

Engineering Assessment of Aurizon Network's Capital Expenditure Claim



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Client: Queensland Competition Authority

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Table of Contents

Executive Summary	ii
1.0 Introduction	1
1.1 Background	1
1.2 Scope of Review	2
1.3 Report Structure	2
2.0 The Aurizon Network Capital Expenditure Claim	3
2.1 Overview	3
2.2 Extent of Review	4
3.0 Assessment Methodology	6
3.1 Methodology for Assessment	6
3.2 Assessment Template	7
3.3 Project Documentation Assessment	9
3.4 Interviews	10
3.5 Interpreting this Report	11
4.0 Growth Projects	12
4.1 Large Projects	12
4.2 Summary of Findings for Growth Projects	21
5.0 Renewal Projects	22
5.1 Large Projects	22
5.2 Small Projects	24
5.3 Summary of Findings for Renewal Projects	43
6.0 Other Projects	44
6.1 Large Projects	44
6.2 Small Projects	45
6.3 Summary of Findings for Other Projects	46
7.0 Compliance with Safety and Environment Standards	47
7.1 Safety Performance	47
7.2 Environmental Performance	49
8.0 Summary of Findings	51
8.1 Key Findings	51
8.2 Costs Recommended for Rejection	52
8.3 Findings in Relation to the Review Process	52
9.0 Recommendations	55
Appendix A	
Individual Project Assessments	A
Appendix B	
Independent Review of A.03989 Bauhinia Electrification	B

Tables

Table 2 Report Structure	2
Table 3 Aurizon Network FY15-16 Capital Expenditure Claim (adjusted)	3
Table 4 Growth projects	4
Table 5 Other projects	4
Table 6 Renewal projects	5
Table 7 Documents (or equivalent information) expected to support a sound recommendation	9
Table 8 Project Documentation Assessment	10
Table 9 Review Summary example (North Coast Line)	11
Table 10 Summary of findings for Growth projects	21
Table 11 Moura Flood Works Scope	31
Table 12 Summary of findings for Renewal projects	43
Table 13 Network KPIs	45
Table 14 Summary of findings for other projects	46
Table 15 Safety audit findings	47
Table 16 Typical audit finding	48
Table 17 Summary of findings by project reviewed	51

Glossary

Acronym	Description
The Act	Queensland Competition Authority Act 1997
ALCAM	Australian Level Crossing Assessment Model
BPCT	BP Coal Terminal
BRTT	Below Rail Transit Time
CAPEX	Capital Expenditure
CESS	Civil Engineering Structures Standards
CQCN	Central Queensland Coal Network
CRIMP	Coal Rail Infrastructure Master Plan
FIAR	Feasibility Investment Approval Request
FY16	Financial Year 2015-16
IAR	Investment Approval Request
IDC	Interest during construction
ITP	Inspection and Test Plans
MTBF	Mean time between failures
mtpa	Million tonnes per annum
MTTR	Mean time to repair
NCL	North Coast Line
OHLE	Overhead Line Equipment
PEPA	Preliminary environmental and planning assessment
QCA	Queensland Competition Authority
RAB	Regulatory Asset Base
RCS	Rail Control Systems
RFI	Request for Information
RGTCT	RG Tanna Coal Terminal
RTU	Remote terminal unit
SOAs	Standing Offer Agreements
SWMS	Safe work method statement
TACA	Track and Civil Assets
t.a.l.	Tonne axel loads
TOA	Track Occupancy Authority
ToR	Terms of Reference
WHSMP	Work Health and Safety Management Plan
WIBL	Wiggins Island Balloon Loop
WICET	Wiggins Island Coal Export Terminal
WIRP	Wiggins Island Rail Project

Executive Summary

Aurizon Network Pty Ltd (Aurizon Network) is a part of the Aurizon Group of companies (Aurizon Group). Aurizon Network operates the below-rail network servicing coal mines in Central Queensland and these services are declared for third party access under the *Queensland Competition Authority Act 1997* (the Act).

The Queensland Competition Authority (QCA) has approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Region, and the Access Undertaking provides for the QCA to approve any additions to the RAB. The approval process involves annual assessments of Aurizon Network's Capital Expenditure Claims undertaken in accordance with the access undertaking, which stipulates that capital expenditure must be prudent in scope, standard and cost for acceptance into the RAB.

This report provides AECOM's recommendations in relation to Aurizon Network's Financial Year 2015-16 (FY15/16) Capital Expenditure (CAPEX) Claim, based on a detailed review of the scope, compliance with standards and cost of a selected sample of projects from the Claim. AECOM has applied a small team of specialist staff for this review, including rail engineers of various disciplines and cost management specialists, coordinated by its Advisory group. Where a potential conflict of interest was determined to exist, AECOM employed the services of Brimik Resources as a sub-contractor to act as an independent reviewer, with the approval of the QCA. A stand-alone independent report by Brimik Resources is attached in relation to one of the projects under review.

This review has primarily been a desktop review, with several rounds of requests for additional documentation to clarify particular issues in relation to the projects being reviewed. In total, over 15,000 documents were provided by Aurizon Network, a large percentage of which were found to be not relevant to the review. Where the documentation did not provide sufficient clarity, AECOM conducted a number of in-person interviews with key Aurizon Network staff to obtain evidence that would further support a recommendation. To ensure consistency of approach, each technical reviewer used a standard template for the review, which was designed based on the criteria required by the Access Undertaking.

Since its original Claim, Aurizon Network has withdrawn one project from its Capital Expenditure Claim, and reduced the claimed amount on two other projects. In consideration of this, the review has found that the majority of the projects included in the FY15/16 Capital claim satisfy the Access Undertaking criteria, and may, in our opinion, be accepted by the QCA. However, AECOM makes the following recommendations in regards to two of the projects:

- A.03742 Moura East – this project was found not to be prudent in standard and we recommend that the QCA consider not accepting \$1.1 million for a project that used non-standard material and is expected to have a significantly shorter service life.
- IV.00028 Autotransformer Replacement – this project was found not to be prudent in standard, as the works were non-compliant with AS2067. We recommend that the accepted value of this claim is reduced by \$0.1 million.

We have also made a number of recommendations based on observations made by our review team during their assessment that we believe could be adopted by Aurizon Network to improve their business processes and deliver improved outcomes for future Capital Claim reviews.

1.0 Introduction

1.1 Background

Aurizon Network Pty Ltd (Aurizon Network) is a part of the Aurizon Group of companies (Aurizon Group). Aurizon Network operates the below-rail network servicing coal mines in Central Queensland and these services are declared for third party access under the *Queensland Competition Authority Act 1997* (the Act). A map of Aurizon Network’s rail network is provided at Figure 1.



Figure 1 Aurizon Network’s Rail Network (Source: QCA)

An access undertaking, approved by the Queensland Competition Authority (QCA) and developed in accordance with the Act, provides a framework for the provision of access to Aurizon Network's rail network. Under the framework, Aurizon Network is responsible for providing, maintain and managing access to, and operations on, its rail network and associated infrastructure. The original access undertaking was developed in 2010, and was replaced on 11 October 2016 by the 2016 access undertaking.

The QCA has approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Network (CQCN), and the access undertaking provides for the QCA to approve any additions to the RAB. As such, the QCA conducts annual prudency assessments of Aurizon Network's Capital Expenditure Claims to determine if the capital expenditure should be approved for inclusion in the RAB. The prudency assessments are undertaken in accordance with the access undertaking, which stipulates that capital expenditure must be prudent in scope, standard and cost for acceptance into the RAB. Given the Capital Expenditure Claim refers to capital expenditure prior to 11 October 2016, this prudency review has been conducted in accordance with the 2010 access undertaking (the Undertaking).

AECOM has been engaged by the QCA to undertake this prudency assessment.

1.2 Scope of Review

Schedule A of the Undertaking details the conditions upon which the capital expenditure claimed by Aurizon Network should be accepted into the RAB. The scope of the review, therefore, covers a prudency assessment of the CAPEX in relation to its scope, standard and cost, based on Schedule A of the Undertaking and the Terms of Reference provided to AECOM on 23 November 2016.

In order to assess the prudency of Aurizon Network's FY15/16 Capital Expenditure Claim, AECOM has examined a sample of projects, selected in consultation with the QCA, from the Claim.

1.3 Report Structure

This structure of this report is outlined in Table 1.

Table 1 Report Structure

Main Report	
Section 1	Introduction
Section 2	The Aurizon Network Capital Expenditure Claim
Section 3	Assessment Methodology
Section 4	Growth Projects
Section 5	Renewal Projects
Section 6	Other Projects
Section 7	Compliance with Safety and Environmental Standards
Section 8	Summary of Findings
Section 9	Recommendations
Appendices	
Appendix A	Individual Project Assessments using the Template
Appendix B	Independent Review of A.003989 Bauhinia Electrification

2.0 The Aurizon Network Capital Expenditure Claim

2.1 Overview

Aurizon Network's FY15/16 Capital Expenditure Claim includes 87 projects totalling \$810.8 million, excluding interest during construction (IDC).

Following initial iterations of the Capital Expenditure Review, one project, *IV.00035 Callemondah Yard Spur 1 Connection*, has been removed from the FY15/16 Claim and deferred to later years, and another two projects have been reduced in value¹. To reflect Aurizon Network's adjustments, the Claim is now comprised of 86 eligible projects, with a total value of \$806.8 million. A breakdown of the adjusted Claim by project discipline is provided at Table 2.

Table 2 Aurizon Network FY15-16 Capital Expenditure Claim (adjusted)

Project Discipline	No. of Projects in Claim	Value of Projects in Claim, excl. IDC (\$ million)
Expansion Projects that add capacity to the existing network, such as track capacity or additional electrical capacity.	16	\$612.7
Track and Civil Assets (TACA) All assets related to the rail formation, corridor civil works, ballast, sleepers, rail and structures such as culverts and bridges.	25	\$127.4
Signalling and Track Side Systems (S&TSS) Assets required to control train movements, identify train location, operate rail points, operate active level crossing protection and to monitor and protect the below rail assets from rolling stock defects.	19	\$29.6
System Assets	9	\$20.0
Electrical Assets All elements of the electrical supply and distribution network that provides power for electric traction on the systems.	6	\$12.2
Telecommunications Assets These assets provide data linkages between field equipment and network control, the network control systems, digital and microwave radio systems, and the IT systems.	6	\$3.5
Corridor Assets Assets within or that access the rail corridor, but which are not directly part of the track structure, signalling or telecoms networks, or the electrical overhead systems. These assets include fencing and corridor security, environmental protection, corridor access and level crossings.	5	\$1.2
Total	86	\$806.6

¹ Letter to QCA entitled 'Capital Expenditure FY16 – Amendment,' 5 June 2017, Aurizon Network

2.2 Extent of Review

This review involved a sample of 29 of the 87 projects submitted in the Claim, representing 90% of the total value of the Claim.

The sample was selected in consultation with the QCA, and based on the nature of the project (growth or renewal), the main discipline involved (track and civil, electrical, telecommunications and structures) and project size (value). The full list of projects in the claim is presented in Table 3, Table 4 and Table 5 below, with the projects included in the sample for this review highlighted in yellow.

This report addresses the projects in decreasing order of cost, reporting in the following order:

- Growth projects (6)
- Renewal projects (21)
- Other projects (2).

Following initial iterations of the Capital Expenditure Review, one project, *IV.00035 Callemondah Yard Spur 1 Connection*, has been removed from the FY15/16 Claim and deferred to later years, and another two projects have been reduced in value². This includes Moura Flood Works, which has been reduced by \$0.6 million. To reflect Aurizon Network's adjustments, a prudence assessment has been made on 28 of 86 eligible projects, with a total value of \$806.8 million.

Table 3 Growth projects

Project	System	Asset Type	Included	Total
A.01731 Dingo to Bluff Duplication	Blackwater	Track	Y	\$207.5
A.02976 North Coast Line	Blackwater	Track	Y	\$155.8
A.03989 Bauhinia Electrification	Blackwater	Electrical Expansion	Y	\$149.2
A.02803 NI Wotonga Feeder Station	Goonyella	Electrical Expansion	Y	\$47.5
A.03686 WIRP1: Moura System Upgrade	Moura	Track		\$25.4
A.04043 WIRP Electrification Works	Blackwater	Electrical Expansion	Y	\$11.2
A.04003 NI GAPE x110	Newlands	Track		\$5.7
A.01631 Rocklands to Stanwell Duplications	Blackwater	Track		\$5.3
A.01552 Wiggins Balloon Loop	Blackwater	Track		\$4.1
A.03742 Moura East	Moura	Track	Y	\$1.08
A.03735 Bauhinia North Upgrade	Blackwater	Track		\$0.2
A.03323 NI Rolleston Upgrade Spur Line 9.75 Mtpa	Blackwater	Electrical Expansion		\$0.1
A.02827 NI Sth Goonyella (Lilyvale) Passing Loop	Goonyella	System Expansion		\$0.0
A.03473 GAP 50	Goonyella	System Expansion		\$0.0
A.03353 NI Dbct To Hpsct Second Road	System Wide	Track		-\$0.1
A.02603 NI Duaringa Feeder Station	Blackwater	Electrical Expansion		-\$0.4
All Growth Projects (AUGEX)				\$612.6
			% of projects in Claim reviewed by Value	93%
			% of projects in Claim reviewed by Number	38%

Table 4 Other projects

Project	System	Asset Type	Included	Total
A.03980 Project Pluto-Network Planning System Ph	Goonyella	Operational Systems	Y	\$14.4
A.04358 PACE-Possession Assessment & Capacity Ev	System Wide	Operational Systems		\$1.8
A.04565 Track Access System (TAS)	System Wide	Operational Systems	Y	\$1.6
A.04433 Network Billing System	System Wide	Operational Systems		\$0.5
A.03931 NR Train Control Disaster Recovery Project	System Wide	Network Controls		\$0.2
IV.00042 Open Track Project	System Wide	Operational Systems		\$0.0
A.02628 Coal System: Coal Loss Management	System Wide	Environmental		\$0.0
A.04404 Energy Efficiency Study	System Wide	Power Systems		\$0.0
A.04516 Aurizon Network Customer Portal	System Wide	Operational Systems		\$0.0
A.04591 Network SAP PS Enhancements	System Wide	Operational Systems		\$0.0
All Other Projects				\$18.6
			% of projects in Claim reviewed by Value	86%
			% of projects in Claim reviewed by Number	20%

² Letter to QCA entitled 'Capital Expenditure FY16 – Amendment,' 5 June 2017, Aurizon Network

Table 5 Renewal projects

Project	System	Asset Type	Included	Total
IV.00140 NO FY16 Network Maintenance Re-Rail Prog	System Wide	Rail	Y	\$33.3
IV.00025 NR Track Upgrade Program FY16	System Wide	Track	Y	\$25.6
IV.00033 NR FY16 Sleeper Renewal Program	System Wide	Sleepers	Y	\$10.4
IV.00032 NR FY16 Turnout Renewal Program	System Wide	Turnouts	Y	\$9.8
IV.00031 NR FY16 Structure Renewal Program	System Wide	Structures	Y	\$9.1
A.04547 NR Track Upgrade Program FY15	System Wide	Track		\$8.4
A.04221 NR Microwave Resilience System Upgrades	Blackwater	Network Controls	Y	\$7.4
IV.00052 Level Crossings FY16	System Wide	Level Crossings	Y	\$6.4
IV.00040 NR Train Detection Renewal Program	Goonyella	Network Controls		\$6.0
IV.00048 NR Formation Renewal FY16	System Wide	Formation / Ballast	Y	\$5.7
IV.00036 NR Bridge Ballast Renewals FY16	System Wide	Formation / Ballast	Y	\$5.6
IV.00034 NR Callemondah Yard Track Upgrade	Blackwater	Track		\$5.3
IV.00176 2015 Moura Flood Works	Moura	Formation / Ballast	Y	\$4.4
A.04622 OH Equipment Renewal FY14 to FY17 - Blac	Blackwater	Power Systems	Y	\$4.8
A.04320 NR Optical Fibre Transmission Network Upgrade	Blackwater	Network Controls	Y	\$3.8
IV.00029 NR Bridge Ballast Renewals FY15	System Wide	Formation / Ballast		\$3.6
IV.00035 NR Callemondah Yard Spur 1 Connection	Blackwater	Track	Y	
IV.00028 NR Autotransformer Renewal Program	System Wide	Power Systems	Y	\$3.0
A.04621 OH Equipment Renewal FY14 to FY17 - Goon	Goonyella	Power Systems		\$3.0
A.04231 NR Ethernet to Corner - SCADA Upgrade	System Wide	Network Controls	Y	\$2.8
IV.00041 Connors Range 3G Coverage	Goonyella	Telecoms Backbone	Y	\$2.5
IV.00006 NR Cooling Channel Bridge Upgrade (Phase 2)	Blackwater	Track		\$2.3
A.04339 NR Turnout Renewal Program 2014-15	System Wide	Turnouts		\$2.2
IV.00009 GIS Implementation	System Wide	Operational Systems		\$1.6
IV.00026 Transmission Renewal Program - Tranche 1	System Wide	Network Controls	Y	\$1.4
A.03465 NR CQ Coal Transformer Refurbishments	System Wide	Power Systems		\$1.4
IV.00010 NR CQCN Corridor Sec. Civil Works 14/15	System Wide	Corridor Access		\$1.3
A.04563 NR CQCN Structures Renewal Program FY15	System Wide	Structures	Y	\$1.1
A.04548 NR Weighbridge Renewal	System Wide	Weighbridges / Overloaders		\$1.0
A.02620 Dragging Equip Detectors: Coal Systems	System Wide	Network Controls		\$0.7
A.04429 NR Burnett Highway Bridge Protect System	Moura	Structures		\$0.7
A.03961 NR Operational Network LAN WAN Architecture	System Wide	Telecoms Backbone		\$0.6
A.04297 NR AzS600 Axle Counters Replacement	System Wide	Operational Systems		\$0.4
A.04313 NR Gauge Face Lubrication Asset Renewal	System Wide	Track		\$0.3
A.04371 DC Power Supplies CERs	System Wide	Power Systems		\$0.2
IV.00013 NR Points Machine Improvement Project	System Wide	Network Controls		\$0.3
A.03978 NR Optical Fibre Transmission Network Upgrade	Blackwater	Telecoms Backbone	Y	\$0.2
A.04187 NR CSEE Track Circuit Upgrade Rocklands	Blackwater	Operational Systems		\$0.2
A.04321 NR Central Coal UPS Upgrade Project	System Wide	Operational Systems		\$0.2
A.04463 NR Dynamic Speed Indicator Safety	System Wide	Network Controls		\$0.1
A.04366 NR Level Crossing Upgrades 13/14 FY	System Wide	Level Crossings		\$0.1
A.04111 NR Dual Telemetry Upgrade	System Wide	Telecoms Backbone	Y	\$0.1
IV.00008 NR Saraji S122 Signal Movement	Goonyella	Network Controls		\$0.1
A.04252 NI Rolleston Flood Protection Stage 2	Blackwater	Formation / Ballast		\$0.1
A.04254 NR Section Insulator Renewal	System Wide	Power Systems	Y	\$0.1
A.03934 CQ Coal Formation Strengthening Project	System Wide	Formation / Ballast		\$0.0
IV.00001 NR Asset Protect. Systems: Braeside WILD	System Wide	Operational Systems		\$0.0
A.04145 NR Newlands Culvert Upgrade Project	Newlands	Structures		\$0.0
IV.00014 NR UTC Upgrade Program	System Wide	Network Controls		\$0.0
A.04074 POSS Points Condition Monitors	System Wide	Operational Systems		\$0.0
A.04307 Culvert Asset Renewal Project Blackwater	Blackwater	Structures		\$0.0
A.04308 NR Culvert Asset Renewal Project Gnyella	Goonyella	Structures		\$0.0
A.03372 Fist Fastened Sleeper Upgr: Coal Systems	System Wide	Track		\$0.0
A.04338 NR IAMPS Upgrade	System Wide	Telecoms Backbone		\$0.0
A.04044 NR Upgrade CQ Coal Sys Fencing 2012/13	System Wide	Fencing & Corridor Security		\$0.0
A.04612 NR Formation Strengthening FY15	System Wide	Formation / Ballast		\$0.0
A.02816 NR CQ Coa: Level Crossing Investigations	System Wide	Level Crossings		-\$0.1
A.04322 NR CQ Access Roads - Accelerated Program	System Wide	Corridor Access		-\$0.2
IV.00002 NR Sleeper Renewal Program FY15	System Wide	Sleepers		-\$0.2
A.04511 Accelerated Culvert Asset Renewal Project	System Wide	Structures		-\$0.4
A.04190 NR Digital TI21 Track Circuit Upgrade Cop	System Wide	Power Systems		-\$1.1
All Renewal Projects (REPEX)				\$175.6
		<i>% of projects in Claim reviewed by Value</i>		78%
		<i>% of projects in Claim reviewed by Number</i>		34%

3.0 Assessment Methodology

3.1 Methodology for Assessment

For this engineering assessment of Aurizon Network’s FY15/16 Capital Expenditure Claim, the selected sample of projects was evaluated using the methodology summarised in Figure 2. This review has primarily been a desktop review, with several rounds of requests for additional documentation to clarify particular issues in relation to the projects being reviewed. In total, over 15,000 documents were provided by Aurizon Network, a large percentage of which were found to be not relevant to the review. Where the documentation did not provide sufficient clarity, AECOM conducted a number of in-person interviews with key Aurizon Network staff to obtain evidence that would further support a recommendation.

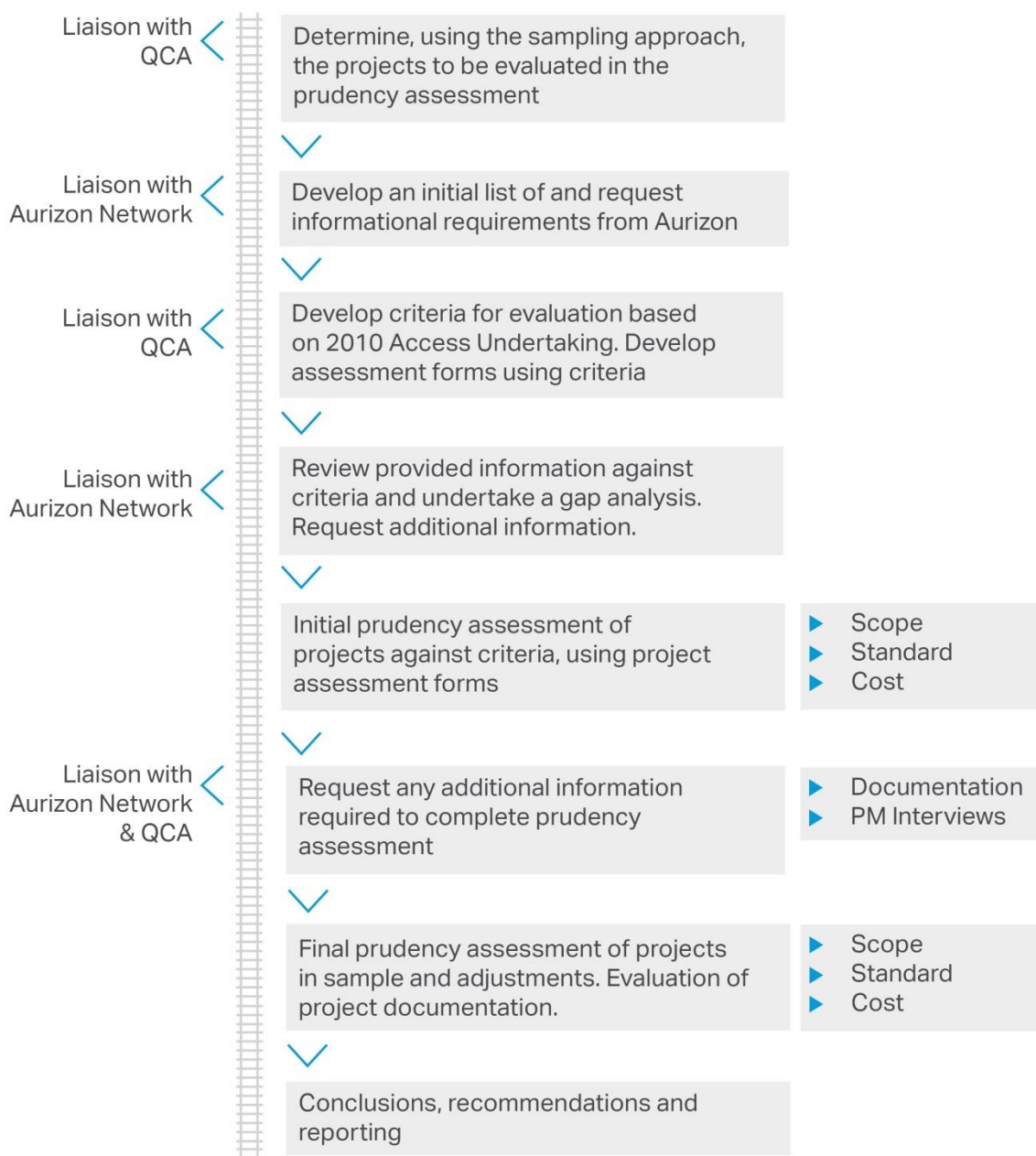


Figure 2 Project Methodology

3.2 Assessment Template

To establish consistency in the technical assessment, a standard project assessment template was developed using criteria derived from the Undertaking. Each member of the team conducting the assessments was briefed on the format of the assessment and provided with direction on how to complete the forms. In addition to ensuring a consistent approach to the assessments by all reviewers, the standard assessment template is a key mechanism by which AECOM has demonstrated transparency in its review.

The completed forms form the basis of this report, and are attached in Appendix A.

The criteria used in this assessment and included in the standard template were developed in consultation with the QCA and is based on the Schedule A of the Undertaking and the Terms of Reference (ToR). These criteria are outlined in the following sections.

3.2.1 Scope

SCOPE	<p>Was the project:</p> <ul style="list-style-type: none"> ▶ Below-rail infrastructure? ▶ Commissioned in FY15-16 (or earlier)? ▶ Capital Expenditure and not Maintenance? ▶ Not covered by other claims? ▶ Fully funded by Aurizon Network? <p>Was the expenditure:</p> <ul style="list-style-type: none"> ▶ Pre-approved by QCA? ▶ Pre-approved by Customer Group vote? <p>For Expansion Projects, was the project:</p> <ul style="list-style-type: none"> ▶ Aligned with Aurizon Network's Master Plans? ▶ Reasonably required to accommodate Access Agreements ▶ Reasonably required to accommodate Reasonable Demand? <p>For Renewal Projects, was the project:</p> <ul style="list-style-type: none"> ▶ Reasonably required with regards to the age and condition of the asset? ▶ Reasonably required to reduce risk? ▶ Reasonably required to comply with legislation? ▶ Consistent with the Asset Management Plan?
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3.2.2 Standard

STANDARD	<p>Was the standard of works:</p> <ul style="list-style-type: none"> ▶ Pre-approved by QCA? <p>Were the works:</p> <ul style="list-style-type: none"> ▶ Consistent with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels (to the extent that the standard of adjacent or existing infrastructure has been accepted as reasonable)? <p>Were the works of a reasonable standard to meet the requirements of the Scope, and not overdesigned, with regards to:</p> <ul style="list-style-type: none"> ▶ Requirements of Railway Operators and compliance with Access Agreements? ▶ Current and likely future usage levels? ▶ National Codes of Practice? ▶ Requirements of other relevant Australian design and construction standards ▶ Aurizon Network's design standards contained within its Safety Management System (and which is accepted by the Safety Regulator)? ▶ All relevant legislation, including requirements of any authority?
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3.2.3 Cost

COST >

Were the costs:

- ▶ **Reasonable for the Scope and Standard of works done?**
 - Did the costs align to the Coal Rail Infrastructure Plan?
 - Did the costs align to scale, nature and complexity of the project?
 - Was there a material difference between budget and actual costs (i.e. >5%)?
 - What proportion of this difference should be considered a capital cost?
- ▶ **Does the project demonstrate value for money?**
 - With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?
 - With regards to sourcing of labour?
 - With regards to sourcing of equipment?
 - Were alternatives considered to minimise whole of life costs?
 - Was the procurement methodology consistent with approved procurement?
- ▶ **Was the project effectively managed with regards to:**
 - Appropriate governance structure for size and nature of project?
 - Safety during construction and operation?
 - Environmental approvals and compliance?
 - Compliance with legal and authority requirements?
 - Minimising disruption to operation of train services during construction?
 - Were access holder requests appropriately managed?
 - Minimising whole of life costs including future maintenance & operating costs?
 - Minimising total project costs?
 - Did project elements align with other elements in the supply chain?
 - Did the project meet contractual time frames?
- ▶ **At the time the project was approved, was the program appropriate, with regards to:**
 - Contingency allowed for?
 - Project management costs?
 - Risk allowances
 - Timing/delivery program?
 - Ordering and storage of equipment?
- ▶ **Cost allocations:**
 - Are there multiple beneficiaries to the project?
 - If yes, were costs allocated appropriately for end users?

3.3 Project Documentation Assessment

Each project has been evaluated for prudence in terms of scope, standard and cost, and recommendations made based on:

1. Review of project documentation supplied by Aurizon Network, supplemented with an iterative request for information (RFI) process used in an attempt to obtain further information
2. Interviews with key Aurizon Network staff where the information provided was not sufficient
3. The professional judgement of our technical reviewers, where the information available was not sufficient.

In this context, the use of project documentation is the preferred and best practice, but not the sole, means of evaluating project prudence.

A list of documentation that we would expect to be available to support recommendations of prudence in relation to capital projects is listed in Table 6. For example, we consider that the rationale for every significant renewal project should be available in a strategic asset management plan (or similar document) for that class of assets, and that an approved business case should be available for significant growth projects.

We note that the list provided should be seen as identifying topics that require adequate documentation, rather than a requirement for specific documents.

Table 6 Documents (or equivalent information) expected to support a sound recommendation

Prudence of Scope	Prudence of Standard	Prudence of Cost
Investment Approval Request	Investment Approval Request	Investment Approval Request
Approved business case (growth)	As-built drawings	Approved business case
Project feasibility analysis (growth)	Design drawings	Project Management Plan
Project plan	Project completion report	Project Program
Project completion report	Detailed design report	Procurement recommendation
Detailed design report	Certificate of practical completion	Tender recommendation or Exemption from Tendering document
Condition assessment report (renewal)	Signed-off inspection and test plans	Evidence of previous claims
Asset Management Plan (renewal)	RPEQ Certification	Evidence of risk allocations / contingencies
Access Holder Request	Photographs of completed works	Pre-Tender Estimates
Evidence of customer approval (60% or more)	Aurizon Standard Specifications and drawings	Project completion report
	Aurizon Policy document	
	Post-Implementation Review	

We have assessed and reported the quality and range of documentation made available by Aurizon Network for each project under our review. In summary:

- Where the documentation provided was alone sufficient to make sound recommendations, we have assessed the quality of documentation as high. This rating indicates that all the information required to make the recommendation was documented and available, to a sufficient level of quality.
- Where a proportion of the expected documentation was provided at a sufficient quality, but the available information, supplemented by interviews, informal documentation and/or professional judgement, supported a conclusion on prudence, we have assessed the quality of documentation as medium.
- Where the documentation provided was inadequate in range or quality, and our reviewers were reliant on professional judgement to make sound recommendations, we have assessed the quality of documentation as low.

These criteria are summarised in Table 7.

Table 7 Project Documentation Assessment

Quality and range of documentation	Legend	Description
High		Sufficient documentary evidence to support and demonstrate a recommendation.
Medium		Incomplete documentary evidence, but interviews, informal documentation and/or professional judgement support a recommendation.
Low		Limited documentary evidence, but professional judgement supports a recommendation.

There are a small number of instances in this assessment where prudence of cost has been recommended, supported by a 'low' level of documentation quality.

In these instances, benchmark data from comparable projects has been used to determine whether the project cost is reasonable, other than for works that had been competitively tendered. Works that had been competitively tendered have been assessed as prudent because the tender process is assumed to have provided the optimal value for money at that time.

Where the cost summaries provided suggested that the project costs fall outside normal industry variability as indicated by benchmarking, they were reviewed in more detail to ascertain if the variances were justified by the scope, size, complexity and locality of the project.

3.4 Interviews

In instances where project documentation was insufficient to provide a recommendation, AECOM conducted interviews with Aurizon Network representatives in order to apply more rigour to our assessments. A summary of the interviews conducted where information provided in the interview has been relied upon for a recommendation is provided at Table 8.

Table 8 Summary of key interviews

Project	Date	Outcome
IV.00032 - NR FY16 Turnout Program	28-Apr-17	An interview was conducted with the Civil Asset Manager to understand the process of scoping and prioritisation of works. Additional information received for C16 major component replacement.
IV.00033 - FY16 Sleeper Renewal Program	28-Apr-17	Aurizon confirmed that used fist sleepers have not been installed at any location as part of this program of works.
IV.00048 - NR Formation Renewal FY16	28-Apr-17	Aurizon provided the organisational structure and role description for the district engineer who defines the scope and criticality and the civil asset manager who makes the determination or prioritisation. Additional information provided.
IV00052 - Level Crossings	28-Apr-17	Provided clarification on the determination of intervals for inspection and ALCAM assessment works
A.03742 - Moura East	09-May-17	Clarified that the capital claim is for: <ul style="list-style-type: none"> - Close out activities (\$97,243) - Unclaimable insurance costs (\$1,017,599)

Project	Date	Outcome
A.04043 - WIRP Electrification	09-May-17	Clarification on design scope
A.02976 - North Coast Line	09-May-17	The use of additional track drainage was not installed. A monitoring program was undertaken.
A.04043 - WIRP Electrification	10-May-17	Confirmed that civil works noted in SAP relate to the access road (phone call)

3.5 Interpreting this Report

An example of a review summary for a project is provided at Table 9. As demonstrated, prudence of scope, standard and cost are denoted by ticks or crosses, and as mentioned in the previous section, the level of documentation quality for the assessment is denoted by the colours of the cells.

In the example, the project is found to be:

- Prudent in scope with a high level of documentation quality
- Prudent in standard with a high level of documentation quality
- Prudent in cost with a medium level of documentation quality.

And there are no recommended amendments to the claimed amount.

Table 9 Review Summary example (North Coast Line)

Review Summary	Scope	✓	Capital Expenditure Claim	\$155.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$155.8M

4.0 Growth Projects

4.1 Large Projects

4.1.1 A.01731 Dingo to Bluff Duplication

Project Overview

The Dingo to Bluff Duplication includes the design and construction of a 23.900km duplication of the Blackwater System’s Central Line between Dingo and Bluff.

The duplications are designed for the current Blackwater configuration, and have a comparison train length of 1,685m and a holding length of 1,835m. The formation and track is designed for 26t axle loads with minimum 1:16 turnouts and 4m access roads. The rail infrastructure is electrified with Rail Control Systems (RCS) Signalling track circuits and axle counters. Structures include bridges at Springton Creek, Charleville Creek and Walton Creek. Open level crossings are at Pinegrove at 153.951km, Quarry Eastranie at 163.860km and Rockview at 166.790km.

