute being resolved in accordance with part 11</i>"</p>	Aurizon Network accepts an obligation to act reasonably and negotiate with affected Access Holders. It does not accept any dispute about who will fund being resolved in accordance with Part 11 of the Access Undertaking. Please refer to our policy submission in relation to Part 11 (Disputes).	Drafting]
7A.4.3 (f)(ii)(A) and (B)	Included reference to the Approval Date of the 2016 Undertaking and fixed numbering.	To clarify that the confidentiality obligations in relation to the Condition Based Assessment are split between access holders who hold pre-UT4 access agreements and access holders who hold post UT4 access agreements.	Clarification
7A.4.4 and 7A.4.4 (a)	<p>Drafting amendments included to remove the QCA as an Appointing Party.</p> <p>Drafting changes to reflect policy position that the expert review will be an audit.</p>	<p>This clause has been modified to reflect that there are no Baseline Capacity Assessments under UT5 and therefore only Aurizon Network engages the expert.</p> <p>Please refer to section 8 of the Policy Submission in relation to the process for Capacity Review.</p>	Clarification
7A.4.4 (b)	Inclusion of a new clause providing clear direction of the scope of the audit.	Please refer to section 8 of the Policy Submission in relation to the process for Capacity Review.	Drafting

Clause	Amendment	Rationale	Change Type
7A.4.4(c)	Deleted the ability of the expert to develop assumptions	Due to the expert review now being an audit, the auditor can opine on the consistency of Aurizon Network's assumptions with access agreements and relevant laws, but does not develop assumptions.	Alignment
7A.4.4(d)(i)	Replace reference to "assessment" with "audit"	This is due to the fact that the expert review is now an audit.	Alignment
7A.4.4(d)(ii)	Delete " <i>capacity model</i> ", add replace with " <i>modelling process</i> " and delete " <i>methodology</i> "	This term better describes the elements of the modelling.	Clarification
7A.5(d)	Removed reference to an Alternative Baseline Capacity Assessment Report	This clause has been modified to reflect that there are no Baseline Capacity Assessments under UT5.	Alignment

Part 8: Network Development and Expansions

Clause	Amendment	Rationale	Change Type
8.2.2	Removed “or proposed Expansion Funder” and replaced with “(to the extent that such proposed Pre-feasibility Funder or proposed Feasibility Funder is an Access Seeker, Customer or Train Operator)”	Clarifies the right of parties to dispute, and aligns with clarifications to Part 11.	Workability
8.3.2(c)(ii)	Removed “an expert” and replaced with “QCA”	Aligns with dispute provisions; ensures QCA role, clarity and certainty.	Workability
8.7.1(a)	Removed “ <i>Subject to this clause 8.7 and clause 8.8</i> ” and replaced with “ <i>If Aurizon Network provides notice under clause 8.7.1(c)(ii) that it is not willing to fund an Expansion, or is willing to do so only with Access Condition, then</i> ”	Provides Aurizon Network with the ability to elect to fund on regulatory terms, and provides for finite timeframe for doing so.	Power; workability

Clause	Amendment	Rationale	Change Type
8.7.1(c)-(f)	Drafting changes to reflect Aurizon Network's obligation to issue indicative and binding funding notices	Aligns with Aurizon Network's right to fund an expansion on regulatory terms, and sets out a clear process for Aurizon to provide clear notification of its funding choice, and of the resulting processes flowing from these notifications.	Power; workability
8.7.1(j)	Amended " <i>must not have regard to</i> " to " <i>may consider</i> " and added " <i>only to the extent permitted by the Act and this Undertaking</i> "	More clearly and accurately reflects Aurizon Network obligations under QCA Act.	Power
8.8.3(a) – (f) (Development and review of the SUFA)	Amendments to reflect Aurizon Network's policy submission in relation to the development and review of the SUFA	Changes are to: <ul style="list-style-type: none"> • recognise the continuing development of the SUFA in UT4; • simplify the process for the lodgement, consideration and review of the UT5 SUFA; • accurately reflect the provisions of the QCA Act which relate to the consideration of voluntary DAAUs and the initiation of compulsory DAAUs; and • include a more workable and efficient process for the review of the SUFA, in order to ensure reviews are only conducted when and to the extent required. 	Power, drafting, workability, efficiency
8.9.3 Capacity shortfall)	Amendments to reflect Aurizon Network's policy submission in relation to capacity shortfalls	Includes a process for consultation with affected access holders to determine the most appropriate response to the shortfall. This amendment maximizes the opportunity for a flexible and innovative approach to expansions and capacity management, and reduces incentives to "gold plate".	Power, workability