There is no allowance for the undertaking of any above rail operations such as crew changing and provisioning.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$207.5M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$207.5M

The scope of the project included four track duplications between existing passing loops. The project is part of a larger program of works for the Wiggins Island Coal Export Terminal (WICET) project, and was included as part of the Wiggins Island Expansion Master Plan in 2009.

The Investment Approval Request (IAR) outlines that the completion of four duplications was required to meet the Wiggins Island Rail Project (WIRP) Stage 1 committed tonnage, [REDACTED] and finalise the duplication of the Blackwater System. Aurizon Network’s FY15/16 Capital Expenditure Report outlines that

[REDACTED]

[REDACTED]

The IAR outlines further that Aurizon Network is contractually obligated to provide a service with a Below Rail Transit Time (BRTT) no greater than 127%³. This requirement has been confirmed by sighting [REDACTED]

[REDACTED]

³ BRTT is a transit time performance indicator that is calculated as:

- The relevant nominated section run times in the direction of travel as specified in the Train Service Entitlement
- Identified Below Rail Delays
- Time taken in crossing other trains to the extent that such time is not contributed to by Above Rail causes or Force Majeure Events
- Delays due to Operational Constraints directly caused by the activities of Aurizon Network maintaining the Rail Infrastructure or due to a fault or deficiency in the Rail Infrastructure provided such delays are not contributed to by Above Rail causes or Force Majeure Events.

The percentage is calculated by dividing the Below Rail Transit Time by the relevant nominated section running times (in the direction of travel) as specified in the Train Service Entitlement (Aurizon Network Public Quarterly Report, July – September 2016)

[REDACTED]

[REDACTED]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Given that Dingo to Bluff is a growth project that was aligned to the Coal Rail Infrastructure Master Plan, and was required to accommodate reasonable demand, in line with WIRP1 committed tonnages, the scope of the project is considered prudent. The documentation quality to inform this assessment is assessed as high.

Following review of WIRP – Stage 1 Scope Book and the completion documentation, the works were found to be consistent in standard with existing Aurizon standards and configuration of adjacent infrastructure. In addition, approved variations to standard practice (VSP) are in line with normal process for construction works within a brownfield corridor that interface with existing operational assets. This project is considered prudent in standard with a high level of documentation quality, as works were consistent with appropriate standards.

With regards to cost and procurement, evidence of a competitive tender process was sighted for early works, civil works and signalling packages. As an example, the civil works contractor was selected from five contractors and the contract was awarded to Abigroup based on price and scoring. This procurement process was in accordance with Aurizon Group procurement guidelines, and for the civil works, the competitive process reduced costs by [REDACTED].

This project was part of a larger program of works (the WIRP integration), which provided contingency and risk allowances for all the projects involved in the program. This project fell within financial tolerances, and is considered prudent in cost. The documentation quality to inform this assessment of cost has been assessed as medium.

4.1.2 A.02976 North Coast Line (NCL)

Project Review

The North Coast Line project comprises rail infrastructure works for the following areas:

- Wiggins Island Coal Export Terminal (WICET) Spur
 - A crossover to provide access to Aldoga holding road.
 - WICET spur connection to allow a BW train length to be held on the spur clear of the entry to the balloon loop.
- Yarwun Ballast Siding
 - Relocation and reconfiguration of Yarwun ballast siding to 2 siding tracks, each with a holding length of 382m. The relocated siding allows for ballast movements to the north and south.
- Aldoga Holding Road
 - A holding road to allow 1 no. BW train to be held off the main line when required for management of train paths.
 - The holding road is to connect to the NCL up main at 555.75km and 553.51km approx.
 - Suitable facilities for train crews to entrain/detrain 24 hours per day and to apply handbrakes.
- Kabra Holding Roads
 - Kabra holding roads shall be located between 17km to 21km Central Line. The holding roads will be used to dwell trains when transitioning to and from 15 minute train pathing between Callemondah and Kabra and 20 minute train pathing between Kabra and Bluff.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$155.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$155.8M

The scope for North Coast Line project included four components of rail infrastructure works, and is part of the wider WIRP program of works – discussed in Section 4.1.1 above. The scope, as outlined in the WIRP Scope Book, was reduced from the initial NCL triplication as proposed in the IAR. The change of works from North Coast Line triplication to WICET Spur, Aldoga Holding Road, Yarwun Crossover, and Yarwun ballast siding has been suitably justified to meet the reasonable demand requirements with reduced scope, as demonstrated in the WIRP Deed Scope Variation.

Aurizon Network has undertaken capacity modelling and gained WIRP customer acceptance of two holding roads at Kabra. We note that:

- The actual customer acceptance has been redacted so we cannot confirm that it met the threshold levels required.
- The capacity modelling document, while providing evidence of the need for two holding roads, did not provide any detail on the broader network in which the Kabra Holding Roads options were assessed. It cannot be confirmed from the document if other WICT Stage 1 network enhancements were included in the capacity model or not.

[Redacted content]

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Given that North Coast Line is a growth project that was aligned to the Coal Rail Infrastructure Master Plan and was required to accommodate reasonable demand in line with WIRP1 committed tonnages, the scope of the project is considered prudent. The documentation quality to inform this assessment of scope is medium as the management of scope change was not well documented.

The works undertaken were as per Aurizon Standards as defined in the WIRP Stage 1 Scope Book, and approved variations to standard practice were in line with the normal process for a Brownfield corridor.

This project is considered prudent in standard and documentation to support this finding was of a high quality.

The Project Completion Report (January 2016) shows a revised budget of \$268.0 million. The project was delivered \$99.0 million under budget, mostly realised in the civil works (\$35.0 million) and unused contingency (\$59.0 million). Tender evaluation assessments were sighted for signalling design and construction, noting the award to Aspect3 Alliance, and indicating that the project was competitively tendered to achieve value for money.

This project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

4.1.3 A.03989 Bauhinia Electrification

Project Overview

The Bauhinia Line is also known as the Rolleston Line owing to its direct service requirements to Rolleston Mine. The project scope extends to the electrification of the existing 107km Bauhinia rail spur, from Rangal south to the Rolleston mine, for the purpose of providing access to electric traction for haulage of forecast capacity. Construction of the Bauhinia Electrification Project commenced in 2013 and was completed in 2014 with first electric traction services in December 2014. The project scope included:

- Civil works for electrical masts and access
- Feeder station on Struan Road
- Power systems infrastructure construction inside of existing rail corridor:
 - Track sectioning yard
 - Trackside autotransformer and power supply cubicles
 - Overhead traction wiring system to the existing Bauhinia rail spur, inclusive of the Rolleston mine loop and Memooloo passing loop
- Transmission line construction from Struan Road Feeder station to Ergon transmission infrastructure.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$149.2M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$149.2M

The assessment of prudence of scope and standard has been undertaken by Brimik Resources. From Brimik's report:

'The scope is considered prudent. The documentation quality to inform this finding is assessed as high. Alternate delivery optioning conducted, assessed and selected. There is demonstration of an investment assessment incorporating of life cycle cost and forward demand utilising the Bauhinia Line to service demand, specifically Rolleston Mine forecast capacity. The scope satisfactorily delivered the outcome of facilitating Electric haulage and met with terms sought by the access seeker.

In terms of assessing prudence with regard to be being "reasonably required", the information provided demonstrates the scope is considered prudent. The documentation quality to inform this finding is assessed as Medium-High. Reasonably required under obligations requested under an access agreement. The investment is evidence supported by an access agreement to operate electric traction. The investment governance process was consistent with an investment of this magnitude.

The demand profiles as available at the time of investment (2009 CRIMP, ABARES, Queensland Coal Report, Coal volume actuals and forecast) indicate the capacity may have been accomplished with non-electric traction until at least 2015-16.

The standard is considered prudent. The documentation quality to inform this finding is assessed as high. Stress testing evident for statutory and regulatory compliance. The engineering standard represents equal to the associated infrastructure and that previously endorsed by QCA assessments. Methods demonstrate market testing and innovation assessed and selected. The project management is considered to be within boundary of industry standards.'

Project delivery and competitive tendering for this project reflect cost efficient practices. The project budget of \$198.1 million was noted in the funding request (dated March 2013), and once awarded to Laing O'Rourke, was reduced to \$171.6 million. The project was subsequently delivered under budget and is considered prudent in cost.

4.1.4 A.02803 Wotonga Feeder Station

Project Overview

This project involved the design and construction of the Wotonga Feeder Station Project which includes a Feeder Station and two Track Sectioning Cubicles.

The Wotonga Feeder Station was required to support the Goonyella system expansion from 129mtpa to 140mtpa.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$47.5M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$47.5M

Section 3.1 of the 2010 Access Undertaking notes that:

'Aurizon Network may seek pre-approval of the scope or the standard of a capital expenditure project, or of a procurement strategy...The QCA will accept the scope of a capital expenditure project as prudent if: it is general expansion capital expenditure and the scope of the capital expenditure has been accepted by a Customer Group in accordance with Clause 3.2.2(f).'

Clause 3.2.2(f) outlines the Customer Group Voting Process, whereby Aurizon Network may seek acceptance of a project's scope by written request to each member of the Customer Group. Customer Group acceptance of scope is deemed to have been received if at least 60% of the Group accepts the scope of the proposed capital expansion projects.

Wotonga Feeder Station was one of nine projects identified in the Coal Rail Infrastructure Master Plan that was pre-approved by the QCA based on a Customer Group vote. A letter from the QCA entitled 'Regulatory Pre-approval of Scope for 2010 Coal Rail Infrastructure Master Plan' outlines the decision by the QCA to approve the scope of works of these nine projects, which are listed in Appendix A of the letter. The QCA Regulatory pre-approval of the scope letter states that

'at least 60% of customers, by volume, did not oppose the scope of the project and that the vote was conducted in accordance with the 2010 Access Undertaking.'

The Wotonga Feeder Station, therefore, satisfies the pre-approval conditions of the 2010 Access Undertaking, and can be considered prudent in scope. Documentation was of a high quality.

The project works were carried out to Aurizon Standards and Specifications. High voltage (HV) switchgear, traction power transformers, autotransformers and switch-room buildings have been procured in accordance with the Aurizon Specifications. Traction power substations were designed in accordance with AS2067 – High Voltage Substations above 1kV AC. Inspection and Test Plans (ITP) were reviewed to ensure that the substations were tested in accordance with Aurizon Network's procedure for the Commissioning of Aurizon Network's Power Systems Equipment.

The TrackPower Alliance Best Value Report outlines the State, National, and Aurizon Standards that the project adhered to, and as such, the project is considered prudent in standard with high documentation quality.

The works were partially procured through an existing 'alliance' and partially competitively tendered via standing offer agreements (SOAs). No documented evidence has been viewed which demonstrates that competitive pricing was carried out for the alliance or that an alternative project delivery structure was taken into consideration. However, as the alliance was already operational, documentation, contracts and frameworks were already in place and administration costs were minimised. The project was completed under budget and on-time and demonstrated value for money, but we consider that the Alliance should have been able to use a standard design template instead of having to produce another template as detailed in the TrackPower Alliance Best Value Report.

The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

4.1.5 A.04043 Wiggins Island Rail Project (WIRP) Electrification Works

Project Overview

The rail infrastructure of Wiggins Island Balloon Loop (WIBL) is a key component of the coal supply chain, linking more than 55 mines to ports on the Queensland coast. Together with WIBL’s rail network, the Port of Gladstone’s RG Tanna and Barney Point coal export terminals currently service mines in the southern Bowen Basin and Surat Basin regions.

Existing port terminals cannot be expanded due to physical constraints. To support planned growth, the region’s mining companies planned to develop a new coal export terminal at the Port of Gladstone – Wiggins Island Coal Export Terminal (WICET). WICET is planned to be developed in stages by a consortium of 16 coal companies and have an ultimate capacity of 140Mtpa.

In conjunction with the development of the WICET and the need to increase rail capacity to meet the growing demand for coal transport from mine to ship, WIBL will deliver a series of capacity building projects to link mines to the new coal export terminal. WIBL’s rail expansion program will accommodate the expected tonnage increase and includes a number of interdependent sub-projects spread across the Blackwater/Moura coal systems. The future expansion of the Blackwater/Moura system will be staged in accordance with the needs of the mining industry and the staged expansion of WICET.

The claim is for the electrification of the Wiggins Island Balloon Loop and the Wiggins Island Coal Export Terminal (WICET) spur line. The claim covers the design, construction and commissioning of the civils, traction distribution and power systems infrastructure works.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$11.2M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$11.2M

This project is a growth project which is part of a larger program of works (the WIRP) intended to support the WICET development. The claim is for the electrification of the WIBL and the WICET spur line. It covers the design, construction and commissioning of the civils, traction distribution and power systems infrastructure works.

The electrification of the balloon loop is not mentioned in the Coal Rail Infrastructure Master Plan (CRIMP). Section 5.2.2 of the CRIMP refers only to the concept of the WICET and how it will support any major increases of traffic beyond future committed levels for RG Tanna Coal Terminal (RGTCT), BP Coal Terminal (BPCT) and Gladstone Power Station.

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

[Redacted text block]

We note that some parts of the Wiggins Island Rail Project Stage 1 Scope Book are inaccurate. Section 3.1.5 specifies that the traction distribution scope should include a 50kV autotransformer

system (25-0-25kV) throughout the entire loop, while the Sectioning Diagram C-S-419 shows that it is in fact a 25kV system throughout the balloon loop, indicating that the project has not been delivered to the Scope Book. However, AECOM understand that it is normal practice to use 25kV systems for balloon loops and that the variation from scope is appropriate. Section 4.1.4 of the Scope Book requires the supply, install, test and commission of new autotransformers, power supply cubicles and alternator. AECOM believes that this infrastructure was not required because it is covered in Section 3.4.1 of the Scope Book. We note that no duplication of these works has been carried out by Aurizon Network.

██████████, we consider that the project works are reasonably required to accommodate reasonable demand. As such, this project is considered to be prudent in scope. The quality of information to support prudence of scope is medium as informal information has been used to reach a conclusion.

Various aspects of the as-built documentation for WIBL have been reviewed to gain confidence that the design is in accordance with the Aurizon Network electrification standards. Inspection and Test Plans have been reviewed to ensure that the infrastructure was tested in accordance with the Aurizon Network Commissioning Procedure before being put into service. Limited design documentation has been sighted for the WICET spur line. Upon review of an aerial photograph of the WICET spur line, we can determine that standard Aurizon Network Autotransformer site design has been used. This standard design appears to be in accordance with *AS 2067 – Substations and High Voltage Installations Exceeding 1kV AC*. This project is considered prudent in standard. The documentation quality used to inform this assessment is considered low.

Actual costs are noted to be \$1.9 million less than budgeted. Costs are considered appropriate for mass foundations, autotransformer site civil works, access roads, power systems and distribution. Evidence of risk identification and management was sighted in the IAR, however the IAR does not include contingency for this specific project. Given the works are part of a larger program, and the project has been delivered within the allocated budget, this project is considered prudent in cost with a medium level of documentation quality.

4.1.6 A.03742 Moura East

Project Overview

The Moura East project was identified as a key infrastructure upgrade to the Moura Line to increase reliability and availability to the Moura Line with the increase in coal to be transported on the network as a result of the WIRP Stage 2 project. The project area is located in expansive black soils and prone to inundation (flooding) during rain events resulting in both ballast washout and subgrade/ capping failure.

The Moura East project was to provide formation and flood immunity improvements to the section of track between - 131.52km to 133.58km (2064m).

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$1.1M
	Standard	✗	Impact of findings on Claim	\$1.1M
	Cost	✓	Total accepted	\$-

The scope of the Moura East project is assessed in several parts:

1) Moura East Upgrade

The original Moura East project was part of the Wiggins Island Rail Project Stage 1 (WIRP1) which was to deliver an increased line capacity on the Moura Short Line from ██████████. The increase of ██████████ was due to the expansion of the Cockatoo Coal Baralaba Mine. The coal was to be loaded via a new balloon loop to be located near Moura Mine at approximately 186km on the Moura Short Line.

- [REDACTED]
- [REDACTED]

Given that the project works align with the CRIMP, were reasonably required to accommodate the requirements of relevant Access Agreements and/or to accommodate Reasonable Demand, this aspect of the Moura East Scope is assessed as prudent.

2) Flood Works

We understand that at the time of the flood event the offline section of track had been laid and ballasted however the flood protection rock documented in the design had yet to be placed.

Construction was well progressed (albeit incomplete) by January 2013 when significant rain fell upstream of the project area into the Callide Creek catchment(s) resulting in a significant flood event which overtopped the constructed works resulting in substantial damage.

Work was undertaken to repair the section of new track damaged by the flooding including capping layer replacement. These works are considered reasonable and are assessed as prudent.

3) Close out activities

A small percentage of this capital expenditure claim provided for capping layer analysis, close out activities and project support.

This portion of scope is considered prudent and informs the action when dealing with substandard capping layer materials (discussed below).

4) Rejected insurance claim.

The remaining \$1.02 million of the claim for this project is the proportion of a \$2.70 million insurance claim for the Moura East works which was rejected by Aurizon Network's insurer, according to the Aurizon Network Briefing Paper. An email from Aurizon Network, dated 16 May 2017, referred to this issue:

'This claim was contentious and was the subject of dispute between AN and its insurers. The claim was ultimately settled after adjustments due to application of a policy condition – which in summary, related to a limitation on exposed earthworks per segment. However the majority of costs adjustments related to the contractors being given the repair works on a cost + basis – which subsequently was independently adjusted as being in parts, unreasonably and/or unsubstantiated.'

The prudence of this scope of work does not appear to be an issue in this case. The question appears to be whether the QCA should accept a claim that was clearly considered by Aurizon Network to be an insurance issue, but was rejected by the insurer. This is not a scope or cost issue, and we believe the QCA should determine whether it is appropriate for it to approve these costs.

The Moura East scope items 1, 2 and 3 are assessed as prudent. The documentation quality to inform the assessment of scope is medium. AECOM is unable to comment on insurance issues.

Our review of the documents provided for the evaluation of the project standard identified that the capping layer material used for the flood repairs did not comply with the specification for the project or Aurizon's standards. Aurizon Network's document "Non-conforming capping layer material on SP2 on Moura Line" (dated 23/01/2015) notes that the capping layer material used for the flood repairs did not comply with the specification for the project or Aurizon's standards current at the time. Page 9 of the Jamestone report, attached as an appendix to the aforementioned report, notes the following:

'based on the available data described above and previous experience with similar materials, it is anticipated that the CBR 45 capping layer materials that were sourced from the Yalkara Quarry could become inadequate for the intended use in about 15 to 25 year period from the time of placement. This estimate is based on 70% to 50% reduction in service life compared to fully compliant materials from non-sedimentary source with predicted service life of 50 years.'

A proposed solution of providing additional track drainage was noted. Aurizon Network advised in an interview that the additional drainage has not been installed because of uncertainty over the benefit of the drainage works, the cost of the additional works and the impact on train operations through an increased number of possessions. Instead, Aurizon Network has implemented a yearly assessment program to review standard frequency condition monitoring of the formation and track structure. The scope of the condition monitoring "Civil Engineering Proposal – Monitoring program for the performance of non-conforming capping layer material on Moura Line at location of WIRP1, SP2" dated 8/02/2016.

The standard of the works installed is not reasonable as the expected life of the formation could be reduced by more than 50%.

Based on the documents provided, we conclude that the standard of works is not prudent, and suggest that a deduction of between 50% and 70% be made to the \$2.70 million flood works claim to reflect the expected reduction in service life due to the use of non-standard materials.

We note that the CAPEX included in the FY15/16 Claim is \$1.1 million, which is less than the suggested deduction. Aurizon Network acknowledges that the capping layer does not conform to standard and notes that the original estimate for the procurement and placement of the capping layer is \$477,112.

Additional costs will occur when the formation reaches the end of its service life. To replace the formation the track structure above will need to be removed, but the rail and sleepers will be able to be reused if appropriately handled, and the majority of ballast could be reused (depending on how fouled the ballast has become after the formation starts to fail before replacement). There would be material costs for closure rails, welding, and top up ballast in addition to the capping layer. The costs proposed by Aurizon Network do not align with the unit rate costs for formation replacement, even with the consideration of reduced material costs as more than normal could be reused.

We therefore suggest that the QCA decline the \$1.1 million in its entirety. The documentation quality to inform this assessment of standard is high.

The works have been tendered and panel rates used for the emergent works which represent value for money. The costs incurred during construction are assessed as prudent. The documentation quality to inform this assessment of cost is medium.

4.2 Summary of Findings for Growth Projects

The conclusions for projects reviewed in this section are summarised in Table 10, where:

- A tick or a cross indicates our recommended acceptance or otherwise of scope, standard or cost;
- The colour represents an assessment of the range and quality of documentation provided for each project (as defined in Section 3.3)

Table 10 Summary of findings for Growth projects

Project	Prudency Assessment			Project Cost (\$ million)		
	Scope	Standard	Cost	Claim	Adjust.	Accepted
A.01731 Dingo to Bluff Duplication	✓	✓	✓	\$207.5		\$207.5
A.02976 North Coast Line	✓	✓	✓	\$155.8		\$155.8
A.03989 Bauhinia Electrification	✓	✓	✓	\$149.2		\$149.2
A.02803 Wotonga Feeder Station	✓	✓	✓	\$47.5		\$47.5
A.04043 WIRP Electrification Works	✓	✓	✓	\$11.2		\$11.2
A.03742 Moura East	✓	✗	✓	\$1.1	\$1.1	\$0.0
All Growth Projects (AUGEX)				\$572.3	\$1.1	\$571.3

5.0 Renewal Projects

5.1 Large Projects

5.1.1 IV.00140 NO FY16 Network Maintenance Re-Rail Program

Project Overview

The basis of the Rail Renewal Program (life expired rail) is due to rail wear with the actual service life of the rail primarily determined by the traffic task, the track alignment and geometry. For rail curve renewals, the rail replacement length is typically to be planned to extend through the whole curve and 20m into the straight at each end. Rail renewal is a risk management requirement to prevent the failure of rail in service, which may subsequently cause derailment.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$33.3M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$33.3M

Trends in head wear percentages of limited number of rail replacements were provided to indicate the rationale for inclusion of those locations in the program of works scheduled for the year. At each of these locations the replacement of the rail within the financial year was considered appropriate given the rate of wear and Aurizon Standards for limits on head loss.

There were a significant number of scope request changes for this program of works, and these may have resulted in lower than optimum resource and track closure utilisation. We understand based on discussion during interviews that the scope location confirmation process will improve over future financial years as more rail head wear data is available. The scope is considered prudent. The documentation quality used to inform this assessment of scope is medium based on the limited number of locations for which head wear rates over time were provided.

Further data analysis of information collection from inspection vehicle of side wear versus vertical wear could support Aurizon Network reviewing the benefit of installing higher vertical wear values rail types such as 68 and 72 kg/m rail profiles.

Network Safety Management System SAF/STD/0077/CIV/NET CETS Module 2 prescribes the standards for the design, construction, monitoring, maintenance and modification of rail used in CQCN (Funding Request). The standard is considered prudent. The documentation quality to inform this assessment of standard is high as the standard of works was to Aurizon Standards which are generally in line with wider industry practice for rail size and type.

The project forms part of an ongoing program of works, as outlined in the IAR. While additional scope was added to the FY15/16 year, associated budget approval was obtained and the project was completed within the specific budget. While cheaper than budgeted for, unit rates per km increased [REDACTED]. The reasons for the variance are noted with the 2015/2016 close-out report and include the following:

- the addition of monuments to the Newlands system to meet current design requirements
- the extent of single rail replacements compared to twin rail replacements
- wet weather delays (causing additional mobilisation costs)
- the availability of sufficient closures to complete the works is a single possession.

The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium given the limited availability of information regarding the procurement of the works.

5.1.2 IV.00025 NR Track Upgrade Program FY16

Project Overview

The NR Track Upgrade Program works on upgrading the track structure through undertaking multiple asset renewal activities at the same time minimises the amount of time where the track is disrupted in that location and the need to incur mobilisation costs to site more than once.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$25.6M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$25.6M

The scope delivered significantly changed scope from the scope approved in the IAR due to urgent works which were not originally identified. Early identification and data collection for potential sites would improve the prioritisation process leading to improved planning and execution of works.

During interviews, the Civil Asset Manager outlined the process for prioritisation of programs of works such as the Track Upgrade Program. In support of this, descriptions of the responsibilities for key decision making roles were also provided after the interview. These provide confidence that the prioritisation decision-making process is consistent and standardised. The scope of works is considered prudent. The documentation quality to inform this assessment of scope is medium as the condition reports for all track components are generally provided for the change of scope requests but were not provided for the original scope.

Based on review of the IAR and the practical completion certificates sighted, the standard of works was consistent with Aurizon standards and configuration of adjacent infrastructure. The project is considered prudent. The documentation quality to inform this assessment of standard is high.

The project was completed under budget. Costs per kilometre, outlined in the project completion report, are considered acceptable. The project forms part of an ongoing program of works, as outlined in the IAR, and is considered prudent in cost with a medium level of documentation quality given the limited availability of information regarding the procurement of the works.

5.1.3 IV.00033 FY16 Sleeper Renewal Program

Project Overview

This project is a program of works which replaces railway sleepers across the Aurizon Network System. A sleeper is a fundamental component of the track structure and performs critical functions to ensure the reliable passage of trains.

In the past the practice has been to delay or postpone sleeper renewals for various reasons, and programs tended to fall behind with resultant compromise of reliability, load and speed capacity and transit time aspects of train operations. This has progressively led to deteriorating sleeper condition network wide but particularly on the coastal areas and areas of high coal spillage, where corrosion is limiting the gauge holding/rail rollover safety requirements. As individual sleepers fail, the incidence of clusters of failed sleepers increases, leading to elevated risk of gauge spread derailment.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$10.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$10.4M

The scope of the Sleeper Renewal Program includes the replacement of 22.5 tonne axle load (t.a.l.) fist sleepers and selected timber sleepers 'on a face' with 28 t.a.l. Pandrol e-clip concrete sleepers. According to the Project Summary, the purpose of the Sleeper Renewal Program is to replace identified prioritised support the asset register and confirmation of the delivered scope. damaged or life

expired sleepers and complete track upgrade on areas that have, rail, sleeper and/or ballast, formation defects. While the scope for the project was clearly outlined in the project summary document, limited details were provided for the existing asset condition to confirm the need for the sleepers to be replaced within the 2015-16 financial year. Prioritisation of locations was undertaken by the asset team using a rating of 1 to 5 for sleeper condition, with a primary focus on the fastener for existing concrete sleepers. The scope is considered prudent.

The documentation quality to inform this assessment of scope is medium. A high rating would require further granularity on the 1 to 5 rating system, and a wider focus on overall sleeper condition.

Aurizon Network confirmed that used fist sleepers have not been installed at any location as part of this program of works. Information was based on the assessment of the clips only for a particular type of sleeper, fist fasteners. It is suggested that scope identification and reporting of works completed include the type and batch code of sleepers to support the asset register and confirmation of the delivered scope.

The use of concrete e-clip sleepers with a load rating of 28 t.a.l. is consistent with Aurizon standards which are generally in line with industry practice. The standard of works is considered to be reasonable and prudent.

Informal information has been used to make this determination and as such the documentation quality to inform this assessment of standard is medium.

The project works have been adjusted to suit timetables. \$10.4 million has been spent from a \$17.6 million budget, and the balance of costs has been deferred to FY16/17. The objective of the project is to upgrade end of life assets to minimise whole of life costs and reduce unplanned rail closures, demonstrating consideration for value for money. The materials were procured through the standard procurement arrangements and released from inventory to the project, and internal Aurizon Network staff members were used for construction.

Generally, the costs appear to be reasonable for the works carried out and the project is considered prudent. The documentation quality to inform this assessment of cost is medium given the limited availability of information regarding the procurement arrangements.

5.2 Small Projects

5.2.1 IV.00032 NR FY16 Turnout Renewal Program

Project Overview

This is a program of works involving the renewal of turnouts in FY15/16 in order to maintain below rail reliability across the CQCN. This project can be measured by below rail impact of turnouts, such as delays, cancellations and speed restrictions, across the CQCN.

Turnout renewals are strategic to the provision of a safe and reliable railway structure on which Aurizon Network can conduct its core business of rail freight transport. Turnouts are a fundamental component of the total track structure and perform critical functions to ensure the reliable passage of trains in that they provide means of switching traffic to different lines, allowing access to multiple sources and destinations of freight.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$9.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$9.8M

Original information provided was for complete turnout renewals, including the prioritisation process and scoring. While in general the rating provided justified the turnouts included in the scope there was significant scope changes during the financial year. The majority of turnouts added had not previously been assessed.

Aurizon Network provided an example of a turnout inspection form to demonstrate how condition data was collected. An interview was conducted with the Civil Asset Manager to understand the process of

scoping and prioritisation of works. A sample of the C16 major component replacement was reviewed and included the existing condition, scope, and delivered works. The scope of works is assessed as prudent. The documentation quality to inform this assessment of scope is medium as samples of the renewals were sighted. C16 did not have the same rigor of documentation as full turnout renewals.

The standard of works is reasonable and consistent with Aurizon standards and the configuration of adjacent infrastructure. New equipment types for points machine interface have been trialed. The equipment is being used in other rail networks in Australia and has potential maintenance benefits. The standard is assessed as prudent. The documentation quality to inform this assessment of standard is high.

This project is part of a larger program of works, with the objective to upgrade end of life assets to minimise whole of life costs and reduce unplanned rail closures. Evidence suggests that costs have been managed appropriately to suit closures and that the works were procured through standing offer arrangements. The use of Aurizon Network staff members demonstrated a consideration for value for money.

The project is considered prudent with a medium level of documentation quality, given the procurement arrangements have not been sighted, however generally the costs appear reasonable for the works carried out.

5.2.2 IV.00031 NR FY16 Structures Renewal Program

Project Overview

Bridges and Culverts allow water to flow under the rail corridor. Aurizon Network uses a variety of culvert types across the CQCN Network. The size and type of culvert is matched to required water flow and formation requirements to achieve top of line (rail level) and minimum cover levels.

The impact of running larger and heavier trains across these culverts since being installed would also have aided the accelerated degradation of the culverts.

The renewal or upgrade of the culverts will increase the strength of the culverts to align with Civil Engineering Structures Standards (CESS), providing increased confidence in the asset and progressively aligning the track infrastructure to enable future growth.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$9.1M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$9.1M

Documentation was provided for most of the asset replacements, including inspection reports, design documentation, completion photos, specifications, tender evaluations/recommendations, Practical Completion documents, marked-up as-built drawings and Project Completion Reports. Specifically, the Structures policy document recognises the requirements for QCA auditing, and seeks to ensure all information is available to enable the completion of these audits.

The assessment determined that the scope and the standard of the program were prudent and appropriate. The documentation quality to inform this assessment of scope is high. Aurizon Network has a robust condition inspection program that was initially conducted by consultants and is now coordinated and managed by internal staff. Staff members are appropriately trained to conduct these inspections (Level 2), and documentation (including Level 3 inspection reports) is audited by the Principal engineer, as documented in the Structures Policy. Detailed processes are captured in the Civil Engineering Structures Standards (SAF/STD/0080/CIV/NET).

The trigger for asset renewals is documented in the Structures Policy. Renewal criteria are defined and based on structure condition rating (from inspections), criticality, consequence and temporary short-term management strategies. The overarching prioritisation methodology subscribed to the probability and consequence of failure, as well as the criticality of the bridge to the overall network. This is in keeping with suitable risk management and lifecycle optimization practices. The structures replaced within the required timeframe of this audit were justifiable, based on condition, age, load

deficiencies and criticality. We note that a number of un-documented processes occur in the prioritisation process, including the inspection of the nominated asset, assessment of asset safety and engineering judgement by the Principal Structures Engineer.

Prioritisation is required because of the sheer number of assets in condition state 4 that require replacement but are unable to be addressed in one fiscal year. Assets are selected for replacement due to construction type, location and similarity of repairs, a process which is partially documented in the Structures Policy. The final replacement list is put forward by the Principal Engineer. No inspection reports of bridges were sighted, and Aurizon Network advised that all bridges were in good condition, with culverts being the predominant replacement priority of the network.

Designs were in accordance with appropriate design standards AS5100, AS1597, AS4678 and others, and seek to incorporate safety-in-design and whole-of-life considerations. Design life standards are defined in the Asset Maintenance and Renewal Policy. Innovative design and construction solutions were also observed in the documentation, with the Principal Engineer advising they were conducting a trial of alternative culvert pipe treatments that will be recognised in future renewal programs.

Gold-plating and over-design were not observed for the projects reviewed; rather the structures team prefers to keep an asset in service for as long as possible to minimise expenditure and maximise life, only replacing structures that are critical and at risk of failure. Emergency replacement works also comprise this budget, which is based on failure of the asset prior to its replacement, which enacts an emergency response to ensure the continuing service of the line.

Tender evaluation documentation and approvals were observed for some packages of work, but not all. Issued-for-construction drawings were observed for most culverts.

In addition to the Project Completion Reports, evidence of completed construction included photos, Issued-for-construction drawings marked up with final survey points, Practical Completion certificates and Audit and Compliance Check Sheet. Complete records for all construction were not sighted for every asset. Lessons learned and future improvements were noted.

Some minor discrepancies were identified during the course of the assessment:

- The inclusion of items into an Asset Management budget (such as Insurance and levies, Approvals) remained unexplained and not documented. It is unclear whether these items belong to capital or operational expenditure.
- No signature or sign-off date on Project Closure Reports.

In summary, Aurizon Network demonstrated the need for the replacement of assets in this project (due to condition, age of asset and load capacity deficiency), the prioritisation/selection of the assets to be replaced (via a risk assessment process dependent on the probability, consequence and criticality of failure), the justification for the funding (based on previous capital expenditure programs), the appropriate methodology proposed for structure replacement, and the completion of the program as required. Designs and construction solutions were of suitable quality in keeping with Australian standards and best practice. The standard is assessed as prudent. The documentation quality to inform this assessment of standard is high.

With regards to prudence of cost, this project was part of a larger program of ongoing works. This program budget included appropriate contingency, however individual projects did not have specific contingency allocations. Evidence demonstrates that the project was competitively tendered, demonstrating consideration for value for money. In addition, costs have been managed appropriately to suit closures. The project is considered prudent in cost. The documentation to inform this assessment of cost is of medium quality.