Clause	Amendment	Rationale	Change Type
8.9.4	Deletion of entire clause in relation to the funding of a Shortfall Expansion to reflect Aurizon Network's policy submission in relation to capacity shortfalls	This clause is redundant as it has been replaced by the process now included in clause 8.9.3.	Power, workability

Part 10: Reporting, Compliance and Audits

Clause	Amendment	Rationale	Change Type
10.3.2	Amended Aurizon Network's obligation in relation to the submission of a draft format of the quarterly maintenance report.	The obligation of Aurizon Network to submit a draft format of the quarterly maintenance report should only apply if the QCA has not already approved the quarterly maintenance report under UT4.	Workability
10.3.4(k),	Amended reference to 2010 Undertaking to 2016 Undertaking.	To reflect that this is a UT5 Access Undertaking so the reference to UT3 is outdated.	Workability
10.4.3(j)(ii)	Included reference to the Approval Date of the 2016 Undertaking and fixed numbering.	To clarify that the confidentiality obligations in relation to the Condition Based Assessment are split between access holders who hold pre-UT4 access agreements and access holders who hold post UT4 access agreements.	Clarification
10.4.3(a)	Amended the timing of Aurizon Network's obligation to provide a condition based assessment of the Rail Infrastructure from 31 March 2017 to 3 months prior to expiry of UT5, or as otherwise agreed with the QCA.	Clarification of timing.	Workability

Part 11: Disputes

Clause	Amendment	Rationale	Change Type
11.1.1(a) and (b)	<p>Amended so that the only disputes that the dispute resolution process in Part 11 can apply to are disputes between Aurizon Network (as an Access Provider) and:</p> <ul style="list-style-type: none"> • 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 	<p>Please refer to the section entitled “Dispute Resolution Process” in Aurizon Network’s Policy Submission and specifically the explanation under the heading “Parties who may commence a dispute.”</p>	Drafting
Old 11.1.1(d)	Deletion of entire old clause 11.1.1(d)	The only disputes that the dispute resolution process in Part 11 should apply to are those set out in clause 11.1.1(a) - see above.	Clarification
New 11.1.1(d)	Amended drafting to provide that the invitation to the Train Operator or the Access Seeker to join a dispute is not mandatory.	The drafting provides that either Aurizon Network or the other party to the original dispute (each an Inviting Party) may invite the Train Operator or the Access Seeker as applicable (each an Invited Party) to participate in the dispute if the Inviting Party is of the reasonable opinion that the dispute, or the outcome or consequences of the dispute, may be relevant to the Invited Party.	Drafting

Clause	Amendment	Rationale	Change Type
11.1.1(f)	Inclusion of a new clause 11.1.1(f) which provides that " <i>Section 122 of the Act will apply to all Disputes to which this Part 11 applies.</i> "	Section 122 of the QCA Act allows the QCA to not start or at any time end an arbitration of an access dispute if it considers that the giving of the access dispute notice was vexatious, trivial, misconceived or lacking in substance, or the party who gave the access dispute notice has not engaged in negotiations for an access agreement in good faith.	Drafting
11.1.1(g)	Deleted entire clause requiring the QCA to be kept regularly informed of a dispute.	It is not necessary for the QCA to be kept regularly informed of a dispute, and to be provided with copies of all subsequent notices and formal correspondence in relation to a dispute. It is only where a dispute cannot be resolved between the parties that the QCA should have involvement.	Drafting
11.1.4(b)	Removal of the right of the QCA to appoint an expert where the parties cannot agree on the expert's identity and inclusion of an appropriate process to do so.	Where the parties to a dispute cannot agree on the expert, the expert should be selected not by the QCA but rather by a recognised independent nominating authority such as the President of the Institute of Chartered Accountants in Australia (for financial matters), the President of the Resolution Institute in Australia (for technical matters) or the President of the Queensland Law Society (for all other matters). This is consistent with the expert resolution provisions which are contained in the Standard Access Agreement.	Drafting
11.1.4(b)(v)(F) and 11.1.4(b)(v)(G)	Included drafting to clarify that the expert's determination must be consistent with the QCA Act, Aurizon Network's Safety Management System, its obligations arising under the <i>Transport (Rail Safety) Act 2010</i> (Qld) and Division 5, Part 5 of the QCA Act.	Any expert who is appointed in relation to the determination of a dispute should be required to make a determination in accordance with Division 5, Part 5 of the QCA Act. That is, the expert should be subject to the same limitations and requirements as would apply to the QCA under Division 5, Part 5 of the QCA Act.	Drafting

Clause	Amendment	Rationale	Change Type
11.1.4(h)	Included a right to refer the matter to the QCA for determination if a party believes that there has been fraud or manifest error or that the expert has not complied with clause 11.1.4(e) and made consequential drafting changes.	This has been included to provide a mechanism for the QCA to determine whether or not the expert has complied with clause 11.1.4(e) (independence and impartiality provision).	Clarification
11.1.5(c)	Inclusion of a new clause which provides that where a Dispute is referred to the QCA for determination under this Undertaking, then any determination of that Dispute by the QCA must occur subject to, and in accordance with, Division 5 of Part 5 of the QCA Act and the deletion of the old clauses 11.1.15(d)-(i) inclusive.	As the QCA only has power to resolve disputes to which Division 5, Part 5 of the QCA Act applies, provisions that purport to permit the QCA to determine disputes in circumstances where Division 5, Part 5 of the QCA Act does not apply are beyond power and have therefore not been included.	Drafting
11.1.5(d)	Included the words nothing in this Undertaking is intended to derogate from section 119 of the Act	Language has been moved from previously deleted clause above it.	Clarification

Clause	Amendment	Rationale	Change Type
11.1.5(e)	Included drafting to provide that when the QCA is acting in its dispute resolution capacity, an access determination should not be inconsistent with any general safety duties, obligations or requirements under applicable rail, occupational or electrical safety legislation that apply to Aurizon Network. (including Aurizon Network's obligations to comply with its regulator approved SMS).	This limitation on the QCA's dispute resolution powers is required so as to ensure that Aurizon Network may continue to comply with its safety obligations under law. Please refer to the section entitled "Dispute Resolution Process" in Aurizon Network's Policy Submission and specifically the explanation under the heading "Disputes impacting on safety."	Drafting
11.1.6(a)	Minor amendments made to reflect the fact that there may be more than two parties to a dispute.	Clarification.	Clarification
11.1.6(b)(i)	Inclusion of the words "unless....the QCA determines that the expert's determination is not binding under clause 11.1.4(h); or (b)" and clarification that any challenge to a determination by the QCA must be successful	Amendment is consistent with clause 11.1.4(h) so that the decision maker's determination is final and binding upon the parties to the Dispute who must comply with the determination of the decision maker, unless (a) in the case of an expert, the QCA determines that the expert's determination is not binding under clause 11.1.4(h); or (b) a determination by the QCA is successfully challenged on the basis of a breach of a requirement in clause 11.2.	Workability

Clause	Amendment	Rationale	Change Type
11.1.7	Deleted entire clause relating to how Part 11 applies to Pat 8 Disputes.	Consistent with the amendments made to clause 11.1.1(a), it is clear that Part 11 deals with any disputes in respect of the negotiation of a Standard User Funding Agreement must be between Aurizon Network (as an Access Provider) and an Access Seeker that is a proposed party to it.	Clarification

Part 12: Definitions and Interpretation

Clause	Amendment	Rationale	Change Type
12.1	New definition of 2016 Undertaking	Given that this is UT5, a definition of the UT4 Access Undertaking is required.	Clarification
12.1	Amended the definition of Access Conditions	Definition amended to ensure only access conditions which are of a material nature or are otherwise deemed by the contracting Access Seeker to be material, are subject to QCA approval, for the reasons set out in Aurizon Network's policy submission.	Drafting; Workability
12.1	Amendments to the definitions of Alternative Baseline Capacity Assessment, Alternative Baseline Capacity Assessment Report, Baseline Capacity Assessment and Baseline Capacity Assessment Report	To clarify that these documents, if any, would be published by the QCA under UT4.	Clarification
12.1	Amendments to the definition of Applicable Undertaking, Approved Undertaking and System Rules to include reference to UT4	Clarification.	Clarification
12.1	Included new definition for Approval Date of the 2016 Undertaking	To clarify that the 2016 Access Undertaking was approved on to 11 October 2016.	Clarification
12.1	Included a new definition of Approved WACC	Please refer to our Weighted Average Cost of Capital Submission for a detailed Explanation of the rationale for this.	Policy