5.2.3 A.04221 NR Microwave Resilience System Upgrades

Project Overview

The bandwidth between Table Mountain and Rockhampton has been noted to be fully utilised. An upgrade of this bandwidth is a key deliverable for any expansion of the Aurizon Network Telecommunications network. In addition, the bandwidth capacity between Summer Hill MWR and Maurice Hill MWR is being upgrade by a further 45Mbps to ease congestion on the North to South bearer and provide the additional capacity required for the proposed upgrade between Sarina MWR and Mackay.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$7.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$7.4M

Aurizon Network has provided strong reasoning for upgrades in order to provide improved network resilience, adding long-term network benefits. The Project Management Plan outlines that the upgrade to the Microwave system will allow for:

- Increase of capacity to allow for Mackay to Rockhampton the capacity increase to carry interconnecting redundant circuits for DR (double current capacity is required initially).
- Replacement of older radio systems almost at end of life that have no upgrade capability. Extra capacity will be required in the future.
- Provide alternate circuits for fibre redundancy into Jilalan and Dalrymple bay network, where there is no current redundancy.
- Full supervision of Equipment within the Main DR network.

The scope is assessed as prudent as the upgrades support future network expansion while offering improved network redundancy.

The documentation quality to inform this assessment of scope is medium.

Design documents have been sighted for the work undertaken by the vendor Bytecomm Pty Ltd (Installation of main work radios muxes). The A.04221 Project Management Plan outlines that handover certificates certify standards compliance. These were not included in the closeout report and have not been sighted. The project is considered prudent in standard as the upgrades to the Microwave Resilience System have followed National Design Standards, suggesting alterations to equipment should be in line with those standards. The documentation quality to inform this assessment of standard is medium.

The claim was for the balance of previously unclaimed works for this program of works established prior to FY15/16. Evidence was sighted indicating that the project was procured through various methods, including a competitive tender process, standing offer agreements (SOAs), and sole sourcing. The project was subject to whole of life cost analysis and value management processes to ensure value for money was achieved. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

5.2.4 IV.00052 Level Crossings FY16

Project Overview

Level crossing upgrade is undertaken annually as part of Australian Level Crossing Assessment Model (ALCAM) program. This program is carried out to reduce the average ALCAM risk score in the Central Queensland Coal Network (CQCN).

The scope of this project is crossing assessments, signage upgrade, and civil works for track and road surface.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$6.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$6.4M

Interviews with Aurizon Network project managers provided clarification on the determination of intervals for inspection and ALCAM assessment works in is line with Australian industry practice. The need to undertake the works within the financial year is difficult to assess for signage because the rate of deterioration determination is not available. Photos were made available for each civil repair location of the existing condition to support the inclusion of the upgrade within the financial year scope of works. Delivered scope information was provided for signage, track and road works. The scope is in line with Aurizon Network's asset strategy for level crossings.

The scope is considered to be prudent. The documentation quality to inform this assessment of scope is medium. Improved existing condition assessment documentation including a rating style of system for each component of the level crossing to be replaced would improve the quality level of the scope documentation.

Scope of all activities within the program was delivered to Aurizon standard and in accordance with the asset management plan. The standard of works is assessed as prudent. The documentation quality to inform this assessment of standard is high.

With regards to prudence of cost, this project was part of a larger program of works, and costs claimed are below the programmed budget of \$6.4 million for FY14/15 and FY15/16. This program budget included appropriate contingency, however individual projects did not have specific contingency allocations. Evidence suggests that the project was competitively tendered, demonstrating a regard for value for money. In addition, costs have been managed appropriately to suit closures. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

5.2.5 IV.00048 NR Formation Renewal FY16

Project Overview

Formation renewals are a rolling program of works each financial year. For this financial year the works were divided into two types, planned and 'fix when fail.'

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$5.7M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$5.7M

A known poor formation area on the Blackwater System is being progressively repaired over numerous financial years. Works at this location are the planned formation renewal.

For the 'fix when fail' formation renewals, Aurizon Network has provided the organisational structure and role description for the district engineer who defines the scope and criticality and the civil asset manager who makes the determination or prioritisation. Their engineering judgement is considered appropriate to determine the criticality and prioritisation of works across the CQCN.

Samples of works were provided for review. The existing condition information was sighted and confirmed that the works were required within the financial year. The scope is considered prudent. The documentation quality to inform this assessment of scope is medium. The 'fix-on-fail' process does not allow forward planning of resources and track access. It is recommended that Aurizon Network continue to investigate tools to allow deterioration to be identified before failure.

The standard of works was to Aurizon standards and comparable to the standard of works of the adjacent sections of track. The standard of works is considered to be reasonable and prudent. Given that we have evaluated a sample of projects, the documentation quality to inform this assessment of standard is medium.

\$5.7 million has been claimed against an original budget of \$8.0 million (inclusive of \$0.2 million contingency). The works achieves value for money with a delivered rate of \$2.8 million per kilometre compared to a budget of \$5.4 million per kilometre. Labour and equipment rates were sighted within the C05-11 Formation Recon 136.88 -136.95.xls. Costs claimed appear reasonable considering the renewal works were needed on a needs basis. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

5.2.6 IV.00036 NR Bridge Ballast Renewals FY16

Project Overview

Aurizon Network has identified that contaminated ballast on bridges is causing track stability issues resulting in poor alignment and increased maintenance intervention. The ballast cannot be cleaned using standard undercutting process used on track away from bridges due to clearance and loading constraints.

Replacement of the ballast and a range of other activities were proposed at a number of bridges to improve the track condition, extend the life of the new ballast (ballast mats and ballast depth), and improve safety (handrails and walkways).

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$5.6M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$5.6M

Track geometry data provided for two bridges were used as a sample of the information used to determine the need for ballast replacement on bridges and the track geometry after the works had been completed. These identify that works were required to manage the top and twist of the track alignment on the bridges. Based on the documentation provided, the core scope has been delivered to the final scope locations and significant improvements have been identified after completion.

The scope is assessed as prudent. The documentation quality to inform this assessment of scope is medium as there is a significant change in bridges in base scope compared with delivered scope, inconsistency between certification information for each site and the sites listed in the close out report. A number of comments for future potential improvements are noted:

- it appears that the handrail scope was not delivered on any of the bridges. Ballast mats were not identified as part of construction activities in multiple locations. Without confirmed ballast depths the need for ballast mats cannot be confirmed.
- site-specific edge wall height increases ('hungry boards') and walkways were not delivered.
- one identified location has sub-standard ballast depth due to bridge configuration restraints.
- due to the significant change in scope from the approved to the delivered, both in bridge locations and removal of permanent hand rails it is difficult to correlate the planned versus actual. Only one original scope location was delivered. This may indicate that the prioritisation process for bridge ballast renewals needs improvement with a focus on the drivers for renewal.

- scope of auxiliary works such as sleeper and rail replacement varies by location. This does not seem to be clearly captured in the original scoping. It also could skew the cost per metre rates at each location.
- change of funding requests did not identify the change of scope.

Works are comparable with the rest of CQCN and other heavy rail networks in Australia to treat ballast contamination on bridges. Suitable trials have been proposed to try and improve life of ballast and reduce maintenance activities, but have not been undertaken. As such, the standard is assessed as prudent.

The documentation quality to inform this assessment of standard is high, but we suggest that Aurizon Network continues to investigate ways to improve and maintain track condition on bridges.

The project was competitively tendered and identified future work methodology to save money on future bridge ballast replacement projects, demonstrating regard for value for money. The works were generally programmed to suit rail closures also. The project is considered prudent in cost. The documentation quality to inform this assessment of standard is medium.

5.2.7 IV.00176 2015 Moura Flood Works

Note: A portion of this project claim has been withdrawn from the Aurizon Network Capital Expenditure Submission, in accordance with Aurizon Network letter to the QCA 'Capital Expenditure FY16 – Amendment,' dated 5 June 2017.

Project Overview

On 20 February 2015, category five Cyclone Marcia crossed the Queensland coast North of Rockhampton and proceeded to track South over Aurizon Network's Blackwater and Moura rail systems. While the majority of infrastructure damage was sustained in the Moura system, the impact of Cyclone Marcia resulted in the closure of both systems for all traffic. Aurizon Network declared Force Majeure for both the Blackwater and Moura systems on 19 February 2015, and subsequently mobilised significant resources to inspect and where appropriate restore the damaged sections of the rail corridor.

The Moura mainline between Stirrat and Dumgree and Earlsfield were the most heavily damaged locations by the cyclone, especially the embankment at Bells Creek which was substantially washed-out as a result of the water flow during the cyclone. Aurizon Network incurred substantial costs in reinstating the Moura system to pre- flood condition.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$4.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$4.4M

The Moura Flood works capital claim is for a number of locations along the Moura system. They have been nominated in the Capital Funding Request document, an excerpt is provided in Table 11.

Table 11 Moura Flood Works Scope**Scope of works**

Job Reference	Description	Location	KM Start Point	KM End Point	Distance (m)	Total Costs
MSL-61	Embankment stabilisation design and track alignment design. Temporary access way (via 3rd party land) created to traverse waterway (Creek) and temporary water course diversion. New rock wall and embankment rebuild. New ballast for track install at temporary alignment for interim solution. Final solution require tack reinstated as before following completion embankment rebuild.	Mt Rainbow - Dumgree	100.3	100.5	200	3,448,209
MSL-20	Major washout - track panel removed, formation repaired, ballast, flood rock, reinstated track, resurfacing completed.	Stirrat - Clarke	59.9	59.98	80	194,550
MSL-22	As above	Stirrat - Clarke	60.9	60.98	80	196,602
MSL-25	As above	Stirrat - Clarke	61.22	61.33	110	168,059
MSL-47	Major washout - track panel to be removed, turnout removed (rodding support) formation repaired, ballast, flood rock, reinstated track, resurfacing completed.	Fry - Mt Rainbow	89.55	89.65	100	316,885
MSL-48	Major washout; rodding removal support, ballast, flood rock, resurfacing completed.	Fry - Mt Rainbow	89.65	89.9	250	644,382
TOTALS						\$ 4,968,687

A separate claim for incremental maintenance costs has been made by Aurizon Network.

Review of each job reference has been undertaken. In general limited photographic evidence was provided of the condition after the flood event. This is understandable given the urgent need to repair and reopen the network.

MSL-61 Work scope reviewed was based on the MSL-61 CRB Revision 1. The length of works was from approximately 100.20 to 100.60 km. The works included in the documentation from MSL-61 were to slew the track away from an embankment failure and towards the existing cutting to allow rail operations to recommence while the embankment was repaired.

As the works reused the existing track structure with a widened formation, and top up ballast this typically be not considered capital. Upon review of the following information this work has been accepted as capital:

- a memo from Aurizon Network, dated 29th June 2015 noted that capital costs for Moura Flood Works had been evaluated by two criteria:
 - the total materials-only costs of ballast and formation exceed \$40,000
 - the distance of the renewal exceeded 75 metres
- All ballast costs have been removed as part of an accounting review commissioned by the QCA⁴
- A portion of the slewing costs have been removed as part of the accounting review.

A practical completion certificate (dated 9 April 2015) has been sighted for the reinstatement of the track to temporary alignment. The Track Validation Certificate (dated 16 September 2016) confirms that the track has been reinstated to the original alignment. Embankment rectification works completion reports have been requested but have not been made available. Photographs of the site show the completed works.

We have reviewed a Parsons Brinckerhoff design report, issued with drawings, and a Client Requirement Brief. The standard of works was deemed suitable.

⁴ Cost Review of Aurizon Network's 2015-16 Capital Expenditure Claim (draft), RSM Australia, 20 April 2017

- MSL-20 Work scope was from 60.75 to 61.20 km and involved debris removal, formation reconstruction, ballast washout repair, resurfacing, track welding, and rail stressing.
The standard of works outlined in the Client Requirements Brief was to Aurizon Standards.
-
- MLS-22 Work was identified across three job references, 21-23. It would seem that job references 21 and 23 were for fencing based on the documentation provided these jobs. This leaves the scope for 22 as; work scope was from 59.9 to 60.063 km and involved debris removal, flood rock replacement, formation reconstruction, ballast washout repair, resurfacing, track welding, and rail stressing.
The standard of works outlined in the Client Requirements Brief was to Aurizon Standards.
-
- MLS-25 Work scope was from 60.75 to 61.20 km and involved debris removal, formation reconstruction, ballast washout repair, resurfacing, track welding, and rail stressing.
The standard of works outlined in the Client Requirements Brief was to Aurizon Standards.
-
- MLS-47 Work scope was from 89.55 to 89.65 km and involved debris removal, formation reconstructions, ballast washout repair, resurfacing, track welding, rail stressing, access road reconstruction, concrete culvert construction, and clean up from neighbouring properties.
Existing culvert was reinstated.
The standard of works outlined in the Client Requirements Brief was to Aurizon Standards.
-
- MLS-48 Work scope was from 89.65 to 89.99 km and involved debris removal, formation reconstructions, ballast washout repair, resurfacing, track welding, rail stressing, access road reconstruction, and clean up from neighbouring properties.
From the photos provided, flood damage was limited to shoulder of track and supports the striking out of full formation reconstruction and repair only.
The standard of works outlined in the Client Requirements Brief was to Aurizon Standards.
-

In summary:

- The scope has been assessed as prudent. The documentation quality to inform this assessment of scope is medium. Closeout documentation for embankment rectification works has not been sighted for MLS-61 and make up a large portion of the capital claim.
- The standard has been assessed as prudent as the works are consistent with Aurizon Standards. The documentation quality to inform this assessment is high.
- The RSM report identified cost duplication between the Moura Flood Claim and the Capital Expenditure Claim. Aurizon Network has subsequently amended their FY15/16 claim to reflect a deduction of the duplicated amount. Based on the removal of this duplication, the remaining costs are considered prudent. The works have been tendered and panel rates used for the emergent works which represent value for money. The documentation quality to inform this assessment of cost is medium.

While not impacted to the extent of site MLS-61 by the flood event associated with Cyclone Marcia, there are other embankments along the Moura Short Line in close proximity to waterways. It is not evident that at the other locations flood rock has been installed to protect the embankment from high flows. We suggest that other embankments be risk assessed for the need to install additional flood protection measures.

5.2.8 A.04622 Overhead Line Equipment Renewal

Project Overview

The overhead line equipment (OHLE) renewal project is one of two OHLE renewal programs for the network. The scope is to replace damaged, aged and deteriorating components which have exceeded their design life, at locations within the Blackwater system.

Replaced components include:

- Section insulators
- Neutral sections
- Termination assemblies
- Insulators
- Bonding conductors.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$4.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$4.8M

The Capital Funding Request provides the necessary details, including the requirement and rationale of the project, detailing that 'doing nothing' will result in speed restrictions being in affected areas. This would diminish the system throughput capacity, and potentially impact Access Agreement requirements. The project was aligned with the Coal Infrastructure Master Plan 2009, Section 8 and internal approval was gained within Aurizon Network.

The scope of the work involved the replacement of various section insulators within the Blackwater system. While this part of the scope appears to be similar scope of works to the Section Insulator Project A.04254, there is nothing in the documentation that suggests that these works have been performed twice on the same item. The scope of work is therefore considered prudent.

The documentation quality to inform our assessment is assessed as medium given the absence of an asset management plan.

The works are consistent with similar works undertaken within the Blackwater System and are consistent with Aurizon Standards. Overhead Renewals Block Reports indicate exactly what works have been carried out at various locations within the Blackwater system. Practical Completion Certificate has been reviewed, which confirms that the works were installed and tested in accordance with Aurizon Network's Standards. The project is considered prudent in standard. Installation and Test Plans are not included in documentation, so the quality of the documentation to inform the assessment of standard is medium.

The Capital Funding Request provides evidence that various options were explored to deliver the project, demonstrating that Aurizon Network considered and evaluated alternatives to minimise whole of life costs. By utilising crews and equipment already on location for other works, supplemented with other staff (procured through tendered labour hire rates), the project demonstrates value for money with regards to the sourcing of labour and equipment, and the circumstances prevailing in the market and locality.

Costs claimed are below the program budget of \$5.42 million for FY14/15 and FY15/16, however, insufficient evidence has been provided to determine the accurate connection between scope and costs incurred, given that the SAP does not match the claimed amount. As the costs appear reasonable for the scope, the project is considered prudent in cost, but with a low level of documentation quality.

5.2.9 A.04320 NR Optical Fibre Transmission Network Upgrade

Project Overview

The NR Optical Fibre Transmission Network upgrade is an upgrade of optic fibre base transmission equipment. This equipment is located at some seventeen sites between Blair Athol and Wotonga and included the installation of new transmission equipment, new vermin proof equipment racks, associated DC power supply/cablings upgrades, removal of redundant transmission equipment and replacement of end of life interface equipment. This is a body of work which forms part of an overarching transmission system upgrade within the CQCN.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$3.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$3.8M

The scope of the NR Optical Fibre Transmission Network Upgrade is for the renewal of all end-of-life (EOL) optical fibre telecommunication equipment between Emerald to Tolmies and Wotonga to Blair Athol. The Minor Funding Request notes that in the previous year two failures occurred on the system, with the age of the electrics identified as the major contributing factor of the failures. One failure at Ambrose resulted in the delay of the tilt train of several hours and the cancellation of 15 coal trains.

The scope is assessed as prudent with medium documentation quality as the renewals to maintain operational performance is considered appropriate. A high level of documentation would be given if Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) statistics were used to quantify the benefits of undertaking any equipment upgrade. The do nothing option, as described in the Minor Capital Funding request, makes mentions of failure rates, however, provides no specific statistics.

The "Verification of Transmission Upgrade" audit document outlines the standards used from Blair Athol to Wotonga. This includes the installation of new transmission equipment, new vermin proof equipment racks, associated DC power supply/cablings upgrades, removal of redundant transmission equipment and replacement of end of life interface equipment. We consider the standard prudent with a medium level of documentation quality as the delivered upgrades met current design standard. A higher level of documentation quality would be assessed if the standards for Emerald to Tolmies had been sighted.

The Minor Capital Funding Request indicated that a number of options were investigated and evaluated for this project. The equipment for this project was competitively tendered, and the costs appear to be reasonable. This project is considered prudent in cost with a medium level of documentation quality.

5.2.10 IV.00035 NR Callemondah Yard Spur 1 Connection

Note: This project has been withdrawn from the Aurizon Network FY15/16 Capital Expenditure Submission, in accordance with Aurizon Network letter to the QCA 'Capital Expenditure FY16 – Amendment,' dated 5 June 2017.

Project Overview

This upgrade to connect the Spur #1 Road to the Departure Roads 3/4 which will reduce the Callemondah Yard mini-cycle by approximately 30 minutes which equates to a 5.5% time saving from the current 9.5-hour total cycle. In addition, this construction will create further movement flexibility and remove congestion between the maintenance workshop roads and the departure roads, meeting operator expectations for clear entry and exit routes within the yard.

The following benefits for all service providers of this project are derived from separating through services from yard shunting movements:

- Reduced yard transit time for services
- Provides redundancy in the event of turnout failure
- Provides additional paths
- Additional operational flexibility for arrival/departure road groups

Review

Review Summary	Scope	-	Capital Expenditure Claim	\$-
	Standard	-	Impact of findings on Claim	\$-
	Cost	-	Total accepted	\$-

This project had been identified by Aurizon Network as a Capital Renewal project. During the review it became clear that the works were more consistent with a Capital Expansion project based on the following information provided by Aurizon Network:

- Capital Funding Request, *Callemondah Yard_Spur 1 Connection (0)*, identifies the project type as Growth (page 1).
- *Capital Expenditure Feasibility Investment Approval Request - Wiggins Island Rail Project Stage 1*, 10th August 2011, Page 5. The highlighted section of the IAR identifies that the works from the Callemondah Rail Yard Study are for additional tonnages to RGTCT.

Practical completion, track validation, and operation handover certificates have been sighted.

Costs outlined the SAP are within tolerance of the cost outlined in the funding request.

5.2.11 IV.00028 Autotransformer Replacement Program

Project Overview

This project is a program of prioritised replacements for autotransformers in the Goonyella and Blackwater System. The Capital Expenditure – Feasibility Investment Proposal includes a list of the eight autotransformer (AT) replacements planned for FY16.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$3.0M
	Standard	✗	Impact of findings on Claim	\$0.1M
	Cost	✓	Total accepted	\$2.9M

The Autotransformer Replacement Program, 'IV.00028' provides details of the actual autotransformer replacements, including start and finish dates. It is understood that four of the autotransformers were replaced due to their failure. Review of the autotransformer scoring confirms, as per the information in the Autotransformer Replacement Scope and the Estimate Document, that the scoring is in line with

the five remaining autotransformers which were replaced. An email received from Aurizon Network, dated 18 May 2017, indicates that North Goonyella AT1 was omitted from the replacements after a further detailed assessment of its condition and operational risk, and a decision was made to replace Mindi autotransformer instead. This is considered to be good engineering judgement. This project is considered prudent in scope.

This assessment is made with a medium level of documentation quality due the limited availability of condition assessment reports, which would have further informed the rationale for the AT replacements.

The autotransformers have been replaced with a higher rating transformer, which is in accordance with the specifications for all new autotransformers on the Aurizon Network. The Aurizon Network Autotransformers Specification was used for the procurement of the transformer to ensure suitability for use on the network. However, consideration should have been given to any oil containment requirements in the event of a transformer failure and for the protection against fire and explosions, in accordance with AS2067:2008; in particular, Clause 6.7 – Protection Against Fire and Explosion and Clause 6.7.11 – Oil Containment.

We note that the new autotransformers contain an additional 2,900 litres of oil. There is no evidence of any design or construction works for oil containment in the event of a failure, which would result in a significant environmental event. There is no evidence of design and construction works to provide fire and explosion protection in the event of a single transformer failure.

Aurizon Network conducted a study called '*Risk Analysis of Fire, Explosion and Oil Spillage for Existing Feeder Station*' to investigate the requirement for fire and explosion protection where autotransformers are installed. Although the study was carried out for feeder stations, it is also relevant for autotransformers. The study identified the requirement for protection against fire and explosion as detailed in AS 2067:2008, clause 6.7, was not relevant to the Aurizon Network substation sites if a risk assessment was carried out to mitigate the risk.

Following a review of the risk assessment, it was noted that the level of risk for all hazards was deemed to be 'Low,' due to the existing control measures in place. The Capital Expenditure Investment Approval Request states: '*with multiple autotransformers experiencing increasing levels in gas pressure and leakage of oil, failure of multiple transformers in the same area could lead to loss of power,*' which implies that the risk assessment had not accurately captured the level of risk.

The Study did not adequately address the requirement of oil containment as per AS 2067:2008, clause 6.7.11, in particular the increase in oil volume of the replacement transformers. The requirements for oil containment in AS2067:2008 are not subject to a risk assessment. The Standard requires that installations containing equipment with more than 500 litres of oil shall have provision for containing the total volume of any possible leakage. The volume of oil has increased from 2,600 litres to 5,500 litres and therefore Aurizon Network should have complied with AS2067.

This project is not prudent in standard, as the project works were required to be compliant to AS2067.

The quality of information to inform this decision is high. The significant change (increase in autotransformer size) carried out to the high voltage installation would require updated drawings for the installations, signed off by a Registered Professional Engineer of Queensland to show that the design was carried out in accordance with AS2067. These documents have not been sighted, but we have sufficient information to conclude that the project is not compliant with AS2067.

We suggest that a total deduction of \$100,000 be made to the claim to reflect the rework costs to bring sites in conformance with AS2067. This cost assumes that the additional work does not require lifting or moving the autotransformers.

We recommend that Aurizon Network:

- Ensure that any sites which have replacement autotransformers are in accordance with AS2067 with regard to containment of the increased amount of oil.
- Ensure that any sites which have replacement autotransformers are in accordance with AS2067 with regard to the provision of fire and explosion protection.

- Consider the requirements of AS2067, Section 1.2.2 in carrying out a review of existing installations against the requirement of the Standard, in particular, the requirement for the provision of fire and explosion protection and for oil containment.

With regards to cost, evidence of a competitive tender process was sighted, which reduced costs by up to an estimated \$1 million. The project was introduced to minimise whole-of-life costs, and works were completed ahead of schedule (as demonstrated in the Completion Certificate). This project is considered prudent in cost with a high level of documentation quality.

5.2.12 A.04231 NR Ethernet to Corner SCADA Upgrade

Project Overview

The current PSS SCADA system's telemetry architecture uses two high speed (38.4Kbps) modem links to the two Corner remote terminal units (RTUs) and low speed (1200bps) links from each of the Corner RTUs to the Outstation RTUs for each loop in the region.

The Corner RTUs (also known as Router RTUs) also perform the functionality of selecting either of the routes to use to transfer data from the Outstation RTUs to the Master RTUs. The original scope of the project planned to upgrade the current life expired CP21 processor modules (9 failures occurred in Dec 2011) to the newer CP30 modules that allow proper redundancy to be implemented in the RTU.

It has been planned to replace the high speed modem links with direct Ethernet connection back to the control centre hardware for the following reasons:

- The CP30 processor modules would be connected to two redundant MC31 communications modules, allowing each Corner RTU to be connected to both Rockhampton and Mackay DR control centres at the same time. This enables design of a warm (or hot) standby DR system.
- The CP30 modules have the ability to use the Simple Network Management Protocol (SNMP), which can assist fault control and possibly avoid sending technicians out to the remote site. The advantage of this becomes more evident during disasters like floods when the remote is not accessible by road but is still accessible through the network.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$2.8M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$2.8M

The objective of the NR Ethernet to Corner SCADA Upgrade is to reduce communication and command failures within the existing traction SCADA system by improving the reach and reliability of the Power SCADA control network, as detailed in the Funding Request..

The Funding Request outlines the key benefits with measurable KPIs, including the improvement of mean time between failures (MTBF). These command failures were seen as a safety issue by the ECOs and the Electrical Safety Office and then resulted in an Enforcement Notice in 2008. The Notice included scope improvements modernising out of date technologies to improve operability on sites. The Enforcement Notice given suggested a necessary upgrade to reduce risk of failure. Furthermore, the current RTUs have reached end of life and are no longer supported by the vendor. Likewise the SCADA software at the heart of the PSS system is now end of life and any future upgrades to this software will require IP/Ethernet connected RTUs. The scope is assessed as prudent with a medium level of documentation quality as the renewals were driven by an Enforcement Notice, suggesting safety has been considered. No asset management plan was provided.

The design standards reflect national standards necessary for commercially available off-the-shelf products for this type of upgrade. This project is considered prudent in standard with a high level of documentation quality.

This project is an internal works project which is part of a rolling program of works, and was required due to an Enforcement Notice provided to the operator to reduce the risk of failures. The equipment has been tendered using an existing supply agreement. As the costs appear reasonable for the works undertaken, this project is considered prudent with a low level of documentation quality, given the limited amount of information available upon to which to base an assessment.

5.2.13 IV.00041 Connors Range 3G Coverage

Project Overview

Currently there is 60km portion of the rail corridor between Sarina and Nebo in the Connor's range where no mobile phone coverage is available. This area is sparsely populated with no Federal Government or Telstra programs now or in the foreseeable future to provide coverage in this region.

Operationally, there are on average 70 trains a day using this section of the network and approximately 150 construction and maintenance personnel regularly performing work in this area. Equipment located in this vicinity includes trackside equipment rooms (housing signalling and wayside equipment), a traction feeder station and a number of other traction power installations for Autotransformers. Availability of mobile phone coverage can be up to 20km away from these Aurizon Network facilities.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$2.5M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$2.5M

Improvements to the Connors Range 3G coverage were based on a need for improved safety in times of emergency, as well as improving transmission reliability in the 60km stretch. The implemented upgrades to network resilience provide long-term benefits across the network, including to the approximate 70 trains that pass through the area each day. The scope is assessed as prudent to a medium level of documentation quality as the improved network coverage provides a benefit for operations and for times of emergency.

Upon review of Telstra as-built drawings, the works appear to be designed to international standards and are consistent with the plan for improved radio coverage. The project is assessed as prudent in standard, with a high level of documentation quality as the work has undertaken by Telstra and as such will be consistent with adjacent infrastructure. According to the Telecommunications Supply Agreement, the Telstra facilities comprise:

- 80m of optical fibre cable which will result in the delivery of not less than 12 core single mode optical fibre cable
- 5647m of 12 core single mode optical fibre
- 288m of P50 communications conduit
- Optical fibre terminating units
- 2 x Telstra Mobile Network Stations
- Cabling and connectors as required.

Installation of modern 3G cellular technology to the area, with support from Telstra, using existing Aurizon Network sites to support and house the equipment, is considered the most cost effective way of meeting the base requirements (Connor's Range Telstra (1)). The Capital Funding Request for this project identifies a number of options which were evaluated, with the preferred option representing the best value for money and reducing whole of life costs. In addition, the project was competitively tendered.

As the project uses the Telstra Network, there exists potential for other users to use the network, and the budget is aligned with the agreement made with Telstra. The project is considered prudent in cost with a high level of documentation quality.

5.2.14 IV.00026 Transmission Renewal Program – Tranche 1

Project Overview

Telecommunication Data Transmission equipment provides telecommunication services between the Network Train Control Centres in Mackay and Rockhampton and the various field devices across the CQCN. The equipment is critical in firstly providing the signalling interlocking status and control to the Network Controller and secondly the power system status and control to the electrical control operator (if applicable). Without the telecommunication data transmission equipment, the train control and electrical control system would be non-functional.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$1.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$1.4M

Reduction of the number of End of Life assets within the network, coupled with a reduction in faults appears to be Aurizon Network's driving motivation for this project. Improved transmission network performance and improved network resilience, as outlined in the Funding Request, provide strong reasoning for upgrades. For both the primary and redundant systems, the impacts of disruptions to the service have been measured on an entire telecommunications basis and their impact outlined in the Funding Request.

The scope is assessed as prudent, and document quality of a medium level. The project's scope would have a high level of documentation quality if an asset management plan was available and failure statistics were used to show costs to the core business.

The appropriate standards for the design and construction of this project are listed in Section 2.3 of the Funding Request. Installation and commissioning reports, closeout reports and handover have been sighted. These confirm the standards that were used and as such the standard is assessed as prudent to a high level of documentation quality.

With regards to cost, limited information for this project was made available. The Capital Funding Request demonstrates that Aurizon Network evaluated a number of project options before selecting a preferred option, demonstrating regard for value for money. SAP records note an expenditure amount that exceeds the claimed amount for the year, however Aurizon Network have confirmed that \$400,000 has been credited back to project for the FY16/17 year. Given the limited available information, as evidence of program or procurement processes were not available, the project is considered prudent in costs with a medium level of documentation quality.

5.2.15 A.04563 NR CQCN Structures Renewal Program FY15

Project Overview

The NR CQCN Structures Renewal Project will enhance the performance of Aurizon Network track infrastructure and improve resilience during the wet season. Reactive works will be reduced due to the elimination of the need to undertake emergency or temporary repairs and ad hoc cleaning. The Project will increase and/ or validate structural capacity and improve the capability of the 'below track' infrastructure to perform under increasing rail traffic and heavier axle loads.

The Project will ensure that the structural capability and hydraulic performance of these prioritised assets is reviewed and engineered to align with the adjacent rail infrastructure, business strategies and Aurizon Policy.

Realisation of these objectives will reduce the likelihood of service disruption and transit delay from emergency closure and/or temporary speed restriction.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$1.1M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$1.1M

As noted for project IV.00031 in Section 5.2.2, Aurizon Network demonstrated the need for the replacement of assets in this project (due to condition, age of asset and load capacity deficiency), the prioritisation/selection of the assets to be replaced (via a risk assessment process dependent on the probability, consequence and criticality of failure), the justification for the funding (based on previous capital expenditure programs), the appropriate methodology proposed for structure replacement, and the completion of the program as required. The project is considered prudent in scope with a high level of documentation quality.

This project is considered prudent in standard with a medium level of documentation quality. Designs and construction solutions were of suitable quality in keeping with Australian standards and best practice. The medium documentation quality level is attributed to the Standard of the assessment is due to lesser amount of information in comparison to project IV.00031. The documentation provided for completed construction did not cover all assets and were not always based on the same asset to enable a complete overview of the replacement of the asset. However, based on information provided and the standard methodologies employed to assess and replace other poor-condition assets within this project, it is not unreasonable to assume that the same process and rigour has been applied to all components.

This project is part of a larger program of works over numerous financial years. Aurizon Network's procurement process was adequately followed, with works competitively tendered to contractors on Aurizon Network's panel, as demonstrated by the Recommendation to Award. While the program of works is ongoing, the works for this project appear to have been delivered under the allocated budget. Limited information on the project's program of works was available, and as such, this project is considered prudent in cost with a medium level of documentation quality.

5.2.16 A.03978 NR Optical Fibre Transmission Network Upgrade

Project Overview

IPT-NMS was purchased as part of the Optical Fibre Transmission Network Upgrade Project with the intention to be used as a managing and Provisioning tool for the ERICSSON SDH network.

IPT-NMS is made up of the following applications:

- IPT-NMS Circuit Module: used to create and capture VC12 services;
- IPT-NMS Packet Module: used to create and capture Ethernet services.

Both modules are independent of each other, though the Ethernet service created using Packet Module is completed after the nxVC12 (or higher) service is created using Circuit Module. Changes are made within the application(s) database before sending to the Network Elements.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$0.2M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$0.2M

The scope of this upgrade was to replace end-of-life communications equipment between Rockhampton and Parana. The associated benefits of the upgrades are clear – a failure of the network has a direct impact on train performance. The minor funding request outlines that the aged equipment is obsolete, is no longer supported by the manufacturers repair, and is the contributing factor to the current failures in the system. An asset management plan or similar document was not available to support the renewals strategy. The scope of the project is considered prudent with a medium level of documentation quality as these upgrades reduce external risk to an acceptable level.

The funding request notes that the upgraded equipment follows the design practice already used throughout the Blackwater System. Maintenance and operational manual references were excluded in the closeout report as the construction was based on existing equipment already supported in the area. Works are outlined in the Closeout Report and reference the completed test certificates, which have not been sighted. The standard of this project is assessed as prudent with a medium level of documentation quality.

While there was little evidence provided to compare costs claimed to scope claimed, the costs for this project appear to be reasonable. As such, the project is considered prudent, with a low level of documentation quality due to the limited availability of information.

5.2.17 A.04111 NR Dual Telemetry Upgrade

Project Overview

The Aurizon Network signalling control telemetry system is the communication backbone that permits the control centre to interface with the field stations via data transmission protocols. Aurizon Network utilises S1 and 82 protocols.

Older model 82 field stations installed during the 1980s are now life expired, no longer supported by the manufacturer and have diminishing spare parts. Upgrading the identified sites is a continuation of an existing program.

In the event that the telemetry fails at a set location the result is an immediate 50% reduction in capacity as the trackside protection systems in that location will not be operable. A manual safe working system will be required to transit trains past the failed site until the fault is located and rectified.

Single bearer telemetry systems which exist currently in the system do not provide a secondary path of communications in the event of a failure. Providing dual telemetry provides a path of communication in the event of a failure.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$0.1M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$0.1M

The scope of this project included post-commissioning works, with the major of costs relating to project management and support. The project completion report was sighted, and the scope of this project is assessed as prudent with a medium level of documentation quality as the improvements to the communication network are warranted, with implications to the overall integrity of the system if failure occurs. The strategy to improve telemetry systems equipment supports long term operational service and strength. The introduction of redundancy to telemetry systems seems reasonable.

Transmission equipment used will be designed to international standards appropriate to the upgrade of telemetry systems. Redundancy in these systems should reflect those standards and were approved in previous capital claims (Table 6 in the 2014/15 Claim). The standard is assessed as prudent with a medium level of documentation quality as a standard project close-out report was produced and sighted.

The capital claim for this project was the balance of works, and cost of the works claimed in FY15/16 was 1.4% of total cost, with \$2.5 million and \$3.6 million approved in 2013/14 and 2014/15. While there was little evidence provided to compare costs claimed to scope claimed, the costs for this project appear to be reasonable. As such, the project is considered prudent, with a medium level of documentation quality due to the limited availability of information.

5.2.18 A.04254 NR Section Insulator Renewal

Project Overview

This project is part of a larger program of works - Aurizon Network is replacing 287 section insulators throughout the Goonyella and Blackwater electrification systems. A helicopter fly-over of the electrified network was conducted to determine the baselined state of the asset and the highest priority section insulators.

Section insulators were installed between the catenary and contact wires of overhead traction wiring typically near turnouts of station yards, at crossovers between two tracks on open route areas between station yards and at turnouts at mine balloon loops and in other locations.

Section insulators with associated isolators enable the switched electrical sectioning of overhead traction wiring, thus enabling the de-energisation of electrical sub-sections between section insulators whilst other electrical sub-sections can be energised. Under electrical fault conditions section insulators with associated isolators in duplicated track situations can enable electric trains to be run around electrical sub-sections.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$0.1M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$0.1M

The scope of the NR Section Insulator Renewal Project includes renewal of the 157 existing Rebosia section insulators in the Blackwater Electrification system with either new Jacque Galland type section insulators that are in accordance with the Aurizon Network current operational and technical specification documents. The works in the 2015/16 period was for the remaining Rebosia insulators and a number of Jacques Galland section insulators. While condition assessments for the insulators were not available for review, we note that Aurizon Network has reported a number of section insulator failures, and the existing insulators were installed 26 years prior. Therefore, due to the age of the equipment it is assumed that the works were reasonably required to maintain operational performance.

The funding included the requirement to conduct a helicopter fly-over of the electrified network to determine the base lined state of the asset and the highest priority section insulators. Email from Aurizon Network dated 27 April 2017 states that a helicopter flyover was completed in 2013, but there was not sufficient detail in the photos taken to ascertain priority and criticality for changing out the section insulators. The email states that the remaining Rebosia and a number of Jacques Galland section insulators were replaced due to insulation failures encountered and a substandard air gap. AECOM consider the scope of works to be prudent based on operational safety requirements, with a medium level of data quality in the absence of condition assessment details or the data expected from the helicopter flyover.

With regards to standard, the insulators installed 26 years ago are being replaced with insulators which are in accordance with Aurizon Network's current operational and technical specification documents. These types of insulators are used across the globe on similar electrified railway schemes. Inspection and Test Plans (ITPs) have been reviewed, which make reference to Aurizon Network's Specifications for the inspection and removal of existing insulators and makes reference to the manufacturer's installation instruction manual. A project closure report is available but is not signed. This project is considered prudent in standard.

The data quality to inform the assessment is medium.

The cost incurred for this program is for the replacement of the aforementioned insulators. The claim is for the balance of unclaimed works for the project, which was started prior to FY15/16 and which has previously been accepted into the regulated asset base. The project is part of a larger program of works and the costs are considered reasonable for the scope and standard of work done. This project is therefore considered prudent in cost, however the limited availability of information in relation to comparing costs to scope claimed means this project is prudent with a low level of documentation quality.

5.3 Summary of Findings for Renewal Projects

The conclusions for projects reviewed in this section are summarised in Table 12, where:

- A tick or a cross indicates our recommended acceptance or otherwise of scope, standard or cost;
- The colour represents our assessed level of project documentation quality in the conclusion based on the range and quality of documentation provided (as defined in Section 3.3).

Table 12 Summary of findings for Renewal projects

Project	Prudency Assessment			Project Cost (\$ million)		
	Scope	Standard	Cost	Claim	Adjust.	Accepted
IV.00140 NO FY16 Network Maintenance Re-Rail Program	✓	✓	✓	\$33.3		\$33.3
IV.00025 NR Track Upgrade Program FY16	✓	✓	✓	\$25.6		\$25.6
IV.00033 FY16 Sleeper Renewal Program	✓	✓	✓	\$10.4		\$10.4
IV.00032 NR FY16 Turnout Renewal Program	✓	✓	✓	\$9.8		\$9.8
IV.00031 NR FY16 Structures Renewal Program	✓	✓	✓	\$9.1		\$9.1
A.04221 NR Microwave Resilience System Upgrades	✓	✓	✓	\$7.4		\$7.4
IV.00052 Level Crossings FY16	✓	✓	✓	\$6.4		\$6.4
IV.00048 NR Formation Renewal FY16	✓	✓	✓	\$5.7		\$5.7
IV.00036 NR Bridge Ballast Renewals FY16	✓	✓	✓	\$5.6		\$5.6
IV.00176 2015 Moura Flood Works	✓	✓	✓	\$4.4		\$4.4
A.04622 Overhead Line Equipment Renewal	✓	✓	✓	\$4.8		\$4.8
A.04320 NR Optical Fibre Transmission Network Upgrade	✓	✓	✓	\$3.8		\$3.8
IV.00035 NR Callemondah Yard Spur 1 Connection	-	-	-	\$0.0		\$0.0
IV.00028 Autotransformer Replacement Program	✓	✗	✓	\$3.0	\$0.1	\$2.9
A.04231 NR Ethernet to Corner SCADA Upgrade	✓	✓	✓	\$2.8		\$2.8
IV.00041 Connors Range 3G Coverage	✓	✓	✓	\$2.5		\$2.5
IV.00026 Transmission Renewal Program – Tranche 1	✓	✓	✓	\$1.4		\$1.4
A.04563 NR CQCN Structures Renewal Program FY15	✓	✓	✓	\$1.1		\$1.1
A.03978 NR Optical Fibre Transmission Network Upgrade	✓	✓	✓	\$0.2		\$0.2
A.04111 NR Dual Telemetry Upgrade	✓	✓	✓	\$0.1		\$0.1
A.04254 NR Section Insulator Renewal	✓	✓	✓	\$0.1		\$0.1
All Renewal Projects (REPEX)				\$137.4	\$0.1	\$137.3

6.0 Other Projects

6.1 Large Projects

6.1.1 A.03980 Project Pluto

Project Overview

In January 2012 Project Pluto was initiated to deliver the processes, technology and organisational change management for optimised planning and scheduling and automated day-of-operations decision making. In recognition of the complexity of delivering these types of solutions the project was to be executed over three phases.

Phase 1 (12 months) – Advanced Planning and Scheduling (APS):

- Planning and scheduling optimisation and decision support capability from two year planning horizon to day of operations execution and recovery
- ViziRail utilised for day of operations monitoring purposes, on time performance and incident recording
- Continuation of existing integration with access holder IT systems and the SAP network billing solution

Phase 2 (18 months) – Movement Planner (Foundation)

- Deployment of Movement Planner Phase 1 (real time electronic graph) for day of operations execution
- Integration of APS and Movement Planner for seamless planning and execution with a feedback loop from day of operations back into planning
- Decommissioning of ViziRail and NOPP
- Integration development to switch over new systems to existing customer systems, including SAP billing solutions

Phase 3 (36 months) – APS+ Movement Planner (Optimisation)

Deployment of Movement Planner Optimisation which will deliver automated conflict detection and resolution within the day of operations.

In 2013 the program delivery schedule was re-sequenced to bring forward Phase 2, followed by Phase 1 and Phase 3. Integration with APS will occur in conjunction with Phase 1.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$14.4M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$14.4M

This claim is for the delivery of Phase 2 of Project Pluto. The objective of Phase 2 was to improve the efficiency of decision making in day-of-operations train control management in the Aurizon Network Train Control Centre. This has been done by moving from manually intensive paper and pen based techniques of recording train movements to an interactive screen based electronic train graph that shows current and forecast location for all train services on the CQCN network.

The key business benefits are well structured within the Capital Expenditure request. Financial benefits include the decommissioning of the ViziRail system and a reduction in day of operation losses. A post-implementation review has not been completed, but a benefits realisation assessment for specific network KPIs referred to in the Capital Expenditure Feasibility Investment Approval Request (FIAR) shows the first six months of operational planning trending upwards, reproduced from the FIAR. As such, the scope is assessed as prudent.

The data quality to inform the assessment is low. It is recommended that the post-implementation review is assessed in future claims to compare the benefits realised compared with those planned.

Table 13 Network KPIs

KPI	Baseline Metric (FY15)	Phase 2 (target)	Phase 2 (actuals)	Trend
On Time Port Arrivals	16.13%	17.30%	17.49%	↑
Network Velocity (Cycle Velocity)	23.7 kph	23.81 kph	23.82 kph	↑
DoO Cancellations	7.30%	7.2%	6.5%	↓
Schedule Adherence	12 to 69%	17 to 74%	14 to 74%	↑
Payload Improvements	8686 t	8687 t	8806 t	↑

The Transition to Support Plan defines the execution plan for the project and the APEX Phase 2 Final Acceptance Report identifies the testing regime to be followed. The standards followed seem reasonable and are assessed as prudent. The documentation quality is considered to be high.

Attachment 8 (Feasibility Paper) in the Funding Request outlines that Aurizon Network tested the market through a Request for Information and invited 14 companies with commercial off-the-shelf capabilities in planning, scheduling, day-of-operations and optimisation. Six companies were subsequently shortlisted and four responded to the Request for Proposal. The scoring and weighting process was sighted with the preferred supplier identified for software and associated implementation services.

The CAPEX budget of [REDACTED] outlined in the FIAR is the result of a competitive tender. It covers three phases of activity, but does not provide a breakdown of cost by phase, although an amended agreement between Aurizon and the selected supplier addresses approximately [REDACTED] of the FIAR cost estimate. [REDACTED]

[REDACTED] No evidence has been provided to explain the change in project scope, or to demonstrate approval of any variations involved.

Implementation of the program is delayed from the original IAR Milestone dates, and Aurizon Network advises that only Phase 2 had been delivered as at the end of the FY15-16 financial year. The capital claim includes \$14.4 million incurred for Phase 2 in the FY15-16 year. Additional costs of [REDACTED] for Phase 2 were not included in the FY15-16 capital claim because the works were delivered after the end of that financial year.

[REDACTED] the \$14.4 million claim is less than the original budget outlined in the FIAR. In the absence of any detail of this cost, and bearing in mind that this is a project in progress, we recommend that the QCA accept this first claim, but apply scrutiny when evaluating future claims for Project Pluto [REDACTED]

The initial project cost is therefore considered prudent, and the quality of the documentation available to inform this assessment is considered to be low.

6.2 Small Projects

6.2.1 A.04565 Track Access System

Project Overview

The pertinent issue relating to this proposal is the foreseeable hazards and associated risks related to existing track access arrangements.

The unsuitable operating condition relating to Track Occupancy Authority (TOA) process is the inability to ensure the integrity of the TOA and validation by authorised persons. A key step related to TOA is ability to confirm and validate the location of in-field workers in proximity to related operations.

In addition to the safety benefits it is believed that there are further efficiency improvements that could be realised, although the utilisation of these improvements is outside the scope of the TAS Project.

Review

Review Summary	Scope	✓	Capital Expenditure Claim	\$1.6M
	Standard	✓	Impact of findings on Claim	\$-
	Cost	✓	Total accepted	\$1.6M

The Capital Funding Request indicates that the Track Access System addresses a core business need in improving safety through delivering:

- Transition from an administrative based control process to an engineering control;
- Improvements through providing GPS based confirmation of location;
- Streamlining of access, thereby improving convenience and reducing “shortcutting” of safety procedures;
- Elimination of human error in transcription of form details.

The close-out report (dated 27/10/16) has been sighted, along with a Benefit Realisation Plan (dated 13/1/2014) which identifies cashable benefits for 2015 and 2016. The scope is considered prudent with a medium level of documentation quality as the primary benefit to the business of the TAS Project is in the consolidation of the ongoing drive for Zero Harm through a significant safe working improvement. An upgrade to Track Possession System improves operational access to the corridor. We note that a post-implementation review is not yet available and that signatures are missing in the close-out report.

Upgrade to software applications across a number of Aurizon Network and QR systems including TAS, IAMPS and UTC. The project followed a development, change management and testing strategy with standards identified. The standard is considered prudent with a medium level of documentation quality. The Executed Project Brief lists the quality expectations, which includes field trials. Documentation of these trials have not been sighted.

The Capital Funding Request detailed a number of options investigated for this project, and noted a preferred option. In addition, numerous stakeholders were engaged and consulted, and signed off on the design. The project is a joint venture between Aurizon Network and QR, and common costs have been split 50/50 between both parties. Costs for the project are on budget, however a project program was not available. As such the project is considered prudent with a medium level of documentation quality.

6.3 Summary of Findings for Other Projects

The conclusions for projects reviewed in this section are summarised in Table 14, where:

- A tick or a cross indicates our recommended acceptance or otherwise of scope, standard or cost;
- The colour represents our assessed level of project documentation quality in the conclusion based on the range and quality of documentation provided (as defined in Section 3.3).

Table 14 Summary of findings for other projects

Project	Prudency Assessment			Project Cost (\$ million)		
	Scope	Standard	Cost	Claim	Adjust.	Accepted
A.03980 Project Pluto	✓	✓	✓	\$14.4		\$14.4
A.04565 Track Access System	✓	✓	✓	\$1.6		\$1.6
All Other Projects				\$16.0	\$0.0	\$16.0

7.0 Compliance with Safety and Environment Standards

The scope for this review specifically included evaluation of the safety and environmental controls specified and applied by Aurizon Network in the projects reviewed. This section summarises our findings in these areas.

7.1 Safety Performance

This review was made based on Work Health and Safety Management Plans (WHSMPs) provided by Aurizon Network as typical documents. The documents reviewed included:

- The Blackwater System Integrated Possession 11th and 12th of April 2016 Work Health and Safety Management Plan

This document establishes project scope, key H&S personnel, the stakeholder consultation process, safety incident management and reporting protocols, the provision of information to workers, audit process and records control, a safety policy statement, site specific safety rules, a hazard register, reference documents, safety responsibilities and SWMS.

The document includes a Hazard Register, but this is more a list of typical hazards than a specific hazard register, and there is no statement provided as to what to do with the list.

Attached to the WHSMP file are 65 site packs.

- The CM - IP Completion Report - Blackwater Possession April 2016 (v1.0)

This report summarises completion statistics for 110 planned and four unplanned work activities. It indicates, for example, that:

- 33 PC Site Packs were received on time, 61 were received late and 12 were not received
- 4 risk registers were received on time, 96 were received late and six were not received
- 12 PC compliance inspections were completed, and no non-conformances were raised.

The safety audit findings included in this completion report are outlined in Table 15.

Table 15 Safety audit findings

Topic	Completion
PPE Compliance	100%
SWMS Signed by Workers	75%
SWMS Reviewed and accepted in WHSMP	58%
20% of workers checked for RIW card	100%
Emergency assembly signage in place	66%
Prestart completed	100%
Welfare available on site	92%
Site Pack available on site	100%
WHSMP available on site	92%

- A sample of 11 PC Inspection & Audit Reports
Three of these reports are reproduced Table 16 to indicate the typical audit finding.

Table 16 Typical audit finding

Project	Topic	Result
Aspect 3 Level Crossing Modifications	General worksite (WHSMP available onsite, Site pack available onsite)	100%
	Prestart & inductions (briefing, emergency evacuation, 20% RIW card spot check)	67%
	SWMS (check available and in use, listed in WHSMP, signed by workers)	75%
	PPE (compliant and in serviceable condition)	100%
	Housekeeping (materials, final comments)	100%
Narrows Road Level Crossing	General worksite (WHSMP available onsite, Site pack available onsite)	100%
	Prestart & inductions (briefing, emergency evacuation, 20% RIW card spot check)	67%
	SWMS (check available and in use, listed in WHSMP, signed by workers)	75%
	PPE (compliant and in serviceable condition)	100%
	Plant and Electrical (in use on site)	100%
	Housekeeping (materials, final comments)	100%
Clean out culvert at 137.880Km and Culvert replacement at 126.100Km	General worksite (WHSMP available onsite, Site pack available onsite)	83%
	Prestart & inductions (briefing, emergency evacuation, 20% RIW card spot check)	100%
	SWMS (check available and in use, listed in WHSMP, signed by workers)	100%
	PPE (compliant and in serviceable condition)	100%
	Plant and Electrical (in use on site)	100%
	Housekeeping (materials, final comments)	100%

7.1.1 Findings

Findings based on consideration of the documents provided include:

- The Blackwater System Integrated Possession Work Health and Safety Management Plan covers all the elements that would be expected of an acceptable WHSMP.
It covers project scope, key H&S personnel, stakeholder consultation process, safety incident management and reporting, provision of information to workers, audit process and records control, safety policy statement, site specific safety rules, hazard register, reference documents, safety responsibilities, and SWMS.
- The Site Packs cover all the elements that would be expected of site packs: incident reporting, scope of works, applicable SWMS, PPE, site specific hazards listed and their safety controls, site specific hazard register completed with hazard map, emergency response plan, traffic management plan, site induction record: name, RIW card, sign-off and date, welfare facilities description.

- A sampling of PC Inspection & Audit Reports for the project activities corresponding to the issued site packs demonstrates that the site packs are being acceptably followed to manage safety on-site during the project activity.

The area of non-compliance of most concern is some instances where workers are not signing off on the issued SWMS and so the evidence to support the claim that they are fully aware of its contents is harder to support. However, the audit reports provide a clear means of measuring that deficiency, so that actions can be put in place to ensure that improves during future projects and that improvement recorded.

- Although only 11 audit report/checklists are provided, there is a sufficient number of each type to provide sufficient evidence that audits/checklists of this type provide sufficient depth of surveillance of implementation of the requirements of the WHSMP on-site during project activities to ensure that the safety objectives of the WHSMP are met.

It is a deficiency of the report "20160411 - CM - IP Completion Report - Blackwater Possession April 2016" that it does not make clear that "No. PC COMPLIANCE INSPECTIONS COMPLETED" listed in the "Safety Inspection Summary Table" (which is recorded as 12) is the number of audits conducted.

It is not clear why only 11 reports are provided for this review. There is no wording to summarise the percentage of activities audited, although it would appear to be about 10% (noting the number of activities is probably 114). That seems to be a reasonable percentage, but aiming for closer to 20% would be desirable to give greater confidence in the completion report summary.

The primary finding of the completion report that some SWMS were not being listed and were not being provided to the PC is overshadowed by the finding in the actual audit reports that not all workers are signing the SWMS (which leaves open the doubt that not all workers are aware of their contents or have the opportunity to point out any variations that may be applicable).

However, the audit completion report identifies that no non-conformances were raised and that the audits did cover a range of discipline areas. It is also accepted that that the completion report to review all audit report findings provides an acceptable way of monitoring any trend in SWMS signage compliance.

7.1.2 Conclusion

It is clear from the documents reviewed that Aurizon Network balanced the requirements of Safety during construction and operation and managed the project effectively, therefore satisfying Requirement 3.3.4 (c) (vi).

Two opportunities for improvement were identified in the audit summary completion report:

- to clearly show percentage audit completions
- to provide a summary table linking project activities and the audit report/checklist reviewing them.

7.2 Environmental Performance

Aurizon Network's corporate environmental management system provides a comprehensive framework and supporting documentation to ensure consistency in environmental planning and assessment approach and flexibility in management and mitigation response based on the nature of the project and potential impacts.

7.2.1 Aurizon Network's Environmental Framework

The Environmental Planning and Assessment Procedure (2014) provides a framework for environmental assessment, management and mitigation of impacts with potential to affect the environment in a way that supports the Aurizon Environmental Policy (POL-08) and the Aurizon Environmental Management Principle (ENV-PRI-001). The process flow includes:

- initial scoping assessment
- detailed environmental investigations

- preparation of preliminary environmental management planning
- seeking necessary approvals and permits
- checking of design for compliance with approvals conditions and statutory obligations
- preparation of and compliance with detailed construction environmental management planning
- preparation of operational environmental management plan/s and compliance with legal and approvals obligations.

Completed at concept stage, the preliminary environmental and planning assessment (PEPA) is a mandatory environmental assessment and scoping tool for all proposed Aurizon Network projects. It gives a preliminary or actual determination of potential environmental risks and mitigation measures (depending on the complexity of the project), as well as level of environmental assessment required and planning/environmental approvals required and timeframes to obtain them.

There is currently a PEPA checklist for Queensland, New South Wales and Western Australia. PEPA checklist identifies environmental planning triggers, statutory approvals, investigation requirements and assigns risk based on Aurizon-defined risk matrix. The Aurizon risk matrix defines risk levels for project performance and compliance factors to ensure equitable allocation of likelihood, consequence and risk rating, and nominates minimum action plan for resulting risk rating.

Based on the outcomes of the PEPA, recommendations are made for further studies such as Environmental Planning Study or Environmental Impact Statement, and implementation and compliance documentation such as Environmental Management Plan (Planning), Environmental Design Report and/or Environmental Management Plan (Construction) and Construction Environmental Audits. The completed checklist is signed off by an Aurizon Environmental Adviser.

For asset maintenance, renewal, and other minor works, a Construction EMP has been developed as a template where there are no statutory approvals or self-assessable works required. On CAPEX works where approval conditions apply, the Principal Contractor will provide its own specific EMP, which Aurizon Network will review.

There are a series of approvals and documents relevant to the CQCN to cover legal obligations in terms of contaminated land, invasive plants, noise management, working in or adjacent to waterways and vegetation management. Aurizon Network has submitted a Species Management Program for Colonial Breeder Fauna Species Encountered during the Maintenance, Replacement, Upgrade and Expansion of Culverts, Bridges and Other Structures to Queensland Department of Environment and Heritage Protection, which approved the document for implementation and conditions for its use. There is also an approved Species Management Program for tampering with animal breeding places (low risk impacts), and conditions for its use (valid until 30 June 2016).

Audits will be conducted depending on risk, duration and nature of CAPEX works. Monthly reports of environmental performance and incidents are typically sought from performing contractors.

7.2.2 Application of the Framework to the Projects under Review

All the projects listed in the FY15/16 Capital Claim were reviewed to assess the extent to which the Environmental Framework was applied, and to identify any notifiable incidents that could indicate a flaw in the procedures.

The documentation suggests that Aurizon Network applied its environmental control procedures effectively and consistently through the projects listed in the FY15/16 Capital Claim. There appear to have been no notifiable incidents (that indicate material or serious environmental harm) on any Network CAPEX project during FY15/16.

We therefore conclude that Aurizon Network is discharging its environment-related obligations consistently and effectively.

8.0 Summary of Findings

This section includes a summary of all key findings, presents our conclusions in relation to the capital claim, and highlights issues that were identified during the review that may be of interest to the QCA in terms of possible improvements to Aurizon Network's activities or the process of this review.

8.1 Key Findings

Findings in relation to the sample of projects selected for this review has been presented in this report by looking at Growth projects first, then Renewal projects and finally projects that do not fit into those categories, working through them in decreasing order by value.

A summary of findings is presented in Table 17, which shows our assessment in relation to each major criterion together with our assessment of the level of project documentation available (see Section 3.3 for legend), and the final impact on the capital claim.

Table 17 Summary of findings by project reviewed

Project	Prudency Assessment			Project Cost (\$ million)		
	Scope	Standard	Cost	Claim	Adjust.	Accepted
A.01731 Dingo to Bluff Duplication	✓	✓	✓	\$207.5		\$207.5
A.02976 North Coast Line	✓	✓	✓	\$155.8		\$155.8
A.03989 Bauhinia Electrification	✓	✓	✓	\$149.2		\$149.2
A.02803 Wotonga Feeder Station	✓	✓	✓	\$47.5		\$47.5
A.04043 WIRP Electrification Works	✓	✓	✓	\$11.2		\$11.2
A.03742 Moura East	✓	✗	✓	\$1.1	\$1.1	\$0.0
All Growth Projects (AUGEX)				\$572.3	\$1.1	\$571.3
IV.00140 NO FY16 Network Maintenance Re-Rail Program	✓	✓	✓	\$33.3		\$33.3
IV.00025 NR Track Upgrade Program FY16	✓	✓	✓	\$25.6		\$25.6
IV.00033 FY16 Sleeper Renewal Program	✓	✓	✓	\$10.4		\$10.4
IV.00032 NR FY16 Turnout Renewal Program	✓	✓	✓	\$9.8		\$9.8
IV.00031 NR FY16 Structures Renewal Program	✓	✓	✓	\$9.1		\$9.1
A.04221 NR Microwave Resilience System Upgrades	✓	✓	✓	\$7.4		\$7.4
IV.00052 Level Crossings FY16	✓	✓	✓	\$6.4		\$6.4
IV.00048 NR Formation Renewal FY16	✓	✓	✓	\$5.7		\$5.7
IV.00036 NR Bridge Ballast Renewals FY16	✓	✓	✓	\$5.6		\$5.6
IV.00176 2015 Moura Flood Works	✓	✓	✓	\$4.4		\$4.4
A.04622 Overhead Line Equipment Renewal	✓	✓	✓	\$4.8		\$4.8
A.04320 NR Optical Fibre Transmission Network Upgrade	✓	✓	✓	\$3.8		\$3.8
IV.00035 NR Callemondah Yard Spur 1 Connection	-	-	-	\$0.0		\$0.0
IV.00028 Autotransformer Replacement Program	✓	✗	✓	\$3.0	\$0.1	\$2.9
A.04231 NR Ethernet to Corner SCADA Upgrade	✓	✓	✓	\$2.8		\$2.8
IV.00041 Connors Range 3G Coverage	✓	✓	✓	\$2.5		\$2.5
IV.00026 Transmission Renewal Program – Tranche 1	✓	✓	✓	\$1.4		\$1.4
A.04563 NR CQCN Structures Renewal Program FY15	✓	✓	✓	\$1.1		\$1.1
A.03978 NR Optical Fibre Transmission Network Upgrade	✓	✓	✓	\$0.2		\$0.2
A.04111 NR Dual Telemetry Upgrade	✓	✓	✓	\$0.1		\$0.1
A.04254 NR Section Insulator Renewal	✓	✓	✓	\$0.1		\$0.1
All Renewal Projects (REPEX)				\$137.4	\$0.1	\$137.3
A.03980 Project Pluto	✓	✓	✓	\$14.4		\$14.4
A.04565 Track Access System	✓	✓	✓	\$1.6		\$1.6
All Other Projects				\$16.0	\$0.0	\$16.0
All Projects Reviewed				\$725.7	\$1.2	\$724.5

% of projects in Claim reviewed by Value
% of projects in Claim reviewed by Number

90%
33%

8.2 Costs Recommended for Rejection

We recommend that two projects of the projects reviewed of the adjusted claim have their cost claim completely or partially rejected. These include:

1. A.03742 Moura East

We have noted that Aurizon Network installed capping layer material in this project that did not meet their specifications. The lower quality material is likely to reduce the expected service life of the formation by more than 50%. Aurizon Network recognised the issue, and proposed a further project to mitigate this risk in their document "*Non-conforming capping layer material on SP2 on Moura Line*" dated 23/01/2015. This project has not, however, been implemented.

The lower quality material appears not to have obtained at a reduced cost, but the impact is likely to be a service life between 50% and 70% shorter than would otherwise have been the case. We have found that this project does not comply with Aurizon's standards, and suggest that the claim for the project be reduced accordingly. We note that only \$1.1 million of the project is included in the 2015-16 Claim, and since this is less than the adjustment suggested, we recommend that the QCA considered not accepting this Claim in its entirety.

2. IV.00028 Autotransformer Replacement Program

We note that the delivery of these works did not comply with standard AS2067:2008, as the bunds were not constructed to contain potential oil leakage. Future rectification of this issue will require an element of rework, and we recommend that Aurizon Network be instructed not to claim for the cost of this rework in the future.

8.3 Findings in Relation to the Review Process

Of the projects reviewed, only a small number were found to have issues significant enough to warrant a potential adjustment to part or all of their capital cost Claim. As noted previously, two of these projects have been adjusted or deferred from the Claim.

Several factors contributed to these issues and affected the conduct of this Review:

- **Scope control**

It appears that Aurizon Network has allowed project scope to be modified after approval of the funding request and for two of the projects reviewed there appears to be no evidence of justification for the additional or revised works.

While we are not in a position to comment on the prudence of these additional works because we have not seen justification for the scope, we assume that this justification does exist. The primary issue is therefore the ability of Aurizon Network staff to use funds to deliver works that are not in the approved scope, and this is a governance issue. We are not able to conclude how wide-spread this issue is from the limited sample of projects we have reviewed, but we recommend that the QCA advise Aurizon Network to improve its controls and approval procedures.

- **Compliance with Standards**

The works delivered has generally been found to meet Aurizon Network or best practice standard sand specifications, but two of the projects reviewed did not comply with the relevant standards.

We are unable to identify the reason why these two projects did not comply with relevant standards, but the implication is that Aurizon Network's governance and project management procedures are not consistently followed and monitored.

We recommend that Aurizon Network be instructed to recognise the need for a consistent performance in relation to applicable standards, and to improve its training, delivery and governance in that area. We have not identified evidence of 'gold-plating' or over-design. In contrast, it appears that staff members generally prefer to keep assets in service for as long as possible.

- **Documentation**

This review has had to involve a large number of documents, many of which were only partly relevant. We believe that the range of documentation required for an assessment capital projects is easy to define, and should be available for in-house post project reviews carried out for audit purposes and to identify performance improvement opportunities.

The documents should therefore be standard practice for Aurizon Network. If they were completed as a matter of course, reviews such as this, whether done by third parties or done internally, would be a great deal more efficient.

Tender evaluation documentation and approvals were observed for some packages of work, but not all. Project Completion Reports were generally not signed or dated.

The lack of the full range of documentary evidence and the lack of consistency in those documents provided means that we are forced to assign a relatively low level of documentation quality to some of our findings. We note in particular the apparent lack of adequate justification in the form of business cases or similar documents for many capital projects.

We indicated in Table 6 the documents we believe should be adopted as standard deliverables by Aurizon Network, and should be made available for future reviews of capital claims.

- **Condition Assessment**

Effective condition assessment is essential for optimal planning of asset renewal. It appears that Aurizon Network is not consistent in assessing asset condition, in terms of frequency, range of assets assessed and the quality of the assessment.

We are aware that Aurizon Network has invested in this area since the FY15/16 Claim.

The more critical assets usually warrant a higher degree of inspection, and we would expect to see more comprehensive assessments of these assets.

- **Strategic Asset Management Plans**

In many cases, it appears that renewal planning during and before FY15/16 was based on assessments made by staff, where there is very little if any basis provided for the decisions.

Best practice, as indicated by ISO55001:2014, involves:

- Clear definition of levels of service required, and specifically of maximum allowable outages or service interruptions. This is used to develop a corporate risk tolerance (of failure) which guides strategic asset planning.
- Identification of 'critical' assets (often referred to as 'gold' assets), which are defined as those assets that would cause a service interruption if they fail (referring to the maximum interruptions allowed).
- Developing a clear understanding of the both the risk of failure and the impact of failure on service levels. Renewal planning for critical assets is driven by an assessment of this risk.
- Planning of asset renewal and maintenance activity based on whole-of-life or total cost of ownership, intended to identify the optimal timing of asset renewal based on asset criticality, and the likelihood of failure, and total cost (specifically including consideration of the cost of a service interruption to customers).
- Failure prediction based on regular assessment of asset condition, with reference to in-house experience of failure and manufacturer's recommendations in relation to service life.
- A range of other factors which are less relevant to this review.

The rationale for asset renewal or replacement should be captured in a set of strategic asset management plans, developed in compliance with ISO55001:2014.

We note that many asset classes are best managed as a population of assets, and that we would expect to see program-based planning for renewal, especially for linear assets which generally reach a steady state in the rate of replacement and therefore of funding requirements (in real terms) based on the planned state of good repair of the assets.

Although Aurizon Network has been able to provide some evidence of effective condition assessment prior to the FY15/16 Claim, it has not been able to provide us with any asset management plans, and the basic requirements for planning of asset renewal do not appear to have been in use at the time the FY15/16 renewal projects were approved. We note that we have been shown evidence of significant improvement in this area during the last year, largely in relation to condition data and evaluation, but we have not been shown any asset management plans or any similar documents that indicate effective planning for optimisation of asset renewal.

We strongly recommend that Aurizon Network be instructed to become as compliant as possible with ISO55001:2014 before the next review of its capital projects, and specifically that it develop a set of strategic asset management plans for all significant asset classes as soon as possible.

- **Cost control**

Costs and cost control for most projects appeared to be reasonable

We note that the breakdown and justification of costs for final construction is minimal, and is not fully demonstrated in final reporting. Formal cost reconciliation is required during project close-out and should be included in post-project reviews.

9.0 Recommendations

Based on the findings of this review, we recommend that:

1. The QCA provisionally reject \$1.1 million of FY15/16 Claim in relation to A.03742 Moura East, because of works determined to not meet Aurizon's standards.
2. The QCA recommend to Aurizon Network that they continue the improvement in their business processes, specifically including:
 - Control of project scope and scope variations.
 - Consistency of compliance with standards and the governance processes that monitor compliance performance.
 - The quality and range of documentation used in project control, particularly in relation to project justification.
 - Its approach to condition assessment, which has been assessed to be inconsistent. We have noted Aurizon Network appears to have invested in this area since these projects were delivered, and we anticipate that this may not be an issue at the time of the next Capital Claim review.
 - Development, maintenance and use of asset management plans to record the rationale and justification for asset renewal, demonstrate that an optimal solution has been identified and adopted, and inform resource allocations including funding for asset renewal (and maintenance).
 - Development of its asset management systems towards compliance with ISO55001:2014
 - Project close-out and post-implementation project reviews.

We have noted that planning for refurbishment or replacement of assets should be planned and prioritised based on the risk that their failure would impose on service levels (their criticality). This assessment involves assessing the probability of failure, and while it can be used effectively in populations of assets of one class, it is not necessarily reliable for individual assets.

Best practice involves managing a class of assets on a whole-of-life basis, scheduling resources and funds based on the assessed probability in a particular period of a number of assets failing. We believe that an assessment of renewal projects would be more effective if the management program is examined, generally as reflected in strategic asset management plans. This implies that an assessment of renewal projects should be forward-looking, and could be relied on to estimate to an acceptable degree of confidence the funding required in a forthcoming undertaking period. We believe that this approach would deliver better outcomes.

We therefore recommend that Aurizon Network, in their next undertaking propose a similar, forward looking review process for renewal capital expenditure to the way it currently reviews operational cost projections for the next undertaking period.