Clause	Amendment	Rationale	Change Type
12.1	Included a new definition of Average Annual Payload, Maximum Payload, Nominated Monthly Operational Rights, Nominated Monthly Train Services, Payload, Surplus Access Rights	These terms are used in clause 7.4.4 of Part 7 and the Standard Access Agreement and the Standard Train Operations Deed.	Clarification
12.1	Amended definition of Capacity Deficit	To reflect the drafting changes to clause 7.7.3.	Clarification
12.1	Amended definition of Commencing Date to 1 July 2017	This date is the start of the UT5 regulatory period.	Clarification
12.1	Included a new definition of Publication Date	This term is used in clause 7.7.3.	Clarification
12.1	Amended the definition of Supply Chain Group	To ensure that a Supply Chain Group is one that is both set up for the purposes of Supply Chain coordination AND which has the support of sufficient Supply Chain participants to effectively perform that function.	Clarification

Clause	Amendment	Rationale	Change Type
12.1	Amended the definition of Terminating Date	Drafting included to ensure consistency with the timeframe or continuation of any applicable declaration or replacement declaration as the declaration of the declared service will expire on 8 September 2020 (ss 248 and 250(2) of the QCA Act).	Workability

Clause	Amendment	Rationale	Change Type
12.4	Amendments to the transitional provisions to include reference to UT4 instead of UT3.	Clarification.	Clarification

Schedule E: Regulatory Asset Base

Clause	Amendment	Rationale	Change Type
1.1(a)	Deletion of the words “ <i>CPI between the June Quarter of the previous Year and the June Quarter for that Year</i> ” and replacing them with “ <i>forecast CPI value that was used for the purpose of determining the relevant Reference Tariff for the relevant year</i> ”	Amended to reflect the proposed change in the inflation rate used to inflate the RAB. This change is consistent with clause 4.3(c)(ii)(B) of Schedule F.	Workability; alignment
1.1(c)	Inclusion of specific treatment for asset disposals resulting from Expansions or maintenance work	As described in policy section, to ensure the disposal provisions do not inadvertently – by removing the entire value of replaced assets from the RAB - penalize Aurizon Network from carrying out Expansions or maintenance work. The revised mechanism allows reduction of RAB only by proceeds of the sale of the removed assets. As a result, the footnote to clause 1.1 is no longer required.	Workability; clarification
1.1	Removal of the words “ <i>For the purposes of this Schedule E, “Dispose” excludes any unsold asset that is replaced (in whole or in part) by an Expansion or Maintenance Work on the Rail Infrastructure.</i> ”	This is no longer used as a defined term as the word has an ordinary and general meaning.	Clarification

Clause	Amendment	Rationale	Change Type
1.2(b)(i)	Inclusion of minor clarification to ensure any RAB reduction can only be to the extent of any misleading or inaccurate information. Concept of inadequate information removed.	Any RAB reduction should only ever be to the extent of any overstatement of the RAB due to the provision of misleading or inaccurate information. Inadequate information is no longer required as a trigger, as Schedule E includes detailed information provision requirements and the ability for the QCA to require additional information.	Clarification
1.2(b)(ii)(B)	Inclusion of minor clarification to ensure any RAB reduction can only be to the extent necessary to address any demand-based pricing "spiral"	As the QCA recognized in its UT4 final decision, clause 1.2(b)(ii) of Schedule E is designed to operate as a "last resort" to rebalance pricing in order to avoid further demand reductions and pricing increases. However, the clause should be used only to the extent required to address this situation and not – for example – to remove the RAB entirely. To do so would be contrary to the legitimate business interests of Aurizon Network, and to the public interest in facilitating confidence in investment in long-term infrastructure like rail.	Clarification
1.2(b)(iii)(C)	Inclusion of minor clarification to ensure any RAB reduction can only be to the extent of any deterioration in the rail infrastructure	For the same reason as described above for 1.2(b)(i) – RAB reduction should not extend beyond what is necessary to address the deterioration in the asset. To do more would be contrary to the legitimate business interests of Aurizon Network, and to the public interest in facilitating confidence in investment in long-term infrastructure like rail.	Clarification
4.1(a)	Inclusion of minor qualification to ensure the voting process recognizes the binding nature of the voting in clause 2.1(f) of Schedule E	This clarifies the interrelationship between the relevant clauses and that a positive vote should create an obligation for Aurizon Network to seek approval of capital expenditure under clause 2.1(f) of Schedule E. During the finalisation of UT4, the QRC requested we include this clarification in a future DAAU to amend UT4: QRC submission dated July 2016 on Aurizon Network's Amended 2014 Draft Access Undertaking, available at: http://www.qca.org.au/getattachment/086f7710-e824-495a-b8aa-e0fbd869ae10/QRC-submission.aspx For consistency, we have also incorporated this change in UT5.	Clarification