Finally, we recommend that following the finalisation of this review, a 'lessons learned' workshop be undertaken with participants from the QCA, Aurizon Network and AECOM. The aim of this workshop will be to evaluate the capital expenditure review process from each perspective and allow participants to recommend improvements for streamlining the process in future years. The outcome of the workshop should be actionable objectives for future reviews agreed on by all parties, for example, a standard RFI process, a minimum requirement document 'checklist,' or the inclusion of document managers in project teams.



Appendix A

Individual Project
Assessments

Project Name	Dingo to Bluff Duplication	
Project Number	A.01731	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Track	
System	Blackwater	
Expenditure Claimed	\$	207,523,309.00

Reason for Project		
Expansion		<input checked="" type="checkbox"/>
Renewal		<input type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Feasibility Investment Approval Request Project Management Plan Executed Works Brief (2012) CRIMP WIRP Scope and Variations Completion certificates
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	YES	2009 Master Plan for Wiggins Island Expansion	None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	YES	Based on the WIRP 1 IAR and BRRT requirements, the four duplications were required to meet the WIRP1 committed tonnages to finalise the duplication of the Blackwater System from Burngrove to the North Coast Line	None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	YES	Given that this is a growth project and was required to accommodate reasonable demand, in line with WIRP1 committed tonnages, the scope of the project is considered prudent with a high level of confidence.	None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	N/A	Part of the WIRP Project to meet WICET requirements	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	WIRP Project IAR then Section Budget, Tender	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	To suit WIRP	None	\$ -	
Comment on Prudency of Scope			Given that Dingo to Bluff is a growth project that was aligned to the Coal Rail Infrastructure Master Plan, and was required to accommodate reasonable demand, in line with WIRP1 committed tonnages, the scope of the project is considered prudent. The documentation quality to inform this assessment is assessed as high.			
Prudency of Scope Documentation Quality			High			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Scope book Variation to standard practice Completion certificates
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Approved variations to standard practice are in line with normal process for a brownfield corridor.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			Following review of WIRP – Stage 1 Scope Book and the completion documentation, the works were found to be consistent in standard with existing Aurizon standards and configuration of adjacent infrastructure. In addition, approved variations to standard practice (VSP) are in line with normal process for construction works within a brownfield corridor that interface with existing operational assets. This project is considered prudent in standard with a high level of documentation quality, as works were consistent with appropriate standards.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	CRIMP Table 15	None	\$ -	Documents include: Feasibility Investment Approval SAP Invoices Recommendation for award Tender evaluation plan Contracts and Procurement Management Plan
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?			None		
	What proportion of the difference should be considered a capital cost?			None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Yes, works beyond Aurizon capabilities competitively tendered	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	External contractors / Local Aurizon staff	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Supply agreements used for them not tendered	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Insufficient info to comment	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Yes, works beyond Aurizon capabilities competitively tendered	None		
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Project split into segments	None	\$ -	
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None		
	(B) Environmental approvals and compliance?	YES	Project was constructed without significant safety, quality or environmental issues. The project received a number of environmental approvals that were approved and conditioned by government departments and agencies under relevant Commonwealth and State legislation. Conditions of approval were integrated into work methods and planned activities. Evidence of EMP and contractor's Environmental Works Method Statements being implemented to achieve compliance with approvals and a high level of environmental performance. Erosion and sediment control complied with IECA best practice. Only one minor environmental (spill) incident was recorded.	None		
	(C) Compliance with legal and authority requirements?	N/A		None		
	(D) Minimising disruption to operation of train services during construction?	N/A		None		

	(E) Were access holder requests appropriately managed?	N/A		None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A		None	
	(G) Minimising total project costs?	YES	Competitively tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES	WIRP Integration	None	
	(I) Did the project meet contractual time frames?	YES	Network ready for WICET	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	WIRP Project included \$59m contingency.	None	\$ -
	With regards to project management costs?	N/A	Seg 4 IAR / Estimate not provided	None	
	With regards to risk allowances?	N/A		None	
	With regards to timing/delivery program?	N/A		None	
	With regards to ordering and storage of equipment?	N/A		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO	Cost for WIRP are not passed onto WICET except through purchase to pay freight contracts	None	\$ -
	If Yes, were the costs allocated appropriately for end users?	N/A		None	
Comment on Prudency of Cost			This project was part of a larger program of works (the WIRP integration), which provided contingency and risk allowances for all the projects involved in the program. This project fell within financial tolerances, and is considered prudent in cost. The documentation quality to inform this assessment of cost has been assessed as medium.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	North Coast Line	
Project Number	A.02976	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Track	
System	Blackwater	
Expenditure Claimed	\$	155,796,333.00

Reason for Project		
Expansion		<input checked="" type="checkbox"/>
Renewal		<input type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Feasibility Investment Approval Request Project Management Plan CRIMP WIRP Scope and Variations Completion certificates Customer Presentation Kabra Roads Assessment
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO	For the Kabra Holding Roads, evidence was sighted of a presentation to customers on the scope of works. This pre-approval is not in accordance with Clause 3.1.1 of the 2010 Undertaking	None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	YES	2009 Master Plan for Wiggins Island Expansion. Exact scope not defined, but the support for works on NCL was included.	None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	YES	Reduced scope from base IAR (triplication of NCL) as defined in the scope book as four components of works: WICET Spur Yarwun Ballast Siding Aldoga Holding Road Kabra Holding Road	None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	YES	Aurizon Network has undertaken capacity modelling and gained WIRP customer acceptance of two holding roads at Kabra.	None	\$ -	
Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Part of the WIRP Project to meet WICET requirements	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	WIRP Project IAR then Section Budget, Tender	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Customer presentation sighted	None	\$ -	
Comment on Prudency of Scope			Given that North Coast Line is a growth project that was aligned to the Coal Rail Infrastructure Master Plan and was required to accommodate reasonable demand in line with WIRP1 committed tonnages, the scope of the project is considered prudent. The documentation quality to inform this assessment of scope is medium as the management of scope change was not well documented.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Scope book Variation to standard practice Completion certificates
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Approved variations to standard practice are in line with normal process for a brownfield corridor.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The works undertaken were as per Aurizon Standards as defined in the WIRP Stage 1 Scope Book, and approved variations to standard practice were in line with the normal process for a Brownfield corridor.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Part of WIRP Strategy	None	\$ -	Documents include: Feasibility Investment Approval SAP Invoices Recommendation for award Tender evaluation spreadsheet Contracts and Procurement Management Plan Project Completion Report
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Competitively tendered	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	-	Budget for this segment not provided	None		
	What proportion of the difference should be considered a capital cost?	-	Budget not provided	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Scope book provided	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Competitively tendered	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	-	Limited or no evidence	None		
	Were alternatives considered to minimise whole of life costs?	-	Limited or no evidence	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None		
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?			None	\$ -	
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None		
	(B) Environmental approvals and compliance?	YES	Project was constructed without significant safety, quality or environmental issues. Completion reports indicated the WIBL project received a number of environmental and project approvals that were approved and conditioned by government departments and agencies under relevant Commonwealth and State legislation. Conditions of approval were integrated into work methods and planned activities. Anecdotal reports highlight the proactive environmental performance of contractors. Protected plants were translocated and used by local council for landscaping purposes, and vegetation offsets were secured under the Vegetation Management Act 1999. Minor environmental (spill) incidents were recorded.	None		
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None		
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None		

	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	YES	\$99m under budget	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited or no evidence	None	
	(I) Did the project meet contractual time frames?	YES	Project completed to suit WICET	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	\$99m under budget with an initial Contingency of \$12.4m based on a P75 Estimate	None	\$ -
	With regards to project management costs?	-	Limited or no evidence	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO	Part of WIRP Strategy	None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudency of Cost			The Project Completion Report (January 2016) shows a revised budget of \$268.0 million. The project was delivered \$99.0 million under budget, mostly realised in the civil works (\$35.0 million) and unused contingency (\$59.0 million). Tender evaluation assessments were sighted for signalling design and construction, indicating that the project was competitively tendered to achieve value for money.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	Bauhinia Electrification	
Project Number	A.03989	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Electrical Expansion	
System	Blackwater	
Expenditure Claimed	\$	149,247,831.00

Reason for Project		
Expansion		X
Renewal		
Environmental Compliance		
Safety Compliance		
Risk Mitigation		

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Documents Included: Bauhinia Electrification Feasibility IAR Bauhinia Electrification Project Plan Project Delivery Method and Recommendation Report Contract Tender Assessment and Recommendation Report RFP Package Project Management Plan Tender Documentation Project Close Out Report Completion Certificates SAP Schedule
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	External tender provided saving in the order of \$20m	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Tendered to market for competitive tenders	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Option to self build or external providers, which saved approx. \$20m	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Tendered to numerous parties	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Don't have any records noting, however, design was signed off by Aurizon engineers	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Numerous procurement options investigated	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Competitively tendered	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	The project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework.	None	
	(C) Compliance with legal and authority requirements?	YES	PC Certificates signed off	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Works programmed to suit operational network	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	To suit Aurizon network solutions	None	
	(G) Minimising total project costs?	YES	Competitively tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
	(I) Did the project meet contractual time frames?	YES		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES		None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	YES	\$21.6m in contingency allowed in \$171.6m budget	None	
	With regards to timing/delivery program?	YES		None	
	With regards to ordering and storage of equipment?	YES		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	YES		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudence of Cost			Project delivery and competitive tendering for this project reflect cost efficient practices. The project budget of \$198.1 million was noted in the funding request (dated March 2013), and once awarded to Laing O'Rourke, was reduced to \$171.6 million. The project was subsequently delivered under budget and is considered prudent in cost.		
Prudence of Cost Documentation Quality			High		
Conclusion			Prudent		

Project Name	NI Wotonga Feeder Station	
Project Number	A.02803	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Electrical Expansion	
System	Goonyella	
Expenditure Claimed	\$	47,492,745.00

Reason for Project		
Expansion		X
Renewal		
Environmental Compliance		
Safety Compliance		
Risk Mitigation		

SCOPE Assessed by Ian Woodhead

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES				
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES				
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES				
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO				
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES				
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	YES		None	\$ -	Documents include: QCA letter dated 26 May 2011. Coal Rail Infrastructure Master Plan. Capital / Operational Expenditure Feasibility Investment Approval Request, Section 2.5. Independent Peer Review.
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	YES		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.2 (c)	Expansion projects					
	Were the works reasonably required?	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -
		(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	

Renewal Projects

(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -
(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -
(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -
(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -

Procurement

(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	IW words: Capital / Operational Expenditure Feasibility Investment Approval Request, Section 2.2, identifies the Procurement Levers to be explored for the feeder station design and construction, which includes a second partner alliance competitive check. The delivery of this type of project is not considered to be cost effective, in particular, when design cost savings are not carried on from previous Alliance projects. A Design and Construct delivery approach would have resulted in substantial cost savings. The Best Value Report identifies key achievements as producing an effective design template for future TrackPower and Aurizon power systems projects. It is not understood why the existing TrackPower proven template design was not used, which will have increased the estimate carried out in the TrackPower Target Cost Estimates. Using a proven template design would have provided the opportunity for substantial design cost savings. The report has been written in the TrackPower Template, but it makes constant references to UGL's ability in saving costs and delivering ahead of time and within budget.	None	\$ -
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Project & Budget endorsed by sponsors	None	\$ -
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	Stakeholders have endorsed project to proceed	None	\$ -

Comment on Prudency of Scope

Wotonga Feeder Station was one of nine projects identified in the Coal Rail Infrastructure Master Plan that was pre-approved by the QCA based on a Customer Group vote. A letter from the QCA entitled 'Regulatory Pre-approval of Scope for 2010 Coal Rail Infrastructure Master Plan' outlines the decision by the QCA to approve the scope of works of these nine projects, which are listed in Appendix A of the letter. The QCA Regulatory pre-approval of the scope letter states that 'at least 60% of customers, by volume, did not oppose the scope of the project and that the vote was conducted in accordance with the 2010 Access Undertaking.'

The Wotonga Feeder Station, therefore, satisfies the pre-approval conditions of the 2010 Access Undertaking, and can be considered prudent in scope. Documentation was of a high quality.

Prudency of Scope Documentation Quality

High

Conclusion

Prudent

STANDARD Assessed by Ian Woodhead

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:
 - the standard of works has been pre-approved in accordance with Clause 3.1.2
 - QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
 - the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Feasibility Investment Approval Request Project Management Plan Schedule Procurement Plan Best Value Report Completion Certificates
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The project works were carried out to Aurizon Standards and Specifications. The TrackPower Alliance Best Value Report outlines the State, National, and Aurizon Standards that the project adhered to.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The project works were carried out to Aurizon Standards and Specifications. High voltage (HV) switchgear, traction power transformers, autotransformers and switch-room buildings have been procured in accordance with the Aurizon Specifications. Traction power substations were designed in accordance with AS2067 – High Voltage Substations above 1kV AC. Inspection and Test Plans (ITP) were reviewed to ensure that the substations were tested in accordance with Aurizon Network's procedure for the Commissioning of Aurizon Network's Power Systems Equipment. The TrackPower Alliance Best Value Report outlines the State, National, and Aurizon Standards that the project adhered to, and as such, the project is considered prudent in standard with high documentation quality.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Documents include: Feasibility Investment Approval Request Project Management Plan Schedule Procurement Plan Best Value Report Completion Certificates SAP	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None			
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Saving to budget based upon procurement	None			
	What proportion of the difference should be considered a capital cost?	-		None			
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment		Information assessed
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Use of existing alliance & Aurizon standing offer agreements	None	\$ -		
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	As above	None			
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	As above	None			
	Were alternatives considered to minimise whole of life costs?	NO	Aurizon standard specified equipment	None			
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	The procurement was part 'Alliance' and part competitively tendered via SOA	None			

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES		None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Best value review of project (2014) indicates environment, cultural, heritage and community impacts were properly considered and managed. It reports environmental impacts have been assessed with the PEPA tool and Environment Planning Study managed in accordance with Track Power's EMS. Environmental compliance inspections were performed monthly. The project achieved nil environmental incidents and near hits/misses.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence. Aurizon specifications met	None	
	(G) Minimising total project costs?	YES	Saving to budget based upon procurement via Extg. Alliance & SOA's	None	
	(H) Did project elements align with other elements in the supply chain?	YES	To meet Aurizon standards	None	
(I) Did the project meet contractual time frames?	YES		None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES		None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	YES	Project completed under budget & on-time (even some elements early)	None	
	With regards to timing/delivery program?	YES	As above	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudence of Cost The works were partially procured through an existing 'alliance' and partially competitively tendered via standing offer agreements (SOAs). No documented evidence has been viewed which demonstrates that competitive pricing was carried out for the alliance or that an alternative project delivery structure was taken into consideration. However, as the alliance was already operational, documentation, contracts and frameworks were already in place and administration costs were minimised. The project was completed under budget and on-time and demonstrated value for money, but we consider that the Alliance should have been able to use a standard design template instead of having to produce another template as detailed in the TrackPower Alliance Best Value Report. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.		
			Prudence of Cost Documentation Quality Medium		
			Conclusion Prudent		

Project Name	WIRP Electrification Works	
Project Number	A.04043	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Electrical Expansion	
System	Blackwater	
Expenditure Claimed	\$	11,191,296.00

Reason for Project		
Expansion		<input checked="" type="checkbox"/>
Renewal		<input type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Ian Woodhead

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Coal Rail Infrastructure Master Plan 2009, Section 5.2.2. Wiggins Island Rail Project Stage 1 Scope Book. SAP, IAR WIRP scope book stage. SAP/IAR Budget.
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	NO	Section 5.2.2 of the CRIMP refers only to the concept of the WICET and how it will support any major increases of traffic beyond future committed levels for RG Tanna Coal Terminal (RGCT), BP Coal Terminal (BPCT) and Gladstone Power Station.	None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	YES	[redacted] sighted (this was informally provided by Aurizon)	None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	YES	[redacted], we consider that the project works are reasonably required to accommodate reasonable demand	None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	WIRP Electrification respond to suit	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A		None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	WIRP Project scope	None	\$ -	
Comment on Prudency of Scope			<p>We note that some parts of the Wiggins Island Rail Project Stage 1 Scope Book are inaccurate. Section 3.1.5 specifies that the traction distribution scope should include a 50kV autotransformer system (25-0-25kV) throughout the entire loop, while the Sectioning Diagram C-S-419 shows that it is in fact a 25kV system throughout the balloon loop, indicating that the project has not been delivered to the Scope Book. However, AECOM understand that it is normal practice to use 25kV systems for balloon loops and that the variation from scope is appropriate. Section 4.1.4 of the Scope Book requires the supply, install, test and commission of new autotransformers, power supply cubicles and alternator. AECOM believes that this infrastructure was not required because it is covered in Section 3.4.1 of the Scope Book. We note that no duplication of these works has been carried out by Aurizon Network.</p> <p>We consider that the project works are reasonably required to accommodate reasonable demand. As such, this project is considered to be prudent in scope. The quality of information to support prudency of scope is medium as informal information has been used to reach a conclusion.</p>			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Ian Woodhead

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Electrical Engineering - Traction Distribution Technical Specification. Aurizon Autotransformer Technical Specification. AS2067 Inspection and Test Plans, photographs Selection of As-Built drawings.
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Various aspects of the as-built documentation for WIBL have been reviewed to gain confidence that the design is in accordance with the Aurizon Network electrification standards. Upon review of an aerial photograph of the WICET spur line, we can determine that standard Aurizon Network Autotransformer site design has been used.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			Various aspects of the as-built documentation for WIBL have been reviewed to gain confidence that the design is in accordance with the Aurizon Network electrification standards. Inspection and Test Plans have been reviewed to ensure that the infrastructure was tested in accordance with the Aurizon Network Commissioning Procedure before being put into service. Limited design documentation has been sighted for the WICET spur line. Upon review of an aerial photograph of the WICET spur line, we can determine that standard Aurizon Network Autotransformer site design has been used. This standard design appears to be in accordance with AS 2067 – Substations and High Voltage Installations Exceeding 1kV AC. This project is considered prudent in standard. The documentation quality used to inform this assessment is considered low.			
Prudence of Standard Documentation Quality			Low			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Part of WIRP Project	None	\$ -	Documents Include: Wiggins Island Rail Project Stage 1 Scope Book. SAP, IAR WIRP scope book stage. SAP/IAR Budget. Additional Funds Approval
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Actual cost \$1.9m less 14.6%. Only claimed actual cost	None		
	What proportion of the difference should be considered a capital cost?			None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	14.6% saving	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Internal labor used	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Supply agreement used to purchase	None		
	Were alternatives considered to minimise whole of life costs?	N/A	System to match networks	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Actual vs budget cost saving	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	The project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework. The Wiggins Island Balloon Loop electrification (Segment 1) internal services agreement lists production of a Construction environmental management plan and compliance with it as a critical deliverable. Monthly environmental reporting is also a deliverable.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	YES		None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	YES		None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	NO	IAR doesn't include contingency	None	\$ -
	With regards to project management costs?	-	Limited or no evidence	None	
	With regards to risk allowances?	YES	Risks noted in IAR	None	
	With regards to timing/delivery program?	YES	To suit WIRP Project	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO	WIRP is driven by WICET requirements	None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudence of Cost			Actual costs are noted to be \$1.9 million less than budgeted. Costs are considered appropriate for mass foundations, autotransformer site civil works, access roads, power systems and distribution. Evidence of risk identification and management was sighted in the IAR, however the IAR does not include contingency for this specific project. Given the works are part of a larger program, and the project has been delivered within the allocated budget, this project is considered prudent in cost with a medium level of documentation quality.		
Prudence of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	Moura East	
Project Number	A.03742	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Track	
System	Moura	
Expenditure Claimed	\$	1,084,841.00

Reason for Project		
Expansion		X
Renewal		
Environmental Compliance		
Safety Compliance		
Risk Mitigation		

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Includes the balance of an insurance claim that was rejected by Aurizon Network's insurer and approximately \$0.10 million for capping layer analyses, close out activities and project support.
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: 1) Moura East Upgrade Feasibility Investment Approval Request Project Management Plan Executed Works Brief (2012) CRIMP WIRP Scope and Variations Completion certificates 2) Flood Works Construction Methodology Flood Recovery Works Moura East Flood Report 3) Close-out Activities SAP 4) Rejected Insurance Claim Briefing Paper Minutes SAP
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	YES	2009 Master Plan for Wiggins Island Expansion Moura System rail infrastructure required to facilitate expansion - "Formation strengthening and bridge and culvert upgrades"	None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	-	Flood works - Yes Project closeout - Yes Unclaimed insurance costs - N/A	None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	-	Flood works - Yes Project closeout - Yes Unclaimed insurance costs - N/A	None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	N/A	Part of 2014-15 capital expenditure review	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	Part of 2014-15 capital expenditure review	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	Part of 2014-15 capital expenditure review	None	\$ -	
Comment on Prudency of Scope			The scope of the Moura East project is assessed in several parts: 1) Moura East Upgrade - original Moura East project was part of the Wiggins Island Rail Project Stage 1 (WIRP1) which was to deliver an increased line capacity on the Moura Short Line from [REDACTED]. Given that the project works align with the CRIMP, were reasonably required to accommodate the requirements of relevant Access Agreements and/or to accommodate Reasonable Demand, this aspect of the Moura East Scope is assessed as prudent (previously approved in 2014-15 claim) 2) Flood Works - Construction was well progressed (albeit incomplete) by January 2013 when significant rain fell upstream of the project area into the Callide Creek catchment(s) resulting in a significant flood event which overtopped the constructed works resulting in substantial damage. These works are considered reasonable and are assessed as prudent. 3) A small percentage of this capital expenditure claim provided for capping layer analysis, close out activities and project support. This portion of scope is considered prudent and informs the action when dealing with substandard capping layer materials (discussed below). 4) Rejected Insurance Claim - AECOM is unable to comment on insurance issues			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Scope book Non-conforming capping layer report Variation to standard practice
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	NO	Non-conforming capping layer material reduces the expected life of the formation by more than 50%.	Major	\$ 1,084,841.00	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The capping layer material used for the flood repairs did not comply with the specification for the project or Aurizon's standards. Aurizon's document "Non-conforming capping layer material on SP2 on Moura Line" (dated 23/01/2015) outlines that the capping layer material used for the flood repairs did not comply with the specification for the project or Aurizon's standards current at the time. The Non-conforming capping layer material reduces the expected life of the formation by more than 50%.			
Prudence of Standard Documentation Quality			High			
Conclusion			Not Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Part of larger program of works	None	\$ -	Documents include: SAP Records Insurance Briefing Paper Flood Repair Minutes SAP WIRP remediation costs
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Part of larger program of works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A	Part of larger program of works	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	N/A	Unclaimed insurance costs.	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	N/A	Unclaimed insurance costs. The works have been tendered and panel rates used for the emergent works which represent value for money	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	N/A	Unclaimed insurance costs. The works have been tendered and panel rates used for the emergent works which represent value for money	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Unclaimed insurance costs.	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Unclaimed insurance costs.	None		
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	-	Balance of program of works previous unclaimed	None	\$ -	
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None		
	(B) Environmental approvals and compliance?	YES	The approval request (2011) indicates Environmental Impact Statement (EIS) processes for the Wiggins Island Coal Terminal and Balloon Loop, the Moura Link Aldoga Rail and the Environmental Planning Study (EPS) processes for the Blackwater Duplications. Environmental permits recognised as issue for resolution. Environmental management KPI. Safety and Environment Manager responsibilities outlined in program management plan. Construction contractor to delivery Environmental Management Plan for construction, reporting performance fortnightly and via closure report; however closure report not sighted to verify performance.	None		
	(C) Compliance with legal and authority requirements?	N/A	Balance of program of works previous unclaimed	None		
	(D) Minimising disruption to operation of train services during construction?	N/A	Balance of program of works previous unclaimed	None		

	(E) Were access holder requests appropriately managed?	N/A	Balance of program of works previous unclaimed	None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A	Balance of program of works previous unclaimed	None	
	(G) Minimising total project costs?	N/A	Balance of program of works previous unclaimed	None	
	(H) Did project elements align with other elements in the supply chain?	N/A	Balance of program of works previous unclaimed	None	
	(I) Did the project meet contractual time frames?	N/A	Balance of program of works previous unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Balance of program of works previous unclaimed	None	\$ -
	With regards to project management costs?	N/A	Balance of program of works previous unclaimed	None	
	With regards to risk allowances?	N/A	Balance of program of works previous unclaimed	None	
	With regards to timing/delivery program?	N/A	Balance of program of works previous unclaimed	None	
	With regards to ordering and storage of equipment?	N/A	Balance of program of works previous unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudency of Cost			The works have been tendered and panel rates used for the emergent works which represent value for money. The costs incurred during construction are assessed as prudent. The documentation quality to inform this assessment of cost is medium.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NO FY16 Network Maintenance Re-Rail Prog	
Project Number	IV.00140	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Rail	
System	System Wide	
Expenditure Claimed	\$	33,313,551.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Funding Request Wear trend samples Closeout report Milestone Schedule update Completion certificates Project Plan
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	For the examples provided, the wear trends indicate renewal based on total area loss would be required within 12 months of the rerailing.	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	YES	Use of 60kg rail and heavy duty insulators	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	To meet defined CETS wear limits, no identification of defect rates or other drivers for rail replacement.	None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Ongoing program IAR provided but no evidence of tender process	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	Limited or no evidence	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Limited or no evidence	None	\$ -	
Comment on Prudency of Scope			There were a significant number of scope request changes for this program of works, and these may have resulted in lower than optimum resource and track closure utilisation. We understand based on discussion during interviews that the scope location confirmation process will improve over future financial years as more rail head wear data is available. The scope is considered prudent. The documentation quality used to inform this assessment of scope is medium based on the limited number of locations for which head wear rates over time were provided.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Funding Request Wear trend samples Closeout report Milestone Schedule update Completion certificates Project Plan
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The standard of works was to Aurizon Standards which are generally in line with wider industry practice for rail size and type	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			Network Safety Management System SAF/STD/0077/CIV/NET CETS Module 2 prescribes the standards for the design, construction, monitoring, maintenance and modification of rail used in CQCN (Funding Request). The standard is considered prudent. The documentation quality to inform this assessment of standard is high as the standard of works was to Aurizon Standards which are generally in line with wider industry practice for rail size and type.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	N/A	Ongoing program IAR provided	None	\$ -	Funding Request Wear trend samples Closeout report Milestone Schedule update Completion certificates Project Plan SAP Re-rail cost powerpoint	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Ongoing works program resulted in original budget increasing from \$21m to \$33.664m	None			
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Budget increases for \$9.295m and 3.369m approved	None			
	What proportion of the difference should be considered a capital cost?	YES	All Capital works part of on-going program	None			
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	-	Limited or no evidence	None	\$ -		
	Did the project demonstrate value for money with regards to sourcing of labour?	-	Budget including approved variations greater than actual expenditure	None			
	Did the project demonstrate value for money with regards to sourcing of equipment?	-	Limited or no evidence	None			
	Were alternatives considered to minimise whole of life costs?	-	Limited or no evidence	None			
	(iv) Was the procurement methodology consistent with approved procurement strategies?	-	Limited or no evidence	None			

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	-	SAP indicates 11.4%	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?		Ongoing program to suit rail closures	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?		Renewal program	None	
	(G) Minimising total project costs?	-	Limited or no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	YES	Ongoing renewal program	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	YES	SAP indicates 11.4%. Re-rail rates includes an allowance of 13% for management costs	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Significant number of scope changes. Project close out report sighted	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudence of Cost The project forms part of an ongoing program of works, as outlined in the IAR. While additional scope was added to the FY15/16 year, associated budget approval was obtained and the project was completed within the specific budget. While cheaper than budgeted for, unit rates have increased. The reasons for the variance are noted with the 2015/2016 close-out report and include the following: <ul style="list-style-type: none"> • the addition of monuments to the Newlands system to meet current design requirements • the extent of single rail replacements compared to twin rail replacements • wet weather delays (causing additional mobilisation costs) • the availability of sufficient closures to complete the works is a single possession. 		
			Prudence of Cost Documentation Quality Medium		
			Conclusion Prudent		

Project Name	NR Track Upgrade Program FY16	
Project Number	IV.00025	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Track	
System	System Wide	
Expenditure Claimed	\$	25,649,121.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Rolling program of works
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Information Included: IAR Asset Manager Position Description Completion Certificates Project Management Plan Change Requests
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Rerailing existing condition define for approximately 50% of the sites in the IAR. Reasoning for rerailing and resleepering have been defined in the IAR. Some emails in change requests identify the criticality based on condition.	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	YES	Prioritisation decision-making process is consistent and standardised	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Track renewal program	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Track renewal program budget revision	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A		None	\$ -	
Comment on Prudency of Scope			The scope delivered significantly changed scope from the scope approved in the IAR due to urgent works which were not originally identified. Early identification and data collection for potential sites would improve the prioritisation process leading to improved planning and execution of works. During interviews, the Civil Asset Manager outlined the process for prioritisation of programs of works such as the Track Upgrade Program. In support of this, descriptions of the responsibilities for key decision making roles were also provided after the interview. These provide confidence that the prioritisation decision-making process is consistent and standardised. The scope of works is considered prudent. The documentation quality to inform this assessment of scope is medium as the condition reports for all track components are generally provided for the change of scope requests but were not provided for the original scope.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documentation included: IAR Practical Completion Certificates
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Consistent with existing standard and configuration of adjacent infrastructure.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			Based on review of the IAR and the practical completion certificates sighted, the standard of works was consistent with Aurizon standards and configuration of adjacent infrastructure. The project is considered prudent. The documentation quality to inform this assessment of standard is high.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Maintaining capacity	None	\$ -	Information Included: IAR Completion Certificates Project Management Plan Change Requests
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Maintaining capacity	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES		None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES		None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES		None		
	Were alternatives considered to minimise whole of life costs?	-	Limited or no evidence	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Internal works program	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES		None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES		None	
	(G) Minimising total project costs?	YES	Completion certificate works within IAR Budget	None	
	(H) Did project elements align with other elements in the supply chain?	YES	Ongoing works program to maintain network integrity	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	Budgeted contingency	None	\$ -
	With regards to project management costs?	YES	Continuation of works program	None	
	With regards to risk allowances?	YES	Budget included contingency	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?	N/A		None	
Comment on Prudency of Cost			The project was completed under budget. Costs per kilometre, outlined in the project completion report, are considered acceptable. The project forms part of an ongoing program of works, as outlined in the IAR, and is considered prudent in cost with a medium level of documentation quality given the limited availability of information regarding the procurement of the works.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NR FY16 Sleeper Renewal Program	
Project Number	IV.00033	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Sleepers	
System	System Wide	
Expenditure Claimed	\$	10,350,382.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents included: Investment Approval Request Completion certificates Change Register Change Requests Final Scope (spreadsheet) Completed Scope (spreadsheet) Project Management Plan
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	-	Not enough information to assess, based mainly on type. Prioritisation of locations has been undertaken by the asset team with a rating of 1 to 5 for sleeper condition, with primary focus on the fastener for existing concrete sleepers.	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	NO	Aurizon have confirmed that used fist sleepers have not been installed at any location as part of this program of works. No AMP has been sighted, however, this work is in line with the IAR.	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Replacement of End of Life (EOL) assets	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Ongoing program renewal upgrade	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A		None	\$ -	
Comment on Prudency of Scope			The scope of the Sleeper Renewal Program includes the replacement of 22.5 tonne axel load (t.a.l.) fist sleepers and selected timber sleepers 'on a face' with 28 t.a.l. Pandrol e-clip concrete sleepers. According to the Project Summary, the purpose of the Sleeper Renewal Program is to replace identified prioritised support the asset register and confirmation of the delivered scope. damaged or life expired sleepers and complete track upgrade on areas that have, rail, sleeper and/or ballast, formation defects. While the scope for the project was clearly outlined in the project summary document, limited details were provided for the existing asset condition to confirm the need for the sleepers to be replaced within the 2015-16 financial year. Prioritisation of locations was undertaken by the asset team using a rating of 1 to 5 for sleeper condition, with a primary focus on the fastener for existing concrete sleepers. The scope is considered prudent. The documentation quality to inform this assessment of scope is medium. A high rating would require further granularity on the 1 to 5 rating system, and a wider focus on overall sleeper condition.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents included: Investment Approval Request Completion certificates Project Management Plan IFC Drawings
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Use of 28 tal concrete e-clip sleeper is the current Aurizon standard. Identification of galvanised fastenings and housings at specific locations is also suitable. Aurizon have confirmed that used fist sleepers have not been installed at any location as part of this program of works.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The use of concrete e-clip sleepers with a load rating of 28 t.a.l. is consistent with Aurizon standards which are generally in line with industry practice. The standard of works is considered to be reasonable and prudent. Informal information has been used to make this determination and as such the documentation quality to inform this assessment of standard is medium.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Upgrade of asset of EOL to reduce unplanned Rail closures	None	\$ -	Documents included: Investment Approval Request Completion certificates Change Register Change Requests Final Scope (spreadsheet) Completed Scope (spreadsheet) SAP Project Management Plan
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	\$7.9m works deferred to later date	None		
	What proportion of the difference should be considered a capital cost?	N/A	Claim based on actuals	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Work completed during closures	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Aurizon team used	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Standard procurement agreements	None		
	Were alternatives considered to minimise whole of life costs?	YES	Timber sleepers replaced with concrete	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Program of works	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Program of works, scope approved by operations manager	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	N/A		None	
	(D) Minimising disruption to operation of train services during construction?	YES	Works programmed to suit closures / or train timetables	None	
	(E) Were access holder requests appropriately managed?	N/A	No evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Timber replaced with concrete	None	
	(G) Minimising total project costs?	YES		None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	YES	Works adjusted to suit timetables, Out of a budget of \$17.56m, Actual cost of \$10.4 for works completed, remainder deferred to FY17	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Rolling program of works to provide least disruption to network operations	None	\$ -
	With regards to project management costs?	YES	Rolling program of works with appropriate level of management required	None	
	With regards to risk allowances?	N/A		None	
	With regards to timing/delivery program?	N/A	Rolling program adjusted to suit operations	None	
	With regards to ordering and storage of equipment?	YES	Rolling program using Aurizon resources & procurement	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudence of Cost The project works have been adjusted to suit timetables. \$10.4 million has been spent from a \$17.6 million budget, and the balance of costs has been deferred to FY16/17. The objective of the project is to upgrade end of life assets to minimise whole of life costs and reduce unplanned rail closures, demonstrating consideration for value for money. The materials were procured through the standard procurement arrangements and released from inventory to the project, and internal Aurizon Network staff members were used for construction. Generally, the costs appear to be reasonable for the works carried out and the project is considered prudent. The documentation quality to inform this assessment of cost is medium given the limited availability of information regarding the procurement arrangements.		
			Prudence of Cost Documentation Quality Medium		
			Conclusion Prudent		

Project Name	NR FY16 Turnout Renewal Program	
Project Number	IV.00032	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Turnouts	
System	System Wide	
Expenditure Claimed	\$	9,817,490.00

Reason for Project	
Expansion	<input type="checkbox"/>
Renewal	<input checked="" type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Rolling program of works. Changed order of delivery to suit design availability and suitable possessions
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Rolling program of works. Changed order of delivery to suit design availability and suitable possessions
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital expenditure - Feasibility Investment Approval Request EOFY Report Practical Completion Certificates Change Register Asset Renewal Works Brief Project Management Plan Scope of Work Documents (Sample) QA Documents (Sample)	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
3.3.2 (c) Were the works reasonably required?	Expansion projects						
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	A sample of the C16 major component replacement was reviewed and included the existing condition, scope, and delivered work	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	Prioritisation process and scoring sighted in IAR. No asset management plan available.	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Program of works approved by civil asset manager, GM Network Assets, VP of network operations	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Program of works approved by civil asset manager, GM Network Assets, VP of network operations	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	Program of works approved by civil asset manager, GM Network Assets, VP of network operations	None	\$ -			
Comment on Prudency of Scope			Original information provided was for complete turnout renewals, including the prioritisation process and scoring. While in general the rating provided justified the turnouts included in the scope there was significant scope changes during the financial year. The majority of turnouts added had not previously been assessed. Aurizon Network provided an example of a turnout inspection form to demonstrate how condition data was collected. An interview was conducted with the Civil Asset Manager to understand the process of scoping and prioritisation of works. A sample of the C16 major component replacement was reviewed and included the existing condition, scope, and delivered works. The scope of works is assessed as prudent. The documentation quality to inform this assessment of scope is medium as samples of the renewals were sighted. C16 did not have the same rigor of documentation as full turnout renewals				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:
 - the standard of works has been pre-approved in accordance with Clause 3.1.2
 - QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
 - the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital expenditure - Feasibility Investment Approval Request Practical Completion Certificates Scope of Work Documents (Sample) QA Documents (Sample)
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Some trials of new technology have been included within the scope. The technology and reasoning for the trials are consistent with new technology by other below rail operators.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The standard of works is reasonable and consistent with Aurizon standards and the configuration of adjacent infrastructure. New equipment types for points machine interface have been trialled. The equipment is being used in other rail networks in Australia and has potential maintenance benefits. The standard is assessed as prudent. The documentation quality to inform this assessment of standard is high.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Upgrade of asset program of works	None	\$ -	Documents include: Capital expenditure - Feasibility Investment Approval Request Scope of Work Documents (Sample) QA Documents (Sample)	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None			
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None			
	What proportion of the difference should be considered a capital cost?	N/A		None			
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Work completed during closures	None	\$ -		
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Aurizon team used	None			
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Standard procurement agreement	None			
	Were alternatives considered to minimise whole of life costs?	NO		None			
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Procured via standard procurement agreements	None			

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Program of works, scope approval by civil asset manager, GM Network Assets & VP of Network Operations	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Works programmed to suit closures	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES		None	
	(G) Minimising total project costs?	YES		None	
	(H) Did project elements align with other elements in the supply chain?	YES	Upgrade of asset program of works	None	
	(I) Did the project meet contractual time frames?	YES	Works programmed to suit closures	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Rolling program of works	None	\$ -
	With regards to project management costs?	YES	Rolling program of works	None	
	With regards to risk allowances?	N/A	Rolling program of works	None	
	With regards to timing/delivery program?	N/A	Rolling program of works to suit operations	None	
	With regards to ordering and storage of equipment?	YES	Rolling program using Aurizon resources & procurement	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	

Comment on Prudence of Cost

This project is part of a larger program of works, with the objective to upgrade end of life assets to minimise whole of life costs and reduce unplanned rail closures. Evidence suggests that costs have been managed appropriately to suit closures and that the works were procured through standing offer arrangements. The use of Aurizon Network staff members demonstrated a consideration for value for money.

The project is considered prudent with a medium level of documentation quality, given the procurement arrangements have not been sighted, however generally the costs appear reasonable for the works carried out.

Prudence of Cost Documentation Quality Medium

Conclusion Prudent

Project Name	NR FY16 Structure Renewal Program	
Project Number	IV.00031	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Structures	
System	System Wide	
Expenditure Claimed	\$	9,127,211.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Torill Pape

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include Interview with Principal Condition Reports + Photos Structures Policy Asset Maintenance and Renewal Policy Network Safety Management System Track Geometry Data.
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Renewals were selection on poor condition (CS4) + age + asset criticality in network	None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A	Asset criticality and redundancy are taken into account	None	\$ -	
Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Poor condition was affecting service of line; Anecdotally, approx. 5 failures per year occur due to poor condition and age. Complete or partial collapse would have resulted in speed restrictions or traffic diversion.	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	NO	No AMP available	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	see (iv) above	None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	see (iv) above	None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Ongoing renewal program, structures including culverts	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Work program over 5 years 2015 budget 13.7M (11.6M released 2015/16), but \$9.1M spent. Budget based on previous actual project expenditure	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	Work program based on most urgent need	None	\$ -	
Comment on Prudency of Scope			Scope of works was warranted and justifiable due to poor condition and age of asset, as well as network criticality and consequences on operation and safety of network			
Prudency of Scope Documentation Quality			High			
Conclusion			Prudent			

STANDARD Assessed by Torill Pape

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:
 - the standard of works has been pre-approved in accordance with Clause 3.1.2
 - QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
 - the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Project Management Plan Structures Policy Asset Maintenance and Renewal Policy Network Safety Management System Drawings Past performance data (Excel) Aurizon Standard Drawings Tender documents Marked-up as-built information/drawings Project completion Report Project Closure Report Emergency Response Plan Hazard Risk Register Weed Hygiene Declaration Site Audit Environmental Checks
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Similar design/construction solutions chosen. Where works were innovative, RPEQ sign-off on product prior to implementation	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	YES		None	\$ -	
	(ii) With regards to current and likely future usage levels	YES	Seeking to future proof the network (as per AS5100 loading)	None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	YES	Baseline req's: AS5100, AS1597, AS4678 and others noted in project documentation	None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	YES	Suitably qualified consultants and construction contractors selected after tendering process	None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	YES		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	YES	EPA, WHS etc. considerations noted in project documentation	None	\$ -	
Comment on Prudence of Standard			Documentation was available for most asset replacements (such as inspection reports, design documentation, completion photos, specifications, tender evaluations/recommendations, Practical Completion documents, marked-up as-built drawings, Project Completion Reports). Design and construction solutions provided were of similar quality and standard and were consistent with typical solutions provided for similar applications			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Benchmarked against previous projects based upon the prioritization of the works	None	\$ -	Documents include: Project Management Plan Tender documents Marked-up as-built information/drawings Project completion Report Project Closure Report Emergency Response Plan Hazard Risk Register Site Audit Environmental Checks SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Benchmarked against previous projects based upon the prioritization of the works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO	Works were rescheduled and most urgent works completed within Budget	None		
	What proportion of the difference should be considered a capital cost?			None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Competitively tendered	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Competitively tendered	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Competitively tendered	None		
	Were alternatives considered to minimise whole of life costs?	NO	Aurizon design standards specified	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Competitively tendered	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Program of Works	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available. The closure report recognises environmental approvals (long delays) as a risk and recommends further actions to be implemented in future, as well as to clearly delegate environmental obligations to contractor.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Works completed during scheduled rail closures	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A	Aurizon design standards specified	None	
	(G) Minimising total project costs?	YES	Culverts competitively tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES	Structures required to meet current design and performance standards	None	
(I) Did the project meet contractual time frames?	YES	Works programmed around rail closures	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Program budget included contingency, individual projects excluded contingencies	None	\$ -
	With regards to project management costs?	-	Ongoing program	None	
	With regards to risk allowances?	-	Ongoing program	None	
	With regards to timing/delivery program?	YES	Programmed works fit within rail closures and suit works prioritization	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudence of Cost	With regards to prudence of cost, this project was part of a larger program of ongoing works. This program budget included appropriate contingency, however individual projects did not have specific contingency allocations. Evidence demonstrates that the project was competitively tendered, demonstrating consideration for value for money. In addition, costs have been managed appropriately to suit closures. The project is considered prudent in cost. The documentation to inform this assessment of cost is of medium quality.	
			Prudence of Cost Documentation Quality	Medium	
			Conclusion	Prudent	

Project Name	NR Microwave Resilience System Upgrades	
Project Number	A.04221	
Project Type	Capital Renewal	
Project Discipline	S&TSS	
Asset Type	Network Controls	
System	Blackwater	
Expenditure Claimed	\$	7,442,954.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Upgrade to Aurizon's microwave network.
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Project extended over a number of years, following a number of budget reviews.
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Upgrade to equipment and third party connections
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	Previous capital claim made in 2013/2014 (\$2.2M)
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Minor Capital Funding Request Project Management Plan Change Requests Material list Closeout report (not signed)	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	NO	Improved network resilience	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -		
Procurement							
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Four options were considered: Do nothing, install a fibre solution, use an external capacity provider, and transition the existing capacity into the new system. The later option was selected and was the most cost effective.	None	\$ -		
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	Project was tendered	None	\$ -		
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Limited or no evidence	None	\$ -		
Comment on Prudency of Scope			<p>Aurizon Network has provided strong reasoning for upgrades in order to provide improved network resilience, adding long-term network benefits. The Project Management Plan outlines that the upgrade to the Microwave system will allow for:</p> <ul style="list-style-type: none"> • Increase of capacity to allow for Mackay to Rockhampton the capacity increase to carry interconnecting redundant circuits for DR (double current capacity is required initially). • Replacement of older radio systems almost at end of life that have no upgrade capability. Extra capacity will be required in the future. • Provide alternate circuits for fibre redundancy into Jilalan and Dalrymple bay network, where there is no current redundancy. • Full supervision of Equipment within the Main DR network. <p>The scope is assessed as prudent as the upgrades support future network expansion while offering improved network redundancy. The documentation quality to inform this assessment of scope is medium.</p>				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Vendor design documents Project Management Plan
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The Project Management Plan outlines that handover certificates certify standards compliance. These were not included in the closeout report and have not been sighted. The standards is assessed as prudent to a medium level of confidence as the upgrades to the Microwave Resilience System have followed National Design Standards, suggesting alterations to equipment should be in line with those standards.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A	Followed National Design Standards	None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	

Comment on Prudence of Standard

Design documents have been sighted for the work undertaken by the vendor Bytecomm Pty Ltd (Installation of main work radios muxes). The A.04221 Project Management Plan outlines that handover certificates certify standards compliance. These were not included in the closeout report and have not been sighted. The project is considered prudent in standard as the upgrades to the Microwave Resilience System have followed National Design Standards, suggesting alterations to equipment should be in line with those standards. The documentation quality to inform this assessment of standard is medium.

Prudence of Standard Documentation Quality

Medium

Conclusion

Prudent

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Communication key to network operations	None	\$ -	Minor Capital Funding Request Project Management Plan Change Requests Material list Closeout report (not signed) Vendor information
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Competitively tendered	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A		None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Tendered to Aurizon standards	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Tendered and WOL and VM review prior to acceptance	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Tendered and standing offer purchase arrangements, approval to sole sources NEC Digital equipment received to ensure project not delayed	None		
	Were alternatives considered to minimise whole of life costs?	YES		None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Tendered	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Within budget tendered	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Telecommunications project would be expected to have negligible environmental risk, management or approval requirements. According to the project management plan, all works will be undertaken in accordance with relevant QR National environmental policies and procedures, and relevant industry and Australian Standards. It directs the PEPA is used to scope environmental issues, detailed environmental studies and compliance with EMPs.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Network upgrade required to mitigate unplanned shutdown/disruptions	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	The purpose of the project was to increase reliability and ongoing operations	None	
	(G) Minimising total project costs?	YES	Tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES	Necessary for operations	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	\$1.5M out of \$8.04M budget	None	\$ -
	With regards to project management costs?	YES	PM 7% of the FFC	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	

Comment on Prudence of Cost

The claim was for the balance of previously unclaimed works for this program of works established prior to FY15/16. Evidence was sighted indicating that the project was procured through various methods, including a competitive tender process, standing offer agreements (SOAs), and sole sourcing. The project was subject to whole of life cost analysis and value management processes to ensure value for money was achieved. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.

Prudence of Cost Documentation Quality	Medium
Conclusion	Prudent

Project Name	Level Crossings FY16	
Project Number	IV.00052	
Project Type	Capital Renewal	
Project Discipline	S&TSS	
Asset Type	Level Crossings	
System	System Wide	
Expenditure Claimed	\$	6,378,121.00

Reason for Project	
Expansion	<input type="checkbox"/>
Renewal	<input checked="" type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Funding Approval Request Project Summary Final Scope Milestone Schedule Completion Certificates Project Management Plan Inspection and Test Plan (Samples)	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:							
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Major renewals seem suitable from the available photos of each location in the scope documents. Field assessments should be based on either significant changes to usage/environment or time between inspections.	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	YES	Field assessments should be based on either significant changes to usage/environment or time between inspections.	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Major renewals seem suitable from the available photos of each location in the scope documents. Field assessments should be based on either significant changes to usage/environment or time between inspections.	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	Major renewals seem suitable from the available photos of each location in the scope documents. Field assessments should be based on either significant changes to usage/environment or time between inspections.	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Renewal project based on ALCAM priority	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	IAR provided	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A		None	\$ -			
Comment on Prudency of Scope			Interviews with Aurizon Network project managers provided clarification on the determination of intervals for inspection and ALCAM assessment works in is line with Australian industry practice. The need to undertake the works within the financial year is difficult to assess for signage because the rate of deterioration determination is not available. Photos were made available for each civil repair location of the existing condition to support the inclusion of the upgrade within the financial year scope of works. Delivered scope information was provided for signage, track and road works. The scope is in line with Aurizon Network's asset strategy for level crossings. The scope is considered to be prudent. The documentation quality to inform this assessment of scope is medium. Improved existing condition assessment documentation including a rating style of system for each component of the level crossing to be replaced would improve the quality level of the scope documentation.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Funding Approval Request Final Scope Milestone Schedule Completion Certificates Project Management Plan Inspection and Test Plan (Samples)
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Scope of all activities within the program were delivered to Aurizon standard	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			Scope of all activities within the program was delivered to Aurizon standard and in accordance with the asset management plan. The standard of works is assessed as prudent. The documentation quality to inform this assessment of standard is high.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Ongoing program	None	\$ -	Documents include: Funding Approval Request Project Summary Final Scope SAP CAPEX Estimate Project Purchase Approval Summary
	(ii) Do costs align to scale, nature, and complexity of the project?			None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Expenditure was less than the original budget	None		
	What proportion of the difference should be considered a capital cost?	-		None		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	-	Limited / no evidence	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	-	Limited / no evidence	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	-	Limited / no evidence	None		
	Were alternatives considered to minimise whole of life costs?	-	Limited / no evidence	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	-	Limited / no evidence	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?			None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited / no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited / no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited / no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited / no evidence	None	
	(G) Minimising total project costs?	-	Limited / no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited / no evidence	None	
	(I) Did the project meet contractual time frames?	-	Limited / no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	Budget including contingency	None	\$ -
	With regards to project management costs?	YES	Budget including PM costs	None	
	With regards to risk allowances?	-	Limited / no evidence	None	
	With regards to timing/delivery program?	YES	Ongoing program based on prioritization of works	None	
	With regards to ordering and storage of equipment?	-	No information	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudence of Cost With regards to prudence of cost, this project was part of a larger program of works, and costs claimed are below the programmed budget of \$6.4 million for FY14/15 and FY15/16. This program budget included appropriate contingency, however individual projects did not have specific contingency allocations. Evidence suggests that the project was competitively tendered, demonstrating a regard for value for money. In addition, costs have been managed appropriately to suit closures. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.		
			Prudence of Cost Documentation Quality Medium		
			Conclusion Prudent		

Project Name	NR Formation Renewal FY16	
Project Number	IV.00048	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Formation / Ballast	
System	System Wide	
Expenditure Claimed	\$	5,661,246.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Rolling program of works.
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Project Approval Summary Project Summary Project Plan Project Closure Report Scope of Work Documents QA Documentation Completion Certificates Project Change Requests
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	NO	Fix on fail	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Failure has already occurred prior to the capital works.	None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.		This was an on-going program of works where budget and scope of works adjusted within annual budget allocation	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.		On-going program of works	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.		No information provided	None	\$ -	
Comment on Prudence of Scope			<p>For the 'fix when fail' formation renewals, Aurizon Network has provided the organisational structure and role description for the district engineer who defines the scope and criticality and the civil asset manager who makes the determination or prioritisation. Their engineering judgement is considered appropriate to determine the criticality and prioritisation of works across the CQCEN.</p> <p>Samples of works were provided for review. The existing condition information was sighted and confirmed that the works were required within the financial year. The scope is considered prudent. The documentation quality to inform this assessment of scope is medium. The 'fix-on-fail' process does not allow forward planning of resources and track access. It is recommended that Aurizon Network continue to investigate tools to allow deterioration to be identified before failure.</p>			
Prudence of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Project Summary Project Plan Project Closure Report Scope of Work Documents QA Documentation Completion Certificates
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Samples of works were provided for review. The standard of works were to Aurizon standards and comparable to the standard of works of the adjacent sections of track.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The standard of works was to Aurizon standards and comparable to the standard of works of the adjacent sections of track. The standard of works is considered to be reasonable and prudent. Given that we have evaluated a sample of projects, the documentation quality to inform this assessment of standard is medium.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Capital Funding approved for #8.04m with a \$195K contingency	None	\$ -	Documents Include: Project Summary Project Plan Project Closure Report Scope of Work Documents QA Documentation Completion Certificates Project Change Request Unit Rates SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	On going renewal project with individual works identified to suit network operations	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO	Program of works adjusted to maintain costs within budget = \$1.5m transferred out of budget	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Funding approval for works, SOA with suppliers	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Funding approval for works, SOA with suppliers	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Funding approval for works, SOA with suppliers	None		
	Were alternatives considered to minimise whole of life costs?	N/A	On-going program of works	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	On-going program of works	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Funding approval for works, SOA with suppliers	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES		None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	-	Limited or no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited or no evidence	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	Outlined in the Project Summary	None	\$ -
	With regards to project management costs?	YES	Outlined in the Project Summary	None	
	With regards to risk allowances?	YES	Risks identified in the Project Summary and Risk Register	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudency of Cost			\$5.7 million has been claimed against an original budget of \$8.0 million (inclusive of \$0.2 million contingency). The works achieves value for money with a delivered rate of \$2.8 million per kilometre compared to a budget of \$5.4 million per kilometre. Labour and equipment rates were sighted. Costs claimed appear reasonable considering the renewal works were needed on a needs basis. The project is considered prudent in cost. The documentation quality to inform this assessment of cost is medium.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NR Bridge Ballast Renewals FY16	
Project Number	IV.00036	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Formation / Ballast	
System	System Wide	
Expenditure Claimed	\$	5,631,744.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Completion certificates Project Plan Client Requirement brief Project Management Plan Inspection and Test Plan Closeout Report	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES		None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	YES	Suggest wider options analysis to be undertaken to consider options including bridge conversion to ballastless (potentially only linked to bridge renewal at end of life)	None	\$ -		
(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -			
(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -			
Procurement							
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Budget renewal required for safety and Environmental considerations	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	Programmed to suit closures	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Limited or no evidence	None	\$ -			
Comment on Prudency of Scope			Track geometry data provided for two bridges were used as a sample of the information used to determine the need for ballast replacement on bridges and the track geometry after the works had been completed. These identify that works were required to manage the top and twist of the track alignment on the bridges. Based on the documentation provided, the core scope has been delivered to the final scope locations and significant improvements have been identified after completion. The scope is assessed as prudent. The documentation quality to inform this assessment of scope is medium as there is a significant change in bridges in base scope compared with delivered scope, inconsistency between certification information for each site and the sites listed in the close out report.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Completion certificates Project Plan Client Requirement brief Project Management Plan
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii)	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	NO	Trial of glued ballast while not an approved standard design treatment is recognised as a suitable potential improvement in ballast lifespan. Trial did not proceed.	None	\$ -	
Works consistent with Adjacent and/or Existing Infrastructure Standards			One identified location (Calliope River Bridge) did not achieve standard ballast depth due to bridge configuration. This could reduce the life and performance of the ballast. Given the alternative solution of bridge modification or replacement the reduced ballast depth is a suitable outcome.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	YES		None	\$ -	
	(ii) With regards to current and likely future usage levels	YES		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	YES		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	YES		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	YES		None	\$ -	
Comment on Prudence of Standard			Works are comparable with the rest of CQCN and other heavy rail networks in Australia to treat ballast contamination on bridges. Suitable trials have been proposed to try and improve life of ballast and reduce maintenance activities, but have not been undertaken. As such, the standard is assessed as prudent. The documentation quality to inform this assessment of standard is high, but we suggest that Aurizon Network continues to investigate ways to improve and maintain track condition on bridges.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Program of works	None	\$ -	Documents include: Completion certificates Project Plan Client Requirement brief Project Management Plan Inspection and Test Plan Closeout Report SAP Request for works Tender documentation	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Within budget	None			
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None			
	What proportion of the difference should be considered a capital cost?			None			
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment		Information assessed
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Work Tendered	None	\$ -		
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Within budget	None			
	Did the project demonstrate value for money with regards to sourcing of equipment?	N/A	Internal resources	None			
	Were alternatives considered to minimise whole of life costs?	N/A	Internal resources	None			
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Internal resources	None			

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Scope amended to suit	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES		None	
	(C) Compliance with legal and authority requirements?	YES	Environmental officers inspected the works	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Generally works programmed during rail closures	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Methodology improvements noted for future works	None	
	(G) Minimising total project costs?	N/A	Budget managed and permanent handrails deferred for urgent works	None	
	(H) Did project elements align with other elements in the supply chain?	YES	Preventative replacement	None	
	(I) Did the project meet contractual time frames?	YES	Work completed 15/16 and closed out	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES		None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	YES	Risk allowances outlined in IAR	None	
	With regards to timing/delivery program?	YES	Project closed out at end 2016 FY	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudence of Cost			The project was competitively tendered and identified future work methodology to save money on future bridge ballast replacement projects, demonstrating regard for value for money. The works were generally programmed to suit rail closures also. The project is considered prudent in cost. The documentation quality to inform this assessment of standard is medium.		
Prudence of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	2015 Moura Flood Works	
Project Number	IV.00176	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Formation / Ballast	
System	Moura	
Expenditure Claimed	\$	4,367,193.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Stuart Lawton

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Aurizon memo dated 29th June 2015 notes that capital costs for Moura Flood Works has been evaluated by two criteria: the total materials only costs of ballast and formation exceed \$40,000, the distance of the renewal exceeded 75 metres.
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	A separate maintenance claim has been made. A portion of this project claim has been withdrawn from the Aurizon Network Capital Expenditure Submission, in accordance with Aurizon Network letter to the QCA 'Capital Expenditure FY16 – Amendment,' dated 5 June 2017. • All ballast costs have been removed as part of an accounting review commissioned by the QCA • A portion of the slewing costs have been removed as part of the accounting review.
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Funding Request Aurizon Memo Practical completion certificates Photos Meeting Minutes Inspection and Test Plans Design Report
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
Expansion projects						
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Flood recovery	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A	Flood recovery	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	MSL61 Embankment stabilisation: The scale of works was more than like for like replacement to meet current standards	None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	Flood recovery.	None	\$ -	
Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Works undertaken to restore network to flood event. Comment under capital funding request states QCA have agreed that the incremental capital costs will be claimed through the normal "ex-post" capital claim process.	None	\$ -	
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	Flood works	None	\$ -	
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Limited or no evidence	None	\$ -	
Comment on Prudency of Scope			The scope has been assessed as prudent. The documentation quality to inform this assessment of scope is medium. Closeout documentation for embankment rectification works has not been sighted for MLS-61 and make up a large portion of the capital claim.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Stuart Lawton

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Funding Request Aurizon Memo Practical completion certificates Photos Meeting Minutes Inspection and Test Plans Design Report IFC Drawings
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	MSL-61: Standards noted in Parsons Brinckerhoff design report, drawings, and Client Requirement Brief are suitable. MSL-20 / MLS-22 / MLS-25 / MLS-47 / MLS-48: The standard of works outlined in the Client Requirements Brief was to Aurizon Standards	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			The standard has been assessed as prudent as the works are consistent with Aurizon Standards. The documentation quality to inform this assessment is high.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	N/A		None	\$ -	Documents include: Funding Request Aurizon Memo Practical completion certificates Photos Meeting Minutes Inspection and Test Plans Design Report SAP Purchase Order
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Panel rates used.	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A		None		
	What proportion of the difference should be considered a capital cost?			None		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Panel rates used.	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Panel rates used.	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Panel rates used.	None		
	Were alternatives considered to minimise whole of life costs?	NO		None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?			None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	-	Limited or no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited or no evidence	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	-	Limited or no evidence	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	

Comment on Prudence of Cost
 The RSM report identified cost duplication between the Moura Flood Claim and the Capital Expenditure Claim. Aurizon Network has subsequently amended their FY15/16 claim to reflect a deduction of the duplicated amount. Based on the removal of this duplication, the remaining costs are considered prudent. The works have been tendered and panel rates used for the emergent works which represent value for money. The documentation quality to inform this assessment of cost is medium.

Prudence of Cost Documentation Quality Medium

Conclusion Prudent

Project Name	OH Equipment Renewal FY14 to FY17 - Blac	
Project Number	A.04622	
Project Type	Capital Renewal	
Project Discipline	Electrical	
Asset Type	Power Systems	
System	Blackwater	
Expenditure Claimed	\$	4,755,345.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Ian Woodhead

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Coal Rail Infrastructure Master Plan 2009, Section 8. Capital Funding Request - OH Equipment Renewal - Blackwater System 2014 - 2017 - Option 1.
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.2 (c)	Expansion projects					
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES		None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	NO	No AMP available	None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -	
	Procurement					
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Part of a three year \$8.3m renewal project IAR approved 1Sep 2014	None	\$ -		
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Budget set based upon previous renewal projects	None	\$ -		
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Project was completed following TLM or BCM operations to minimise disruption to services	None	\$ -		
Comment on Prudency of Scope			The Capital Funding Request provides the necessary details, including the requirement and rationale of the project, detailing that 'doing nothing' will result in speed restrictions being in affected areas. This would diminish the system throughput capacity, and potentially impact Access Agreement requirements. The project was aligned with the Coal Infrastructure Master Plan 2009, Section 8 and internal approval was gained within Aurizon Network. The scope of the work involved the replacement of various section insulators within the Blackwater system. While this part of the scope appears to be similar scope of works to the Section Insulator Project A.04254, there is nothing in the documentation that suggests that these works have been performed twice on the same item. The scope of work is therefore considered prudent.			
Prudency of Scope Documentation Quality			Medium			
Conclusion			Prudent			

STANDARD Assessed by Ian Woodhead

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Capital Funding Request - OH Equipment Renewal - Blackwater System 2014 - 2017
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The completed works are consistent with Aurizon Standards.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			The works are consistent with similar works undertaken within the Blackwater System and are consistent with Aurizon Standards. Overhead Renewals Block Reports indicate exactly what works have been carried out at various locations within the Blackwater system. Practical Completion Certificate has been reviewed, which confirms that the works were installed and tested in accordance with Aurizon Network's Standards. The project is considered prudent in standard. Installation and Test Plans are not included in documentation, so the quality of the documentation to inform the assessment of standard is medium.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Capital Funding Request - OH SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	3 year rolling program \$8.2m budget replace damaged, aged & deteriorated components that have exceeded the design life approx. 50km per year	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	As this is a 3 year program of works only works completed during the period have been claimed	None		
	What proportion of the difference should be considered a capital cost?	N/A	Snapshot of 3 year program	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES		None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Utilising crews already on location for other works, supplemented with other staff (based on tendered labour hire rates)	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Utilising equipment already on location	None		
	Were alternatives considered to minimise whole of life costs?	YES	Scope of project to minimise WOL cost (replacing end of life components)	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Nature of works (internal works program) means works carried out concurrently with other works	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	N/A	Minor works	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Concurrent with TLM & BCM works	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	This is the purpose of project	None	
	(G) Minimising total project costs?	YES	Concurrent with TLM & BCM works utilising labour equipment	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited or no evidence	None	
(I) Did the project meet contractual time frames?	YES	Rolling 3 year program of works	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	NO	Nil. P13 of the funding request	None	\$ -
	With regards to project management costs?	YES	2% Pro-rata	None	
	With regards to risk allowances?	-		None	
	With regards to timing/delivery program?	YES	Rolling 3 year program of works	None	
	With regards to ordering and storage of equipment?	YES	Utilising some equipment already on-site	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudency of Cost The Capital Funding Request provides evidence that various options were explored to deliver the project, demonstrating that Aurizon Network considered and evaluated alternatives to minimise whole of life costs. By utilising crews and equipment already on location for other works, supplemented with other staff (procured through tendered labour hire rates), the project demonstrates value for money with regards to the sourcing of labour and equipment, and the circumstances prevailing in the market and locality. Costs claimed are below the program budget of \$5.42 million for FY14/15 and FY15/16, however, insufficient evidence has been provided to determine the accurate connection between scope and costs incurred, given that the SAP does not match the claimed amount. As the costs appear reasonable for the scope, the project is considered prudent in cost, but with a low level of documentation quality.		
			Prudency of Cost Documentation Quality	Low	
			Conclusion	Prudent	

Project Name	NR Optical Fibre Transmission Network Upgrade	
Project Number	A.04320	
Project Type	Capital Renewal	
Project Discipline	S&TSS	
Asset Type	Network Controls	
System	Blackwater	
Expenditure Claimed	\$	3,778,045.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Upgrade of SDH transmission network - removal of SDH clock
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Project Change Request made in 30th June 2016
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Equipment upgrade
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	\$1.6M in FY13/14
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	Contained to Aurizon transmission network

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital Funding Request Change Request Closeout Report Verification Report	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Modification to transmission network only	None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	-	Limited or no evidence	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	YES	Aspires to deliver best practice and reduce risk the of failure	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Improve equipment performance	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Appears the strategy was to purchase materials & labour from the Aurizon preferred suppliers when required.	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	No evidence to comment on	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	No evidence to comment on	None	\$ -			
Comment on Prudency of Scope			<p>The scope of the NR Optical Fibre Transmission Network Upgrade is for the renewal of all end-of-life (EOL) optical fibre telecommunication equipment between Emerald to Tolmies and Wotonga to Blair Athol. The Minor Funding Request notes that in the previous year two failures occurred on the system, with the age of the electrics identified as the major contributing factor of the failures. One failure at Ambrose resulted in the delay of the tilt train of several hours and the cancellation of 15 coal trains.</p> <p>The scope is assessed as prudent with medium documentation quality as the renewals to maintain operational performance is considered appropriate. A high level of documentation would be given if Mean Time Between Failures (MTBF) and Mean Time To Repair (MTTR) statistics were used to quantify the benefits of undertaking any equipment upgrade. The do nothing option, as described in the Minor Capital Funding request, makes mentions of failure rates, however, provides no specific statistics.</p>				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital Funding Request Change Request Closeout Report Verification Report
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Upgrade to any transmission network is essential as the equipment gets older modifications are required to maintain operational performance	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A	Upgrades installed to latest design standards	None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			The "Verification of Transmission Upgrade" audit document outlines the standards used from Blair Athol to Wotonga. This includes the installation of new transmission equipment, new vermin proof equipment racks, associated DC power supply/cabling upgrades, removal of redundant transmission equipment and replacement of end of life interface equipment. We consider the standard prudent with a medium level of documentation quality as the delivered upgrades met current design standard. A higher level of documentation quality would be assessed if the standards for Emerald to Tolmie had been sighted.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Upgrade required to minimise disruption	None	\$ -	Documents include: Capital Funding Request Change Request Closeout Report Verification Report Invoices SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Appears the strategy was to purchase materials & labour from the Aurizon preferred suppliers when required.	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None		
	What proportion of the difference should be considered a capital cost?	N/A	Reduction to budget	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Quotations received for equipment (Aurizon have noted but no evidence of)	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	N/A	Approved network installer	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Aurizon noted quotations received	None		
	Were alternatives considered to minimise whole of life costs?	YES	Options analysed	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Given the complex and specialized nature of the works	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Options analysed	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Optical fibre network upgrade would be expected to have negligible environmental risk, management or approval requirements. Limited evidence available; however closure report indicates no environmental incidents.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Upgrade of system to failures & delays	None	
	(G) Minimising total project costs?	YES		None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	-	Program was spread of numerous financial years	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES		None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	YES		None	
	With regards to timing/delivery program?	-	Program was spread of numerous financial years	None	
	With regards to ordering and storage of equipment?	YES		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudency of Cost	The Minor Capital Funding Request indicated that a number of options were investigated and evaluated for this project. The equipment for this project was competitively tendered, and the costs appear to be reasonable. This project is considered prudent in cost with a medium level of documentation quality.	
			Prudency of Cost Documentation Quality	Medium	
			Conclusion	Prudent	

Project Name	NR Autotransformer Renewal Program	
Project Number	IV.00028	
Project Type	Capital Renewal	
Project Discipline	Electrical	
Asset Type	Power Systems	
System	System Wide	
Expenditure Claimed	\$	2,993,211.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Ian Woodhead