Schedule F: Reference Tariff

Clause	Amendment	Rationale	Change Type
7.2; 8.2; 9.2; 10.2; 11.2	Reference Tariffs	Updated Reference Tariffs for the UT5 regulatory period	Alignment
7.3; 8.3; 9.3; 10.3; 11.3	GTK Forecast and Allowable Revenues	Updated GTK Forecast and Allowable Revenues for the UT5 regulatory period	Alignment
12	Monthly system forecast	<p>Updated GTK Forecast on a monthly basis for the Blackwater System and Newlands System, which have Access Agreements executed or renewed during the term of the 2001 Access Undertaking (UT1).</p> <p>Clause 12 does not apply in relation to the Goonyella System and the Moura System as there are no longer any Access Agreements, or New Access Agreements where the relevant Old Access Agreement was, executed or renewed during the term of UT1.</p>	Monthly GTK Forecast

Standard Access Agreement

Clause	Amendment	Rationale	Change Type
1.1	Inclusion of the following definitions:	These definitions have been included as they are terms used in the new clause 10 of the Access Agreement.	Drafting
Definitions relating to the Reduction of Nominated Monthly Train Services if Maximum Payload Exceeded (<i>new Clause 10</i>)	<ul style="list-style-type: none"> • Affected Train Service Type • Assessment Date • Average Annual Payload • Defaulting Operator • Maximum Payload • New Train Service Type • Non-Defaulting Operator • Original Train Service Type • Reduction Notice • Relevant Rollingstock Configuration • Revised Maximum Payload • Revised Nominal Payload • Revised Nominated Monthly Train Services • Split Train Service Type 	Please refer to our comments in relation to clause 10 of the Access Agreement below.	

Clause	Amendment	Rationale	Change Type
1.1	Inclusion of the following definitions: <ul style="list-style-type: none"> Nominated Access Rights Notice of Enquiry Revised Nominal Payload Revised Nominated Monthly Train Services Surplus Access Rights Variation Request Notice 	<p>These definitions have been included as they are terms used in the new clause 11 of the Access Agreement.</p> <p>Please refer to our comments in relation to clause 11 of the Access Agreement below.</p>	Drafting
1.1	Inclusion of a new definition of Effective Date	This term is used in clause 12.	Clarification
1.1	Deletion of the defined term "Nominated Unloading Facility"	This term is not used in the Access Agreement.	Clarification
1.1	Inclusion of a definition of Relinquishment Fee.	This term is used in clause 15.2 of the Access Agreement.	Clarification

Clause	Amendment	Rationale	Change Type
New Clause 10	Inclusion of a new clause in relation to the Reduction of Nominated Monthly Train Services if Maximum Payload exceeded	<p>Please refer to section 1 of Aurizon Network's Policy Submission in relation to Relinquishment Processes to support productivity improvements for general commentary.</p> <p>These provisions are designed to allow Aurizon Network to reduce an Access Holder's Nominated Monthly Train Services where an Operator consistently over a 12 month period exceeds the Maximum Payload for those Train Services.</p>	Drafting
New Clause 11	Inclusion of a new clause in relation to the Reduction of Nominated Monthly Train Services	<p>Please refer to section 1 of Aurizon Network's Policy Submission in relation to Relinquishment Processes to support productivity improvements for general commentary.</p> <p>These provisions are designed to allow Access Holders to request an increase in Maximum Payload (to enable longer trains to be used as a productivity improvement) and accordingly reduce Train Paths under the Standard Access Agreement and Standard Train Operations Deed.</p> <p>The drafting in clause 11.2(a), specifically the amount of any fee that will be payable by an Access Holder when train paths are reduced, requires further consideration with stakeholders to avoid socialisation of costs among other system users. In its initial form, this mechanism contemplates that where Train Paths are relinquished under these provisions, the Access Holder will pay a fee equal to the AT2 component of access charges that would have been payable in relation to the Train Paths that have been relinquished. Once the mechanism has been fully worked through, Aurizon Network will provide additional drafting in relation to the appropriate fee that will be payable.</p>	Drafting