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital Expenditure - Feasibility Investment Approval Request. Coal Rail Infrastructure Master Plan 2009, Section 8. Autotransformer Replacement Scope and Estimate Document Blackwater and Goonyella Rail Systems. Capital Expenditure - Feasibility Investment Approval Request.	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Condition assessments were carried out to determine the expected remaining asset life, with some which had already failed. Since the FY16 replacement project, a transformer specialist company has been engaged who have carried out detailed condition assessments on all the transformers within the network.	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	AMP does not exist	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Aurizon have reported transformer failures and have provided condition assessments of the transformers. It is reasonable to say that these works were necessary.	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	Capital Expenditure - Feasibility Investment Approval Request, reports that some of the transformers have oil leaks.	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Project given go-ahead to save on WOL costs	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	By tendering saved approx. \$1m.	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES		None	\$ -			
Comment on Prudency of Scope			The Autotransformer Replacement Program, 'IV.00028' provides details of the actual autotransformer replacements, including start and finish dates. It is understood that four of the autotransformers were replaced due to their failure. Review of the autotransformer scoring confirms, as per the information in the Autotransformer Replacement Scope and the Estimate Document, that the scoring is in line with the five remaining autotransformers which were replaced. An email received from Aurizon Network, dated 18 May 2017, indicates that North Goonyella AT1 was omitted from the replacements after a further detailed assessment of its condition and operational risk, and a decision was made to replace Mindi autotransformer instead. This is considered to be good engineering judgement. This project is considered prudent in scope. This assessment is made with a medium level of documentation quality due the limited availability of condition assessment reports, which would have further informed the rationale for the AT replacements.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD		Assessed by Ian Woodhead				
<p>Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:</p> <ul style="list-style-type: none"> - the standard of works has been pre-approved in accordance with Clause 3.1.2 - QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or - the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable. 						
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: 14MVA, 50kV/25kV, 50Hz Autotransformer Specification and Scope of Work. AS2067 - 2008 (current at the time).
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	NO	Transformers have been replaced with a higher rating transformer, which is in accordance with all new transformers on the Aurizon network. However, consideration should have been given into any oil containment requirements in the event of a transformer failure and for the protection against fire and explosions, in accordance with AS2067. It is noted that the new transformers contain an additional 2,900litres of oil. There is no evidence of any design or construction works for oil containment to provide. There is also no evidence of design and construction works to provide fire and explosion protection in the event of a single transformer failure.	None	\$ 100,000.00	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	NO	Consideration should have been given into any oil containment requirements in the event of a transformer failure and for the protection against fire and explosions, in accordance with AS2067	None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	NO	Consideration should have been given into any oil containment requirements in the event of a transformer failure and for the protection against fire and explosions, in accordance with AS2067	None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	NO	See above	None	\$ -	
Comment on Prudence of Standard			<p>Consideration should have been given into any oil containment requirements in the event of a transformer failure and for the protection against fire and explosions, in accordance with AS2067. It is noted that the new transformers contain an additional 2,900litres of oil. There is no evidence of any design or construction works for oil containment to provide. There is also no evidence of design and construction works to provide fire and explosion protection in the event of a single transformer failure.</p> <p>Further information is provided in Section 5.2.11 of the report.</p>			
Prudence of Standard Documentation Quality			High			
Conclusion			Not Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Documents Include: Funding Request Procurement information (RFP, Submission, Evaluation, payments, variations, closure) SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Saving to budget as works tendered rather than using Standing Offer panel	None		
	What proportion of the difference should be considered a capital cost?	NO	Saving to budget	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	AT's competitively tendered	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	AT's competitively tendered	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Saved approx. \$1m by tendering in lieu of supplier agreement	None		
	Were alternatives considered to minimise whole of life costs?	YES	Project based upon minimising WOL costs	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Tendered	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	AT's competitively tendered saving approx. \$1m	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework. Sighted evidence of environmental management and assessment, which was scheduled in project management plan, and specification requires environmental issues related to operation, maintenance and disposal to be covered in Contractor's operating and maintenance manual.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Project was based on this premise	None	
	(G) Minimising total project costs?	YES	Competitively tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	YES	Works completed ahead of schedule, refer to completions certificate	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	YES	Completed ahead of schedule	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudence of Cost			With regards to cost, evidence of a competitive tender process was sighted, which reduced costs by up to an estimated \$1 million. The project was introduced to minimise whole-of-life costs, and works were completed ahead of schedule (as demonstrated in the Completion Certificate). This project is considered prudent in cost with a high level of documentation quality.		
Prudence of Cost Documentation Quality			High		
Conclusion			Prudent		

Project Name	NR Ethernet to Corner - SCADA Upgrade	
Project Number	A.04231	
Project Type	Capital Renewal	
Project Discipline	S&TSS	
Asset Type	Network Controls	
System	System Wide	
Expenditure Claimed	\$	2,826,362.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Upgrade to the SCADA Network within the existing traction system
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Ongoing upgrade to the Ethernet network that supports the SCADA controls.
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Driven by a Enforceable Notice of undertaking in 2008 and subsequent reports/audits.
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	\$1.6M in FY13/14
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Scope of Works Commissioning docs Funding Approval Request Project Schedule Project Management Plan Completion documents Client Requirements	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Enforceable Notice given in 2008	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	AMP not sighted, however, aspires to deliver best practice and reduce the risk of failure	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Network failures were occurring. SCADA circuits needed to operate traction system.	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	Improved resilience in the network in the event of an emergency.	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Options analysed and became a program of works	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	IAR signed off	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	IAR signed off	None	\$ -			
Comment on Prudency of Scope			<p>The objective of the NR Ethernet to Corner SCADA Upgrade is to reduce communication and command failures within the existing traction SCADA system by improving the reach and reliability of the Power SCADA control network, as detailed in the Funding Request.</p> <p>The Funding Request outlines the key benefits with measurable KPIs, including the improvement of mean time between failures (MTBF). These command failures were seen as a safety issue by the ECOs and the Electrical Safety Office and then resulted in an Enforcement Notice in 2008. The Notice included scope improvements modernising out of date technologies to improve operability on sites. The Enforcement Notice given suggested a necessary upgrade to reduce risk of failure. Furthermore, the current RTUs have reached end of life and are no longer supported by the vendor. Likewise the SCADA software at the heart of the PSS system is now end of life and any future upgrades to this software will require IP/Ethernet connected RTUs. The scope is assessed as prudent with a medium level of documentation quality as the renewals were driven by an Enforcement Notice, suggesting safety has been considered. No asset management plan was provided.</p>				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Scope of Works Commissioning docs Funding Approval Request Project Schedule Project Management Plan Completion documents Client Requirements
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Upgrade to any transmission network is essential as the equipment gets older modifications are required to maintain operational performance	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	YES	SCADA network needed to support Operational requirements.	None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	YES	Design Basis report details design standards	None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	YES	Enforceable Notice given to operator.	None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			The design standards reflect national standards necessary for commercially available off-the-shelf products for this type of upgrade. This project is considered prudent in standard with a high level of documentation quality.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Documents include: Scope of Works Commissioning docs Funding Approval Request Project Schedule Project Management Plan Completion documents Client Requirements Procurement documentation SAP Purchase Orders	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES		None			
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None			
	What proportion of the difference should be considered a capital cost?	N/A		None			
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment		Information assessed
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES		None	\$ -		
	Did the project demonstrate value for money with regards to sourcing of labour?	YES		None			
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES		None			
	Were alternatives considered to minimise whole of life costs?	YES		None			
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None			

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Tendered based upon existing supply agreements	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	IT project would be expected to have negligible environmental risk, management or approval requirements. According to the project management plan, an Environmental Management plan will need to be developed by Aurizon Engineering and Project Delivery Program Support. Accordingly, the Contractor will need to provide specific environmental management requirements to ensure that works undertaken have minimal adverse effects on the environment and surrounding community and to abide by the environmental responsibilities defined in the Contract. The plan will detail both the management and operational processes to ensure construction / operation activities achieve the desired environmental outcomes.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES		None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES		None	
	(G) Minimising total project costs?	YES	Tendered based upon existing supply agreements	None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	YES	Rolling program of works	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	YES	Costs appear reasonable	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	YES	Rolling program of works	None	
	With regards to ordering and storage of equipment?	YES		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?	N/A		None	
Comment on Prudency of Cost			This project is an internal works project which is part of a rolling program of works, and was required due to an Enforcement Notice provided to the operator to reduce the risk of failures. The equipment has been tendered using an existing supply agreement. As the costs appear reasonable for the works undertaken, this project is considered prudent with a low level of documentation quality, given the limited amount of information available upon to which to base an assessment.		
Prudency of Cost Documentation Quality			Low		
Conclusion			Prudent		

Project Name	Connors Range 3G Coverage	
Project Number	IV.00041	
Project Type	Capital Renewal	
Project Discipline	Telecoms	
Asset Type	Telecoms Backbone	
System	Goonyella	
Expenditure Claimed	\$	2,467,344.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Upgrade to the 3G radio network
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Funding request made in 2015
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	New equipment installed in the Connors Range Area.
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	NO	Some sites require back-up connections to Telstra

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Telstra Supply Agreement Capital Funding Request Increase in capital project funding Closeout Report As built Plans	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	No AMP sighted, however it aspires to deliver best practice and reduce the risk of failure	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Improves radio coverage within Connors Range. In times of emergency radio coverage is essential	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES		None	\$ -		
	Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Options analysed and became a program of works	None	\$ -		
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	3 options considered	None	\$ -		
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	Not sufficient info	None	\$ -		
Comment on Prudency of Scope			Improvements to the Connors Range 3G coverage were based on a need for improved safety in times of emergency, as well as improving transmission reliability in the 60km stretch. The implemented upgrades to network resilience provide long-term benefits across the network, including to the approximate 70 trains that pass through the area each day. The scope is assessed as prudent to a medium level of documentation quality as the improved network coverage provides a benefit for operations and for times of emergency.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Telstra Supply Agreement AS Built Plans Closeout_Report
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Standards appear to be designed to international standard and works are consistent with adjacent infrastructure.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			Upon review of Telstra as-built drawings, the works appear to be designed to international standards and are consistent with the plan for improved radio coverage. The project is assessed as prudent in standard, with a high level of documentation quality as the work has undertaken by Telstra and as such will be consistent with adjacent infrastructure.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Quotation from Telstra became the preferred option resulting in less capital expenditure than other options	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	NO		None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money?	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Options provided were more expensive than the preferred option	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Quotation from Telstra became the preferred option resulting in less capital expenditure than other options	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Quotation from Telstra became the preferred option resulting in less capital expenditure than other options	None		
	Were alternatives considered to minimise whole of life costs?	YES	Preferred option also most cost effective WOL	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES		None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES		None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	N/A		None	
	(E) Were access holder requests appropriately managed?	N/A		None	
	(F) Minimising WLC including future maintenance and operating costs?	YES		None	
	(G) Minimising total project costs?	YES		None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	YES	Costs appear reasonable	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	YES	By contractor	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	YES	Telstra network, potential for offer users	None	\$ -
	If Yes, were the costs allocated appropriately for end users?	YES		None	
			Comment on Prudency of Cost Installation of modern 3G cellular technology to the area, with support from Telstra, using existing Aurizon Network sites to support and house the equipment, is considered the most cost effective way of meeting the base requirements (Connor's Range Telstra (1)). The Capital Funding Request for this project identifies a number of options which were evaluated, with the preferred option representing the best value for money and reducing whole of life costs. In addition, the project was competitively tendered. As the project uses the Telstra Network, there exists potential for other users to use the network, and the budget is aligned with the agreement made with Telstra. The project is considered prudent in cost with a high level of documentation quality.		
			Prudency of Cost Documentation Quality High		
			Conclusion Prudent		

Project Name	Transmission Renewal Program - Tranche 1	
Project Number	IV.00026	
Project Type	Capital Renewal	
Project Discipline	S&TSS	
Asset Type	Network Controls	
System	System Wide	
Expenditure Claimed	\$	1,389,384.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Transmission Renewal Project. (Hardware and Software Upgrades)
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Funding source over two years for the initial phase. Funding request made in 2015.
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Equipment Upgrade/renewal
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	Aurizons transmission network.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Project Summary Capital Funding Request Schedule Update Project Management Plan Change Request Handover Documentation Test Results Closeout Report	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Equipment installed to improve transmission network performance and improve network resilience.	None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	-	No Asset Management Plan available	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Improves network performance and removes risk of failure.	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Project part of layer program of works	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	As above	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	Limited or no evidence	None	\$ -			
Comment on Prudency of Scope			Reduction of the number of End of Life assets within the network, coupled with a reduction in faults appears to be Aurizon Network's driving motivation for this project. Improved transmission network performance and improved network resilience, as outlined in the Funding Request, provide strong reasoning for upgrades. For both the primary and redundant systems, the impacts of disruptions to the service have been measured on an entire telecommunications basis and their impact outlined in the Funding Request. The scope is assessed as prudent, and document quality of a medium level. The project's scope would have a high level of documentation quality if an asset management plan was available and failure statistics were used to show costs to the core business.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Project Summary Capital Funding Request Schedule Update Project Management Plan Change Request Handover Documentation Test Results Closeout Report
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The appropriate standards for the design and construction of this project are listed in Section 2.3 of the Funding Request. Installation and commissioning reports, closeout reports and handover have been sighted.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			The appropriate standards for the design and construction of this project are listed in Section 2.3 of the Funding Request. Installation and commissioning reports, closeout reports and handover have been sighted. These confirm the standards that were used and as such the standard is assessed as prudent to a high level of documentation quality.			
Prudence of Standard Documentation Quality			High			
Conclusion			Prudent			

COST

Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	N/A		None	\$ -	Documents include: Project Summary Capital Funding Request Schedule Update Project Management Plan Change Request Handover Documentation Closeout Report
	(ii) Do costs align to scale, nature, and complexity of the project?	-	Budget has been exceeded	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Aurizon Network have confirmed that \$400,000 has been credited back to project for the FY16/17 year.	None		
	What proportion of the difference should be considered a capital cost?	-	Limited or no evidence	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	-	Limited or no evidence	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	-	Limited or no evidence	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	-	Limited or no evidence	None		
	Were alternatives considered to minimise whole of life costs?	-	Limited or no evidence	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	-	Limited or no evidence	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	-	Limited or no evidence	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Transmission renewal project would be expected to have negligible environmental risk, management or approval requirements. The available documentation indicates environmental assessment is provided for in the program budget.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	-	Limited or no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	-	Limited or no evidence	None	
(I) Did the project meet contractual time frames?	-	Limited or no evidence	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	-	Limited or no evidence	None	\$ -
	With regards to project management costs?	-	Limited or no evidence	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	

Comment on Prudence of Cost			With regards to cost, limited information for this project was made available. The Capital Funding Request demonstrates that Aurizon Network evaluated a number of project options before selecting a preferred option, demonstrating regard for value for money. SAP records note an expenditure amount that exceeds the claimed amount for the year, however Aurizon Network have confirmed that \$400,000 has been credited back to project for the FY16/17 year. Given the limited available information, as evidence of program or procurement processes were not available, the project is considered prudent in costs with a medium level of documentation quality.		
Prudence of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NR CQC Structures Renewal Program FY15	
Project Number	A.04563	
Project Type	Capital Renewal	
Project Discipline	TACA	
Asset Type	Structures	
System	System Wide	
Expenditure Claimed	\$	1,091,163.00

Reason for Project	
Expansion	<input type="checkbox"/>
Renewal	<input checked="" type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Torill Pape

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	\$11.1M in FY14/15
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO	Limited or no evidence	None	\$ -	Documents include: Interview with Principal Condition Reports + Photos Structures Policy Asset Maintenance and Renewal Policy Network Safety Management System Track Geometry Data	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
3.3.2 (c) Were the works reasonably required?	Expansion projects						
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Renewals were selection on poor condition (CS4) + age + asset criticality in network	None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A	Asset criticality and redundancy are taken into account	None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Poor condition was affecting service of line; Anecdotally, approx. 5 failures per year occur due to poor condition and age. Complete or partial collapse would have resulted in speed restrictions or traffic diversion.	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	No AMP available	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	see (iv) above	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	see (iv) above	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	Part of a larger program of on-going works	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Project competitively tendered	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES		None	\$ -			
Comment on Prudency of Scope			Scope of works was warranted and justifiable due to poor condition and age of asset, as well as network criticality and consequences on operation and safety of network				
Prudency of Scope Documentation Quality			High				
Conclusion			Prudent				

STANDARD Assessed by Torill Pape

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Project Management Plan Structures Policy Asset Maintenance and Renewal Policy Network Safety Management System, Drawings Project Management Plan Past performance data (Excel). Tender documents Marked-up as-built information/drawings Project completion Report Project Closure Report
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Similar design/construction solutions chosen. Where works were innovative, RPEQ sign-off on product prior to implementation	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	YES		None	\$ -	
	(ii) With regards to current and likely future usage levels	YES		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	YES	Baseline req's: AS5100, AS1597, AS4678 and others noted in project documentation	None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	YES	Suitably qualified consultants and construction contractors selected after tendering process	None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	YES		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	YES	EPA, WHS etc. considerations noted in project documentation	None	\$ -	
Comment on Prudence of Standard			Only select information was available for some asset replacements, pertaining to marked-up as-built drawings and Project Completion Reports. However design and construction solutions provided were of similar quality and standard and were consistent with typical solutions provided for similar applications			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES		None	\$ -	Documents include: Project Management Plan Drawings Project Management Plan Tender documents Project Completion Report Project Closure Report SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Project part of larger program of works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	-	Part of larger program of works which is yet to be completed	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Project was competitively tendered	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Project was competitively tendered	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Project was competitively tendered	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Current design standards specified	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Project tendered competitively to Panel contractors	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES	Procurement process followed	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project has adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework. Sighted evidence of: - Environmental management and assessment scheduled in Project Management Plan. - Provisional allowances made for lengthy approval process for property, cultural heritage, native title and environmental approvals. - Desktop to identify waterways and environmentally sensitive areas - Confirmation that all works to be managed as per the Asset Renewal Construction EMP. - Contractor's draft health, safety and environment management plan.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES		None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Tendered to Aurizon design standards	None	
	(G) Minimising total project costs?	YES	Tendered competitively	None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
	(I) Did the project meet contractual time frames?	YES	Ongoing program of works; works completed in order of prioritization	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	YES	Ongoing program of works	None	\$ -
	With regards to project management costs?	N/A	Part of larger program	None	
	With regards to risk allowances?	YES		None	
	With regards to timing/delivery program?	YES	Ongoing program of works	None	
	With regards to ordering and storage of equipment?	YES	Ongoing program of works	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudency of Cost			For this project, works tendered, as it is part of larger program, final costs of program unknown at this time.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NR Optical Fibre Transmission Network Upgrade	
Project Number	A.03978	
Project Type	Capital Renewal	
Project Discipline	Telecoms	
Asset Type	Telecoms Backbone	
System	Blackwater	
Expenditure Claimed	\$	166,962.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Transmission Network used to support train operations
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	NO	Close out report signed on 21st Jan 2014
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Replacement of equipment
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	This is a balance of payment for project. Capital expenditure was claimed in 2013/14 (\$0.7M) and 2014/15 (\$0.9M)
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Minor Capital Funding Request Revised Capital Funding Request Change Request Project Management Plan Site Scope Milestone Schedule Update Quality Management Plan	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Failure of the network has a direct impact on train performance	None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A	Unable to determine reasonable demand	None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	If failure had occurred in this period, train performance would have been affected	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	No assessment management plan	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Replace life expired equipment	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	NO	Performance deficiency only	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	N/A	Balance of program of works previously unclaimed	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	Balance of program of works previously unclaimed	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	Balance of program of works previously unclaimed	None	\$ -			
Comment on Prudency of Scope			The scope of this upgrade was to replace end-of-life communications equipment between Rockhampton and Parana. The associated benefits of the upgrades are clear – a failure of the network has a direct impact on train performance. The minor funding request outlines that the aged equipment is obsolete, is no longer supported by the manufacturers repair, and the is the contributing factor to the current failures in the system. An asset management plan or similar document was not available to support the renewals strategy. The scope of the project is considered prudent with a medium level of documentation quality as these upgrades reduce external risk to an acceptable level.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents Include: Minor Capital Funding Request Revised Capital Funding Request Change Request Project Management Plan Quality Management Plan
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The funding request notes that the upgraded equipment follows the design practice already used throughout the Blackwater System.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			The funding request notes that the upgraded equipment follows the design practice already used throughout the Blackwater System. Maintenance and operational manual references were excluded in the closeout report as the construction was based on existing equipment already supported in the area. works are outlined in the Closeout Report and reference the completed test certificates, which have not been sighted. The standard of this project is assessed as prudent with a medium level of documentation quality.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Part of larger program of works	None	\$ -	Documents Include: Minor Capital Funding Request Revised Capital Funding Request Change Request Project Management Plan Site Scope Milestone Schedule Update Quality Management Plan SAP
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Part of larger program of works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A	Part of larger program of works	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	N/A	Balance of program of works previously unclaimed	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	N/A	Balance of program of works previously unclaimed	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	N/A	Balance of program of works previously unclaimed	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Balance of program of works previously unclaimed	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Balance of program of works previously unclaimed	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	N/A	Balance of program of works previously unclaimed	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Telecommunications project would be expected to have negligible environmental risk, management or approval requirements. According to available documentation, no environmental management plan is required if no vegetation clearing is undertaken and all works remain inside the building	None	
	(C) Compliance with legal and authority requirements?	N/A	Balance of program of works previously unclaimed	None	
	(D) Minimising disruption to operation of train services during construction?	N/A	Balance of program of works previously unclaimed	None	
	(E) Were access holder requests appropriately managed?	N/A	Balance of program of works previously unclaimed	None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A	Balance of program of works previously unclaimed	None	
	(G) Minimising total project costs?	N/A	Balance of program of works previously unclaimed	None	
	(H) Did project elements align with other elements in the supply chain?	N/A	Balance of program of works previously unclaimed	None	
	(I) Did the project meet contractual time frames?	N/A	Balance of program of works previously unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Balance of program of works previously unclaimed	None	\$ -
	With regards to project management costs?	N/A	Balance of program of works previously unclaimed	None	
	With regards to risk allowances?	N/A	Balance of program of works previously unclaimed	None	
	With regards to timing/delivery program?	N/A	Balance of program of works previously unclaimed	None	
	With regards to ordering and storage of equipment?	N/A	Balance of program of works previously unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
Comment on Prudency of Cost			While there was little evidence provided to compare costs claimed to scope claimed, the costs for this project appear to be reasonable. As such, the project is considered prudent, with a low level of documentation quality due to the limited availability of information.		
Prudency of Cost Documentation Quality			Low		
Conclusion			Prudent		

Project Name	NR Dual Telemetry Upgrade	
Project Number	A.04111	
Project Type	Capital Renewal	
Project Discipline	Telecoms	
Asset Type	Telecoms Backbone	
System	System Wide	
Expenditure Claimed	\$	85,234.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	Upgrade to the communications network that supports operational services
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Closeout report dated 21/7/15
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Renewal of life expired equipment
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	Balance of capital expenditure. CAPEX claims made in 2013/14 (\$2.5M) and 2014/15 (\$3.6M)
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	SAP List of stations and progress Registers (spreadsheet) Project Plan Minor Capital Funding Request Project completion and closure report Engineering Assessment of Aurizon Capital Claim 2013-14 Engineering Assessment of Aurizon Capital Claim 2014-15	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A	Failure of the network has a direct impact on train performance	None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	If failure had occurred in this period, train performance would have been affected	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	N/A	No asset management plan	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Replace life expired equipment	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	NO	Performance deficiency only	None	\$ -		
	Procurement						
	(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	N/A	Balance of program of works previously unclaimed	None	\$ -		
	(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	Balance of program of works previously unclaimed	None	\$ -		
	(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	Balance of program of works previously unclaimed	None	\$ -		
Comment on Prudency of Scope			The scope of this project included post-commissioning works, with the major of costs relating to project management and support. The project completion report was sighted, and the scope of this project is assessed as prudent with a medium level of documentation quality as the improvements to the communication network are warranted, with implications to the overall integrity of the system if failure occurs. The strategy to improve telemetry systems equipment supports long term operational service and strength. The introduction of redundancy to telemetry systems seems reasonable.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	List of stations and progress Registers (spreadsheet) Project Plan Minor Capital Funding Request Project completion and closure report Engineering Assessment of Aurizon Capital Claim 2013-14 Engineering Assessment of Aurizon Capital Claim 2014-15
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Transmission equipment used will be designed to international standards appropriate to the upgrade of telemetry systems. Redundancy in these systems should reflect those standards and were approved in previous capital claims (Table 6 in the 2014/15 Claim).	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			Transmission equipment used will be designed to international standards appropriate to the upgrade of telemetry systems. Redundancy in these systems should reflect those standards and were approved in previous capital claims (Table 6 in the 2014/15 Claim). The standard is assessed as prudent with a medium level of documentation quality as a standard project close-out report was produced and sighted.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Part of larger program of works	None	\$ -	SAP List of stations and progress Registers (spreadsheet) Project Plan Minor Capital Funding Request Project completion and closure report
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Part of larger program of works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A	Part of larger program of works	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	N/A	Balance of program of works previously unclaimed	None	\$ -	Engineering Assessment of Aurizon Capital Claim 2013-14 Engineering Assessment of Aurizon Capital Claim 2014-15
	Did the project demonstrate value for money with regards to sourcing of labour?	N/A	Balance of program of works previously unclaimed	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	N/A	Balance of program of works previously unclaimed	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Balance of program of works previously unclaimed	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Balance of program of works previously unclaimed	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	N/A	Balance of program of works previously unclaimed	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Environmental management requirements delegated to signalling contractor to ensure that works have minimal adverse impacts. Closure report indicates no environmental incidents.	None	
	(C) Compliance with legal and authority requirements?	N/A	Balance of program of works previously unclaimed	None	
	(D) Minimising disruption to operation of train services during construction?	N/A	Balance of program of works previously unclaimed	None	
	(E) Were access holder requests appropriately managed?	N/A	Balance of program of works previously unclaimed	None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A	Balance of program of works previously unclaimed	None	
	(G) Minimising total project costs?	N/A	Balance of program of works previously unclaimed	None	
	(H) Did project elements align with other elements in the supply chain?	N/A	Balance of program of works previously unclaimed	None	
(I) Did the project meet contractual time frames?	N/A	Balance of program of works previously unclaimed	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Balance of program of works previously unclaimed	None	\$ -
	With regards to project management costs?	N/A	Balance of program of works previously unclaimed	None	
	With regards to risk allowances?	N/A	Balance of program of works previously unclaimed	None	
	With regards to timing/delivery program?	N/A	Balance of program of works previously unclaimed	None	
	With regards to ordering and storage of equipment?	N/A	Balance of program of works previously unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?	N/A		None	
Comment on Prudence of Cost			The capital claim for this project was the balance of works, and cost of the works claimed in FY15/16 was 1.4% of total cost, with \$2.5 million and \$3.6 million approved in 2013/14 and 2014/15. While there was little evidence provided to compare costs claimed to scope claimed, the costs for this project appear to be reasonable. As such, the project is considered prudent, with a medium level of documentation quality due to the limited availability of information.		
Prudence of Cost Documentation Quality			Medium		
Conclusion			Prudent		

Project Name	NR Section Insulator Renewal	
Project Number	A.04254	
Project Type	Capital Renewal	
Project Discipline	Electrical	
Asset Type	Power Systems	
System	System Wide	
Expenditure Claimed	\$	66,312.00

Reason for Project		
Expansion		<input type="checkbox"/>
Renewal	X	<input checked="" type="checkbox"/>
Environmental Compliance		<input type="checkbox"/>
Safety Compliance		<input type="checkbox"/>
Risk Mitigation		<input type="checkbox"/>

SCOPE Assessed by Ian Woodhead

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:
 - if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
 - If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	YES	\$1.9M in FY13/14 and \$2.9M in FY14/15.
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?			None	\$ -	Documents include: Coal Rail Infrastructure Master Plan 2009, Section 8. Minor Capital Funding Request. Asset Renewal Client Requirement Brief Section Insulator Renewal.	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?			None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
3.3.2 (c) Were the works reasonably required?	Expansion projects						
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	YES	Most likely, however, without any Condition Assessments, it is difficult to make an assessment.	None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	NO	AMP not available	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Aurizon have reported Section Insulator failures. Condition Assessments have not been made available, making it difficult to confirm that these works were necessary.	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	YES	It is assumed that they were reasonably required due to the age of the equipment. However, there has been no Condition Assessment made available to assess the condition of the equipment.	None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	N/A	Balance of program of works previously unclaimed	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	N/A	Balance of program of works previously unclaimed	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	N/A	Balance of program of works previously unclaimed	None	\$ -			
Comment on Prudency of Scope			The scope of the NR Section Insulator Renewal Project includes renewal of the 157 existing Reboisia section insulators in the Blackwater Electrification system with either new Jacque Galland type section insulators that are in accordance with the Aurizon Network current operational and technical specification documents. The works in the 2015/16 period was for the remaining Reboisia insulators and a number of Jacques Galland section insulators. While condition assessments for the insulators were not available for review, we note that Aurizon Network has reported a number of section insulator failures, and the existing insulators were installed 26 years prior. Therefore, due to the age of the equipment it is assumed that the works were reasonably required to maintain operational performance. The funding included the requirement to conduct a helicopter fly-over of the electrified network to determine the base lined state of the asset and the highest priority section insulators. Email from Aurizon Network dated 27 April 2017 states that a helicopter flyover was completed in 2013, but there was not sufficient detail in the photos taken to ascertain priority and criticality for changing out the section insulators. The email states that the remaining Reboisia and a number of Jacques Galland section insulators were replaced due to insulation failures encountered and a substandard air gap. AECOM consider the scope of works to be prudent based on operational safety requirements, with a medium level of data quality in the absence of condition assessment details or the data expected from the helicopter flyover.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Ian Woodhead

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents include: Asset Renewal Client Requirement Brief Inspection and Test Plans
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Insulators which were installed 26 years ago are being replaced with ones which are in accordance with Aurizon's current operational and technical specification documents.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements			None	\$ -	
	(ii) With regards to current and likely future usage levels			None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice			None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards			None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator			None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)			None	\$ -	
Comment on Prudence of Standard			With regards to standard, the insulators installed 26 years ago are being replaced with insulators which are in accordance with Aurizon Network's current operational and technical specification documents. These types of insulators are used across the globe on similar electrified railway schemes. Inspection and Test Plans (ITPs) have been reviewed, which make reference to Aurizon Network's Specifications for the inspection and removal of existing insulators and makes reference to the manufacturer's installation instruction manual. A project closure report is available but is not signed. This project is considered prudent in standard.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?			None	\$ -	Documents include: Minor Capital Funding Request. Asset Renewal Client Requirement Brief SAP Exception from tendering memo
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Part of larger program of works	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	N/A	Part of larger program of works	None		
	What proportion of the difference should be considered a capital cost?	N/A	Part of larger program of works	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	N/A	Balance of program of works previously unclaimed	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	N/A	Balance of program of works previously unclaimed	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	N/A	Balance of program of works previously unclaimed	None		
	Were alternatives considered to minimise whole of life costs?	N/A	Balance of program of works previously unclaimed	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	N/A	Balance of program of works previously unclaimed	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	N/A	Balance of program of works previously unclaimed	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	As a renewal project, the project would have adopted the PEPA environmental risk assessment, management planning/ approvals and compliance framework; however no evidence of implementation specific to this project was available.	None	
	(C) Compliance with legal and authority requirements?	N/A	Balance of program of works previously unclaimed	None	
	(D) Minimising disruption to operation of train services during construction?	N/A	Balance of program of works previously unclaimed	None	
	(E) Were access holder requests appropriately managed?	N/A	Balance of program of works previously unclaimed	None	
	(F) Minimising WLC including future maintenance and operating costs?	N/A	Balance of program of works previously unclaimed	None	
	(G) Minimising total project costs?	N/A	Balance of program of works previously unclaimed	None	
	(H) Did project elements align with other elements in the supply chain?	N/A	Balance of program of works previously unclaimed	None	
(I) Did the project meet contractual time frames?	N/A	Balance of program of works previously unclaimed	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	N/A	Balance of program of works previously unclaimed	None	\$ -
	With regards to project management costs?	N/A	Balance of program of works previously unclaimed	None	
	With regards to risk allowances?	N/A	Balance of program of works previously unclaimed	None	
	With regards to timing/delivery program?	N/A	Balance of program of works previously unclaimed	None	
	With regards to ordering and storage of equipment?	N/A	Balance of program of works previously unclaimed	None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	
			Comment on Prudency of Cost	The cost incurred for this program is for the replacement of the aforementioned insulators. The claim is for the balance of unclaimed works for the project, which was started prior to FY15/16 and which has previously been accepted into the regulated asset base. The project is part of a larger program of works and the costs are considered reasonable for the scope and standard of work done. This project is therefore considered prudent in cost, however the limited availability of information in relation to comparing costs to scope claimed means this project is prudent with a low level of documentation quality.	
			Prudency of Cost Documentation Quality	Low	
			Conclusion	Prudent	

Project Name	Project Pluto-Network Planning System Ph	
Project Number	A.03980	
Project Type	Other	
Project Discipline	System	
Asset Type	Operational Systems	
System		
Expenditure Claimed	\$	14,418,411.00

Reason for Project	
Expansion	<input type="checkbox"/>
Renewal	<input type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	N/A	Project Pluto objective was to upgrade Aurizons planning, scheduling and execution systems - SAP Project No: A03980
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	NO	Phase 2 – Day of Operations Foundation (Boards 1-4) – commissioned May 2016. Phase 2 – Day of Operations Foundation (Boards 5-9) – commissioned August 2016. This is outside the assessment period.
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Upgrade of software -Ref AL-201 Phase 2 Transition to Support Plan Rev Q. Ongoing OPEX costs are separate and are being assessed by the QCA seperately.
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	Aurizons Operational Network Planning Tools.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents include: Capital Expenditure Feasibility Investment Approval Request Project Management Plan Phase 2 Acceptance Report Tender Scoring Executed Contract with supplier System Requirement Specification Closure Report Pluto Financial Summary (Commissioning Dates and amounts)
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -	
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.2 (c)	Expansion projects					
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -	
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -	
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -	
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A	Improves operational efficiency	None	\$ -	
	(iv) Were the works consistent with the Asset Management Plan?	N/A		None	\$ -	
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A		None	\$ -	
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -	
	Procurement					
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	-	Original Budget set in 2012 with initial milestone for the works in 1 Oct 2013 and second milestone April 2014. Alternatives considered.	None	\$ -		
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	-	Process involved Stakeholder interviews, RFI, RFP, Solutioning and Due Diligence and then Execution	None	\$ -		
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	-	p24 and 25 of the fundind request lists the stakeholder consultation	None	\$ -		
Comment on Prudency of Scope			The key business benefits are well structured within the Capital Expenditure request. Financial benefits include the decommissioning of the ViziRail system and a reduction in day of operation loses. A post-implementation review has not been completed, but a benefits realisation assessment for specific network KPIs referred to in the Capital Expenditure Feasibility Investment Approval Request (FIAR) shows the first six months of operational planning trending upwards, reproduced from the FIAR. As such, the scope is assessed as prudent. The data quality to inform the assessment is low. It is recommended that the post-implementation review is assessed in future claims to compare the benefits realised compared with those planned.			
Prudency of Scope Documentation Quality			Low			
Conclusion			Prudent			

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	N/A		None	\$ -	Documents include: Capital Expenditure Feasibility Investment Approval Request Project Management Plan Phase 2 Acceptance Report Tender Scoring Executed Contract with supplier System Requirement Specification Closure Report
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	N/A		None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	

Comment on Prudence of Standard The Transition to Support Plan defines the execution plan for the project and the APEX Phase 2 Final Acceptance Report identifies the testing regime to be followed. The standards followed seem reasonable and are assessed as prudent. The documentation quality is considered to be high.