Clause	Amendment	Rationale	Change Type
New Clause 12	Inclusion of a new clause 12 in relation to the reduction of Nominated Monthly Train Services if the Nominal Payload of an Operator is increased.	<p>Please refer to section 1 of Aurizon Network's Policy Submission in relation to Relinquishment Processes to support productivity improvements for general commentary.</p> <p>These provisions are designed to allow both Aurizon Network and Access Holders to choose to reduce Train Paths to create additional capacity in the most cost effective way.</p>	Drafting
Schedule 7 – Pro Forma Access Interface Deed	Inclusion of a drafting note in clause 3 (Warranties by the Customer) which provides that " <i>Where the Customer is unable to give each of the following warranties, (because the Customer does not own the mine, does not own the coal, or is not entitled to the proceeds of sale) Aurizon Network intends to enter into individual deeds with relevant parties which can give these warranties, where each deed will include clauses from the Access Interface Deed relevant to that party.</i> "	<p>During the finalisation of UT4, the QRC requested that we include this drafting note for clarity in a future DAAU to amend UT4 – see QRC submission dated July 2016 on Aurizon Network's Amended 2014 Draft Access Undertaking, available at: http://www.qca.org.au/getattachment/086f7710-e824-495a-b8aa-0fb869ae10/QRC-submission.aspx</p> <p>For consistency, we have also incorporated this change in UT5.</p>	Clarification

Standard Train Operations Deed

Clause	Amendment	Rationale	Change Type
1.1	<p>Inclusion of the following definitions:</p> <ul style="list-style-type: none"> • Authorised Parking • Category 1 Reduced Operational Rights • Category 2 Reduced Operational Rights • Chargee • Chargor • Disputed Aspect • Former Interface Risk Provisions • Maximum Gross Mass • New Interface Risk Provisions • Non-Charging Party • Reference Tariff • Reference Tariff Provisions • Supplier 	<p>These are defined terms that are used in the Train Operations Deed but had not been defined in clause 1.1.</p>	Clarification
1.1 Definition relating to the Reduction of Nominated Monthly Train Services if Maximum Payload Exceeded (<i>new Clause 11</i>)	<p>Inclusion of a definition for Average Annual Payload</p>	<p>This definition has been included as it is used in the new clause 11 of the Train Operations Deed.</p> <p>Please refer to our comments in relation to clause 11 of the Train Operations Deed below.</p>	

Clause	Amendment	Rationale	Change Type
1.1 Definitions relating to the reduction of Nominated Monthly Train Services if the Nominal Payload of an Operator is increased (new clause 12)	Inclusion of the following definitions: <ul style="list-style-type: none"> • Foreseeable Costs and Detriments • Notice of Intention to Increase Nominal Payload 	<p>These definitions have been included as they are terms used in the new clause 12 of the Train Operations Deed.</p> <p>Please refer to our comments in relation to clause 12 of the Train Operations Deed below.</p>	
1.1	Amended definition of Force Majeure Event to delete the word “reasonable” and replace it with “reasonably”.	Correcting grammatical error.	Clarification
1.1	Amended the definition of Noise Code to refer to the <i>CQCN Noise Management Guideline</i>	The QR Code of Practice has been repealed. It is now the CQCN Noise Management Guideline.	
New clause 11	Inclusion of a new clause in relation to the Reduction of Nominated Monthly Train Services if Maximum Payload exceeded	<p>Please refer to section 1 of Aurizon Network’s Policy Submission in relation to Relinquishment Processes to support productivity improvements for general commentary.</p> <p>These provisions are consistent with clause 10 of the Access Agreement and are designed to allow Aurizon Network to reduce an Access Holder’s Nominated Monthly Train Services where an Operator consistently over a 12 month period exceeds the Maximum Payload for those Train Services.</p>	Drafting

Clause	Amendment	Rationale	Change Type
New clause 12	Inclusion of a new clause 12 in relation to the reduction of Nominated Monthly Train Services if the Nominal Payload of an Operator is increased.	Please refer to section 1 of Aurizon Network's Policy Submission in relation to Relinquishment Processes to support productivity improvements for general commentary. These provisions are consistent with clause 12 of the Access Agreement and are designed to allow both Aurizon Network and Access Holders to choose to reduce Train Paths to create additional capacity in the most cost effective way.	Drafting