Prudence of Standard Documentation Quality	High
Conclusion	Prudent

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	N/A		None	\$ -	Documents include: Capital Expenditure Feasibility Investment Approval Request Project Management Plan Phase 2 Acceptance Report Tender Scoring Executed Contract with supplier Closure Report SAP Records Pluto Financial Summary (Commissioning Dates and amounts)
	(ii) Do costs align to scale, nature, and complexity of the project?	-	No budget available by Phase.	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	[REDACTED] No evidence of the change in scope has been provided.	None		
	What proportion of the difference should be considered a capital cost?	N/A		None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	-	Original Budget (YES) - Work was tendered. Revised Cost (NO) - No evidence has been provided	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	-	Original Budget (YES) - Work was tendered. Revised Cost (NO) - No evidence has been provided	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	-	Original Budget (YES) - Work was tendered. Revised Cost (NO) - No evidence has been provided	None		
	Were alternatives considered to minimise whole of life costs?	-		None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES	Work was tendered	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	-	p25 of the funding request notes "The VP Network Operations will retain ownership of this solution and its integration into the business"	None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Software development and implementation would have negligible environmental risk, management or approval requirements.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	-	Limited or no evidence	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	-	Limited or no evidence	None	
	(G) Minimising total project costs?	-	Limited or no evidence	None	
	(H) Did project elements align with other elements in the supply chain?	-	Required to keep network operation	None	
(I) Did the project meet contractual time frames?	NO	Appears to be behind schedule	None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	NO	Information not available for Phase 1 and 2. Contingency is for the entire program.	None	\$ -
	With regards to project management costs?	-	Limited or no evidence	None	
	With regards to risk allowances?	-	Limited or no evidence	None	
	With regards to timing/delivery program?	-	Limited or no evidence	None	
	With regards to ordering and storage of equipment?	-	Limited or no evidence	None	

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	NO		None	\$ -
	If Yes, were the costs allocated appropriately for end users?			None	

Comment on Prudence of Cost

The CAPEX budget of [redacted] outlined in the FIAR is the result of a competitive tender. It covers three Phases of activity, but does not provide a breakdown of cost by Phase, although an amended agreement between Aurizon and the selected supplier addresses approximately [redacted] of the FIAR cost estimate. [redacted] No evidence has been provided to explain the change in project scope, or to demonstrate approval of any variations involved. Implementation of the program is delayed from the original IAR Milestone dates, and Aurizon Network advises that only Phase 2 had been delivered as at the end of the FY15-16 financial year. The capital claim includes \$14.4 million incurred for Phase 2 in the FY15-16 year. Additional costs of [redacted] for Phase 2 were not included in the FY15-16 capital claim because the works were delivered after the end of that financial year. [redacted] the \$14.4 million claim is less than the original budget outlined in the FIAR. In the absence of any detail of this cost, and bearing in mind that this is a project in progress, we recommend that the QCA accept this first claim, but apply scrutiny when evaluating future claims for Project Pluto [redacted]

The initial project cost is therefore considered prudent, and the quality of the documentation available to inform this assessment is considered to be low.

Prudence of Cost Documentation Quality	Low
Conclusion	Prudent

Project Name	Track Access System (TAS)	
Project Number	A.04565	
Project Type	Other	
Project Discipline	System	
Asset Type	Operational Systems	
System	System Wide	
Expenditure Claimed	\$	1,592,031.00

Reason for Project	
Expansion	<input type="checkbox"/>
Renewal	<input type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Craig Jacobs

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	N/A	Track Access System (TAS) is used to manage track possessions
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Completion report dated 27/10/16
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	Upgrade to Track Possession System, which improves operational access to the corridor
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	NO	Aurizon & QR bespoke systems

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed	
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO		None	\$ -	Documents included: Track Access System Trial Plan Project Management Plan TAS Trial Report Project Brief Closeout report Capital Funding Request Project Schedule Benefits realisation	
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO		None	\$ -		
If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment		
Expansion projects							
3.3.2 (c)	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	N/A		None	\$ -		
Were the works reasonably required?	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	N/A		None	\$ -		
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	N/A		None	\$ -		
	Renewal Projects						
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A		None	\$ -		
	(iv) Were the works consistent with the Asset Management Plan?	-	No Asset Management Plan available	None	\$ -		
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	YES	Improves track access	None	\$ -		
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A		None	\$ -		
	Procurement						
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.	YES	All stakeholders agreed to proceed with joint agreement for common scope as part of the overall project	None	\$ -			
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.	YES	Funding request signed off by all parties	None	\$ -			
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.	YES	All stakeholders signed off i.e. QR Aurizon	None	\$ -			
Comment on Prudency of Scope			The close-out report (dated 27/10/16) has been sighted, along with a Benefit Realisation Plan (dated 13/1/2014) which identifies cashable benefits for 2015 and 2016. The scope is considered prudent with a medium level of documentation quality as the primary benefit to the business of the TAS Project is in the consolidation of the ongoing drive for Zero Harm through a significant safe working improvement. An upgrade to Track Possession System improves operational access to the corridor. We note that a post-implementation review is not yet available and that signatures are missing in the close-out report.				
Prudency of Scope Documentation Quality			Medium				
Conclusion			Prudent				

STANDARD Assessed by Craig Jacobs

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope. The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO		None	\$ -	Documents included: Track Access System Trial Plan Project Management Plan TAS Trial Report EXECUTED Project Brief
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	Improves the ability to take track possessions and clear associated track works and improves safety.	None	\$ -	
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	N/A		None	\$ -	
	(ii) With regards to current and likely future usage levels	N/A		None	\$ -	
	(iii) With regards to the requirements of the National Codes of Practice	N/A		None	\$ -	
	(iv) With regards to the requirements of other relevant Australia design and construction standards	N/A		None	\$ -	
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	N/A		None	\$ -	
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	N/A		None	\$ -	
Comment on Prudence of Standard			Upgrade to software applications across a number of Aurizon Network and QR systems including TAS, IAMPS and UTC. The project followed a development, change management and testing strategy with standards identified. The standard is considered prudent with a medium level of documentation quality. The Executed Project Brief lists the quality expectations, which includes field trails. Documentation of these trials have not been sighted.			
Prudence of Standard Documentation Quality			Medium			
Conclusion			Prudent			

COST Assessed by Gary McDonald

Assessing the prudence of costs involves assessing whether the costs are reasonable for the scope and standard of work done. The QCA will accept the prudence of costs of a capital expenditure project if the costs are reasonable for the scope and standard of works undertaken, having regard to the matters set out in clause 3.3.4(c) given the circumstances relevant at the time when the costs were incurred or the capital expenditure was undertaken (as applicable).

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.4 (c) Are costs reasonable for the scope and standard of work done ?	(i) Do the costs align to the Coal Rail Infrastructure Plan?	YES	Safe access to rail corridor required	None	\$ -	Documents included: Project Management Plan Project Brief Closeout report Capital Funding Request Project Schedule SAP QR PO's and Invoices Procurement documentation
	(ii) Do costs align to scale, nature, and complexity of the project?	YES	Part competitively tendered	None		
	Was there a material difference between budgeted and actual costs (i.e. >5%)? Why?	YES	Not sufficient information to determine	None		
	What proportion of the difference should be considered a capital cost?	YES	100%	None		
3.3.4 (c) Does the project demonstrate value for money:	(iii) With regards to the circumstances prevailing in the market and locality for engineering, equipment supply and construction?	YES	Design was tendered	None	\$ -	
	Did the project demonstrate value for money with regards to sourcing of labour?	YES	Design was tendered	None		
	Did the project demonstrate value for money with regards to sourcing of equipment?	YES	Design was tendered	None		
	Were alternatives considered to minimise whole of life costs?	NO	Project is a JV with QR which receives specific equipment	None		
	(iv) Was the procurement methodology consistent with approved procurement strategies?	YES		None		

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) Was the project managed effectively, including the manner in which Aurizon Network has balanced the requirements of:	With regards to appropriate governance structure for size and nature of project?	YES		None	\$ -
	(A) Safety during construction and operation?	YES	Refer to comments in Section 7.1 of Report.	None	
	(B) Environmental approvals and compliance?	YES	Real-time access system project would be expected to have negligible environmental risk, management or approval requirements. No environmental risks nominated in investment risk assessment.	None	
	(C) Compliance with legal and authority requirements?	-	Limited or no evidence	None	
	(D) Minimising disruption to operation of train services during construction?	YES	Offsite	None	
	(E) Were access holder requests appropriately managed?	-	Limited or no evidence	None	
	(F) Minimising WLC including future maintenance and operating costs?	YES	Project was to provide safe access to corridor assets	None	
	(G) Minimising total project costs?	YES	Part competitively tendered	None	
	(H) Did project elements align with other elements in the supply chain?	YES		None	
(I) Did the project meet contractual time frames?	N/A	Not sufficient info	None		
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
3.3.4 (c) (vi) At the time the project was approved, was the program appropriate:	With regards to contingency allowed for?	NO	Final costs exceed original budget	None	\$ -
	With regards to project management costs?	YES		None	
	With regards to risk allowances?	YES		None	
	With regards to timing/delivery program?	N/A	Not sufficient info	None	
	With regards to ordering and storage of equipment?	YES		None	
Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment
Cost Allocations	Are there multiple beneficiaries to the project?	YES	JV with QR	None	\$ -
	If Yes, were the costs allocated appropriately for end users?	YES	Agreement with QR to pay 50% of 'common cost' which are accounted for separately. Costs are for Aurizon only	None	
Comment on Prudency of Cost			The Capital Funding Request detailed a number of options investigated for this project, and noted a preferred option. In addition, numerous stakeholders were engaged and consulted, and signed off on the design. The project is a joint venture between Aurizon Network and QR, and common costs have been split 50/50 between both parties. Costs for the project are on budget, however a project program was not available. As such the project is considered prudent with a medium level of documentation quality.		
Prudency of Cost Documentation Quality			Medium		
Conclusion			Prudent		



Appendix B

**Independent Review of
A.03989 Bauhinia
Electrification**



QCA

**Aurizon Network - Review of Bauhinia Electrification Project
2016 Capital Expenditure Claim**

Date of Release: 27 July 2017

Table of Contents

Executive Summary	4
1. Introduction	5
1.1. Purpose	5
1.2. Background	6
1.3. Objective	6
2. Project Overview	6
3. Review Methodology	7
3.1. Methodology for Assessment	7
3.1.1. Project Reporting Assessment	7
3.1.2. Assessment of Scope	8
3.1.3. Assessment of Standard	9
3.1.4. Assessment of Costs - Not required under Brimik Review Remit.	9
4. Key Issues	9
4.1. Key Project Background	11
4.2. Project Scope, Initiation and Delivery	11
4.3. Scope and Delivery Overview	12
4.3.1. Rangal to Kinrola	12
4.3.2. Kinrola to Rolleston	12
4.3.3. Power Systems Scope of Work	12
4.3.4. Overhead Traction Wiring Overview	13
4.3.5. Signalling Overview	13
4.3.6. Telecommunications Overview	13
4.3.7. Property Overview	13
4.3.8. Civil Overview	13
4.3.9. Handover of Completed Project Deliverables	14
4.3.10. Project Efficiencies	14
5. Extent of Review	15
5.1. Scope and Finding	15
5.2. Standard	16
5.3. Costs (By AECOM)	16
6. Summary of Findings	16
6.1. Qualification to Summary of Findings	16
6.2. Findings	17
7. Assessment	18
7.1. Assessment of Criteria – Scope Prudency	18
7.2. Prudency of Scope	18
7.3. Assessment Criteria- Standard Prudency	19
7.4. Prudency of Standard	19
8. Referenced Information (<i>Commercial in Confidence- redacted for public version</i>)	20
Appendix A	21

Quality Information

Document QCA Brimik – Aurizon Network - Review of Bauhinia Electrification Project
REF: Brimik – QCA 4002
Date: 27/07/2017
Prepared: Stephen Dredge: BEng(Elec & ElectEng); IEAUST 738769; RPEQ 6973
 Craig Walker MBAe; Dip(ElectEng), Liné Corfixen BCom, BBIS
Reviewed: Craig Walker MBAe; Dip(ElectEng), Liné Corfixen BCom, BBIS

Revision History

Rev	Date	Details	Name
1	27/07/2017	Final-Public Report	C Walker

This report has been prepared in accordance with the scope of services described in the contract or agreement between Brimik ACN 154 128 293 and the Client. Any findings, conclusions or recommendations only apply to the aforementioned circumstances and no greater reliance should be assumed or drawn by the Client. Furthermore, the report has been prepared solely for use by the Client and Brimik accepts no responsibility for its use by other parties.

Executive Summary

Aurizon Network Pty Ltd (Aurizon Network) is a wholly owned subsidiary of Aurizon Holdings Limited. Aurizon Network operates the below-rail network servicing coal mines in Central Queensland and these services are declared for third party access under the *Queensland Competition Authority Act 1997* (the Act).

Access to the Aurizon Network is provided under an Access Undertaking, developed by Aurizon Network and approved by the Queensland Competition Authority (QCA) in accordance with the Act.

Aurizon Network submitted Capital Expenditure Claim for the 2015-16 period for consideration by the QCA under the QCA Act. A critical aspect of the Claim is the prudence assessment for inclusions into the Regulated Asset Base (RAB) used to derive reference tariffs for coal-carrying train services.

Brimik was engaged by QCA to undertake a review and provide advice and guidance to QCA in considering Prudence of Scope and Prudence of Standard for the Bauhinia Electrification Project specifically relating to the 2010 Undertaking Schedule A. This document provides the findings and conclusions of that review.

The scope for the review included processes and evidence as relevant to determining the prudence of investment in terms of reasonableness, timing and value. The review has been approached and directly correlated to the obligations and principles documented in the 2010 Undertaking.

The review has found that:

- The project was delivered safely and in compliance with statutory requirements;
- The policies, procedures and strategies in use by Aurizon Network compare in range to current practice and internal governance process;
- Pre-approvals for the project were permitted however, they were not sought for the capital expenditure process. Pre-approvals were not a requirement for the project;
- The standard is considered Prudent. The documentation quality to inform this finding is assessed as High;
- Prudence of Scope has been separated into two distinct aspects which is allowable under section 3.3.2 of Schedule A of the 2010 Undertaking;
- The scope is considered Prudent relating to the timing of the investment. The documentation quality to inform this finding is assessed as Medium- High. There was reasonable grounds for the investment based upon an access agreement and the request to operate electric traction to meet the demand capacity generated by current demand and operationalisation of WICET. Considering WICET's project delays, it would be reasonable to expect consideration for investment timing alteration based upon the new capacity ramp profile of the Wiggins Island Coal Facility, current contracted demand and the availability of existing non-electric traction services to meet any near term demand;
- The scope is considered Prudent relating to the investment not being excessive to reasonable demand. The documentation quality informing this finding is assessed as High. Access agreements underpinned the investment:

This review has found overall that, having regard to the factors required under the access undertaking, Aurizon Network has demonstrated that it had reasonable grounds for proceeding with the project and as such, this review recommends the QCA approve the expenditure as prudent.

1. Introduction

The Queensland Competition Authority (QCA) requested a proposal from Brimik (CABM Pty Ltd trading as Brimik) to fulfil requirements of an issued Terms of Reference (ToR) identified as “Aurizon Network’s 2015-16 Capital Expenditure Claim - Bauhinia Electrification Project” dated 12th April 2017.

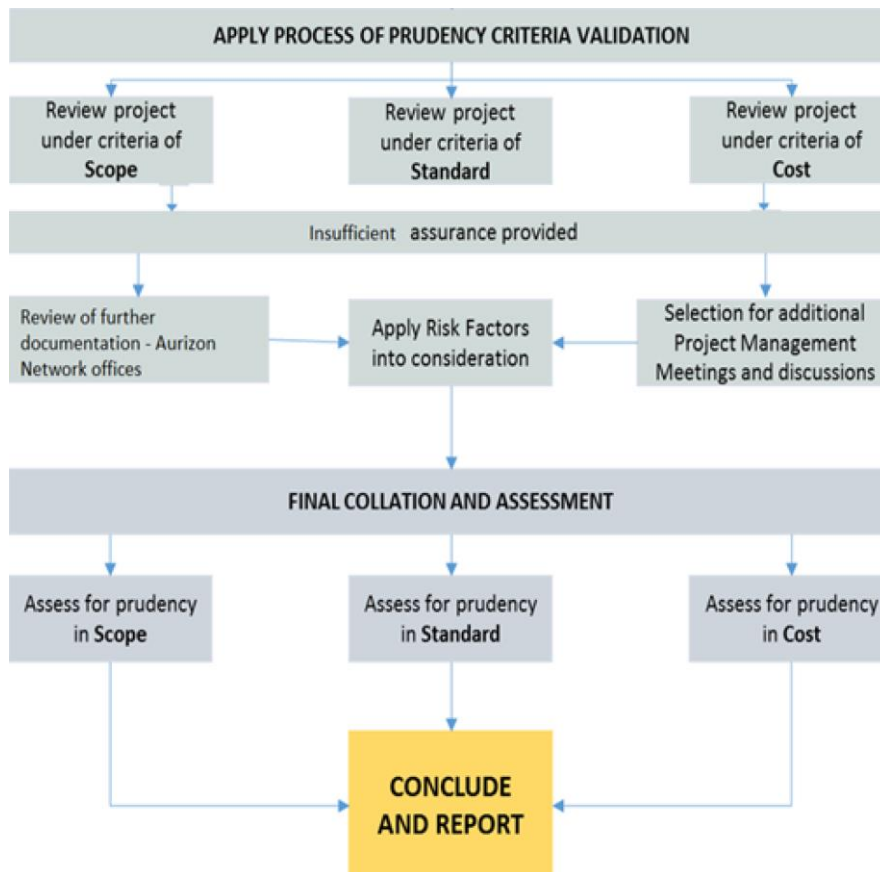
This report addresses the elements as required in the ToR, for the prudence of scope and standard on the Bauhinia Electrification Project included in Aurizon’s 2015-16 Capital Expenditure Claim.

The assessment of prudence of scope and standard has been undertaken by Brimik on behalf of the QCA.

1.1. Purpose

In the Terms of Reference (ToR) issued on the 11th April 2017, the QCA requested independent advice regarding the determination for Prudence of Scope and Prudence of Standard for the Bauhinia Electrification Project as presented in the 2015-16 Capex submission by Aurizon Network under the terms of the 2010 Undertaking Schedule A.

The architecture of the report provides for a project narrative, an empirical assessment, address of relevant clauses of the 2010 Undertaking – Schedule A.



1.2. Background

Aurizon Network Pty Ltd (Aurizon Network), a wholly owned subsidiary of Aurizon Holdings Limited, operates the below-rail network serving coal mines in central Queensland including the Moura, Blackwater, Goonyella, Newlands, and the Goonyella to Abbot Point systems.

The services provided by Aurizon Network's below-rail network are subject to an access undertaking, approved by the Queensland Competition Authority (QCA), which requires the QCA to approve any additions to Aurizon Network's regulatory asset base. To determine whether capital works should be included in the regulatory asset base, the QCA conducts annual post-commissioning assessments of the prudence of capital expenditure, focusing on the scope, standard and cost of the works, specifically in relation to Schedule A of the 2010 Undertaking.

The assessment for prudence of scope and standard has been undertaken by Brimik on behalf of the QCA.

1.3. Objective

To provide advice and assessment support to the QCA for their determining prudence of scope and standard of the project as required by Schedule A of the 2010 Undertaking.

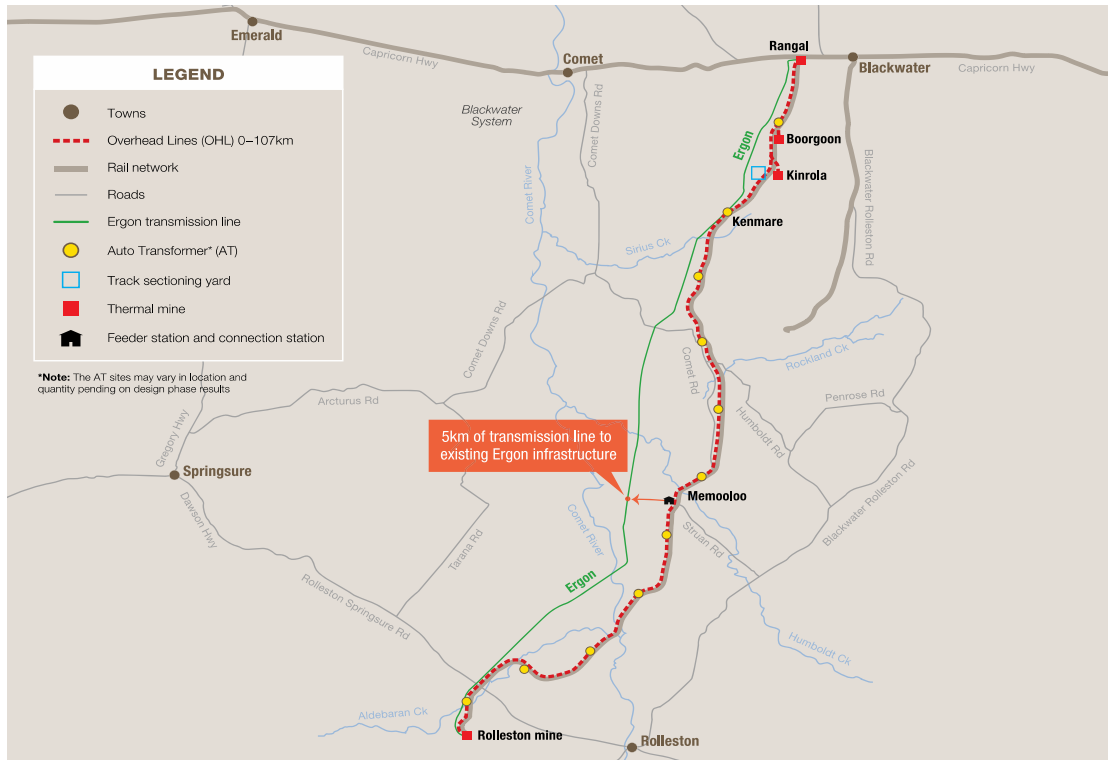
The report is provided independently for the assessment of the capex project listed below to satisfy the objective without any involvement from AECOM. Findings are presented within this document.

Project Number	Project Name	Project Type	Project Discipline	Asset Type	System	2015/16 Claimable Expenditure
A.03989	Bauhinia Electrification	Growth	Expansion	Electrical	Blackwater	\$149,247,831

2. Project Overview

The Bauhinia Line is also known as the Rolleston Line, owing to its direct service requirements to Rolleston Mine. The project scope extends to the electrification of the existing 107km Bauhinia rail spur, from Rangal south to the Rolleston mine, for the purpose of providing access to electric traction for haulage of forecast capacity. Construction of the Bauhinia Electrification Project commenced in May 2013 and was completed in November 2014 with first electric traction services in December 2014. The project scope included:

- Civil works for electrical masts and access
- Feeder station on Struan Road
- Power systems infrastructure construction inside of existing rail corridor:
 - Track sectioning yard
 - Trackside autotransformer and power supply cubicles
 - Overhead traction wiring system to the existing Bauhinia rail spur, inclusive of the Rolleston mine loop and Memooloo passing loop
- Transmission line construction from Struan Road Feeder station to Ergon transmission infrastructure.



3. Review Methodology

3.1. Methodology for Assessment

3.1.1. Project Reporting Assessment

The project has been evaluated for prudence in terms of scope and standard (cost excluded), and findings based on:

1. Review of project documentation supplied by Aurizon Network, supplemented with an iterative request for information (RFI) process used in an attempt to obtain further information;
2. Interviews with key Aurizon Network staff where the information provided was not sufficient;
3. The professional judgement of our technical reviewers, where the information available was not sufficient.

In this context, the use of project documentation is the preferred and best practice, but not the sole, means of evaluating project prudence.

A list of documentation that we would expect to be available to support recommendations of prudence in relation to capital projects is listed in the table below. For example, we consider that a growth project should have an approved business case.

We note that the list provided should be seen as identifying topics that require adequate documentation, rather than a requirement for specific documents.

Prudence of Scope	Prudence of Standard	Prudence of Cost
Investment Approval Request	Investment Approval Request	Investment Approval Request
Approved business case (growth)	As-built drawings	Approved business case
Project feasibility analysis (growth)	Design drawings	Project Management Plan
Project plan	Project completion report	Project Program
Project completion report	Detailed design report	Procurement recommendation
Detailed design report	Certificate of practical completion	Tender recommendation or Exemption from Tendering document
Condition assessment report (renewal)	Signed-off inspection and test plans	Evidence of previous claims
Asset Management Plan (renewal)	RPEQ Certification	Evidence of risk allocations / contingencies
Access Holder Request	Photographs of completed works	Pre-Tender Estimates
Evidence of customer approval (60% or more)	Aurizon Standard Specifications and drawings	Project completion report
Demand- Model / Capacity Profile	Aurizon Policy document	
	Post-Implementation Review	

Documents (or equivalents) expected to support a sound recommendation

We have assessed and reviewed the quality and range of documentation made available by Aurizon Network for the project under our review. In summary:

- Where the documentation provided was alone sufficient to make sound findings, we have assessed the quality of documentation as high. This rating indicates that all the information required to make the finding was documented and available, to a sufficient level of quality.
- Where a proportion of the expected documentation was provided at a sufficient quality, but the available information supported a conclusion on prudence, we have assessed the quality of documentation as medium.
- Where the documentation provided was inadequate in range or quality, and our reviewers were reliant on professional judgement to make sound recommendations, we have assessed the quality of documentation as low.

These criteria metrics are summarised in Table below:

Quality and range of documentation	Legend	Description
High		Sufficient documentary evidence to support and demonstrate a recommendation.
Medium		Incomplete documentary evidence, but interviews, informal documentation and/or professional judgement support a recommendation
Low		Limited documentary evidence, but professional judgement supports a recommendation.

Project Documentation Assessment

3.1.2. Assessment of Scope

The Review Team has considered the scope and outcome against achieving appropriate discretionary scope while ensuring the investment delivered what was reasonably required (not excessive), at the time of the decision, including but not limited to:

- the need for the capital expenditure to accommodate demands at the time of approval;
- the evaluation process adopted by Aurizon Network and the overall effectiveness of the selection process in terms of value for money;
- the specifics around the capital evaluation process and any limitations or strengths of the process to achieve a value-for-money outcome;
- that work undertaken and commissioned was consistent with the scope of works
- Where applicable, additional data to support the scope were sourced and reviewed, such as:
 - capacity forecasts/demand generators;
 - condition reports and engineering recommendations; and
 - safety/accident reports, specifically information on regulatory requirements.

In assessing the scope, the Review Team considered the process of capital project selection and evaluation in relation to the process adopted by Aurizon Network and its overall effectiveness in achieving value for money.

3.1.3. Assessment of Standard

The Review Team has assessed the standard of the works of the project based on, but not limited to:

- as far as is reasonably practicable, that works were consistent in all material aspects with existing and adjacent infrastructure
- where possible, comparing current and likely future usage levels
- where it was evident that works had been altered sufficiently from standards, the engineering justification for any departures from the standard was assessed for its appropriateness and prudence
- where there may be additional requirements of operators or forecasted current and future usage levels requiring augmented capacity or heightened standards (e.g. safety)
- compliance with National Australian Standards, Codes of Practice, or other relevant design and construction standards
- compliance with Aurizon Network and Rail Safety standards
- all relevant legislation, including requirements by any authority (e.g. the Safety Regulator)

3.1.4. Assessment of Costs - Not required under Brimik Review Remit.

4. Key Issues

In assessing whether capital expenditure is prudent under Schedule A of the 2010 Access Undertaking (UT3), Aurizon Network is required to demonstrate it had reasonable grounds for proceeding with a project, and that assessment be made on information that was, or would reasonably have been available at the time the decision to invest was made. Assessing the prudence of scope of that project is undertaken having regard to the factors in clause 3.3.2(c). This is not an exhaustive list (the undertaking specifically states ‘inter alia’, meaning ‘among other things’), nor is there a requirement to satisfy every limb of the clause – rather take into account those factors where relevant.

In this instance, Aurizon Network made an investment decision in April 2013 to electrify the Rolleston branch line by way of the Bauhinia Electrification Project (BEP).

Aurizon Network has submitted BEP for acceptance by the QCA into the regulatory asset base (RAB) in accordance with the provisions of the relevant Access Undertaking – 2010 Access Undertaking (UT3).

A key issue for this review was to consider whether Aurizon Network had reasonable grounds for proceeding with the BEP given the circumstances relevant at the time the decision was made, having regard to the factors set out in clause 3.3.2 (c). It is noted that: (a) the investment was reasonably required to comply with Access Agreements (clause 3.3.2 (c) (ii)), and (b) reasonable demand existed, and as such there was a need for expenditure to accommodate that demand (Clause 3.3.2(c)(ii)). Aurizon Network has sufficiently demonstrated this through the provision of relevant access agreements entered into over a significant period of time, illustrating a timeline of current and future demand for the electrification of the Bauhinia spur line. Specifically, having regard to these factors:-

Redacted due to Commercially sensitivity information



[Redacted]

	Investment Decision Process	Scope & Standard Relevance	Stakeholder Involvement	Evidence	Relevant Associations
Aug-02	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Sep-10	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Oct-11	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Dec-12	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Mar-13	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Apr-13	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Dec-14	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
Mar-15	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Relevant and Associated Timeline associated with BEP Investment

4.1. Key Project Background

The expansion and development, relating to electrification of the Bauhinia line to Rolleston is referenced in the 2009 CRIMP (Coal Rail Infrastructure Masterplan), within the demand growth scenarios. At that time, the project was not nominated as a project within the CRIMP rather, a consideration in future scenarios. For the given scenarios of demand discussed in the 2009 CRIMP, mention of the Rolleston Line expansion is noted in the option scenario of SBB165 and more specifically the Electrification is mentioned in SBB225. Prior to these scenario's, there is an assumption of 12mtpa capacity being available through the existing network infrastructure to Rolleston. Under the auspices of the 2009 CRIMP Long Term demand scenarios, it is reasonable to argue the BEP scope is a relevant scope to meet the long-term demand forecasts for the Blackwater system, specifically beyond 12mtpa. At the time of the 2013 Investment decision, the 2009 CRIMP is considered less relevant due to the passage of time. Specific to BEP, Aurizon's IAR process and modelling superseded the 2009 CRIMP.

Aurizon Network demonstrated that electrification of the Bauhinia spur line to enable operation of electric trains to the Rolleston mine was reasonably necessary to satisfy a request from an access holder and from an access seeker, first in 2011, and committed in 2013

Redacted paragraphs due to Commercially Sensitivity Information

[Redacted paragraph]

[Redacted paragraph]

[Redacted paragraph]

[Redacted paragraph]

[Redacted paragraph]

[Redacted paragraph]

[Redacted paragraph]

	FY2014	FY2015	FY2016	FY ^{TD} 2017
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

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4.2. Project Scope, Initiation and Delivery

Having regard to capital evaluation and investment, the project was evidenced to be subject to comparable project and investment processes. The concept, feasibility, scope, design and execution stages are evident through the investment review and subsequent approval by Aurizon network. The final investment decision timing (30 April

2013) was made subsequent to an underpinning access agreement commitment with Aurizon Operations, whom successfully tendered a competitive process for the haulage of Rolleston tonnes to satisfy future demand for Glencore into Wiggins Island Coal Terminal and RG Tanna Coal Terminals.

4.3. Scope and Delivery Overview

The project delivery method was selected after an assessment of options. The method is described as Hybrid Design and Construct internal and external market delivery. The project delivery management plan is over-viewed by:

Product / Service	Provider	Procurement Method	Responsibility
Design & Construction Works	Laing O'Rourke	Open Competitive Tender	Design & Construction of Kinrola-Rolleston Section
Ergon Connection Agreement	GHD Hill Michael	Sole Source	Ergon Connection Agreement and Due diligence
Ergon Land Acquisition Contract Tax Advice	PWC	Sole Source	Tax Advice and Consultancy Services
Construction Works	Aurizon Rail Services (RSD)	Internal Service Agreement	Construction of Rangal-Kinrola 50kv Augmentation
Design – Signalling, Telecommunications & Controls	Aurizon Signalling & Telecommunication Engineering	Internal Service Agreement	<ul style="list-style-type: none"> o S,T.C Design o S.T.C Coordinate install & commission o T & C install & Commission
Installation- Signalling	Aurizon Rail Services (RSD)	Internal Service Agreement	Signalling Install & Commission

The scope of the project was derived through a process of: - User Requirements Brief, Project Design Brief and Detailed Scope of Works documents, and included:

4.3.1. Rangal to Kinrola

- Installation of a 50kV feeder wire from Rangal feeder station to Kinrola Junction TSY.
- Installation of OPGW from Rangal feeder station to Kinrola TSY.
- Installation of masts ad structures to accommodate the above.

4.3.2. Kinrola to Rolleston

- Electrification of the existing Bauhinia line infrastructure.
- Design and construct power systems infrastructure.
- Design and construct overhead wiring systems infrastructure.
- Property searches as required, followed by acquisition.
- Environmental studies.
- Native Title and Cultural Heritage searches.
- Changes required to signalling systems, specifically as a result of electrification.
- Changes required to telecommunication systems, specifically as a result of electrification.
- Ergon 132kV grid connection study and connection application.
- Design and construction of 132kV transmission line to the existing Ergon infrastructure.
- Geotechnical investigations of civil works required for mast foundations and sub stations.
- Capacity modelling of the Bauhinia and Kinrola lines.
- Immunisation of existing infrastructure effected by electrification

4.3.3. Power Systems Scope of Work

The power systems scope of work included the following:

- Power supply cubicle compound on the Kinrola branch line
- 132kV feeder station (Struan Road)
- Track sectioning yard at 0-5km from the Kinrola Junction
- Trackside autotransformer and power supply cubicle compounds
- Capacitive compensation
- Maintenance Plan and strategic spares
- Training for Maintenance personnel.

All power systems related scope was delivered by the D&C contractor.

4.3.4. Overhead Traction Wiring Overview

The overhead traction wiring scope of work included:

- 50/25kV overhead traction wiring system to the existing Bauhinia line, inclusive of the Rolleston mine loop, existing Memooloo passing loop and new Kenmare passing loop
- Maintenance Plan and strategic spares
- Circa 5km of 132kV transmission lines and switching stations from Struan Road feeder station to Ergon transmission infrastructure.
- Installation of 50kV feeder and OPGW from Rangal feeder station to Kinrola Junction TYS.

The design and construction of all overhead traction wiring works along the Bauhinia line was for delivered by the D&C contractor.

The construction of the 132kV electrical feeder route along Struan Road was for delivered by the D&C contractor.

The design of the Kinrola line upgrade (25kV to 50kV) was completed by Aurizon Engineering & Project Delivery (E&PD) Electrical Program and constructed by RSD under an internal services agreement (ISA) with the BEP

4.3.5. Signalling Overview

Signalling upgrades were required for the electrification in the RCS territory at Kinrola and at the 5 level crossings with active protection. In addition, DTC modifications were required to allow controllers to place blocks to electric traffic.

All design work for signalling and operational systems was conducted by Aurizon's STE division under an Internal Services Agreement with the BEP.

The software upgrade was tendered in collaboration with Queensland Rail, who are the IP owners of the software and the contract awarded to Ajilon and managed by the project via the STE.

Installation and commission of the operational systems was conducted by Aurizon's STE division, whereas installation and commissioning of the signalling systems was conducted by Aurizon's RSD division

4.3.6. Telecommunications Overview

The telecommunications scope of work included the following:

- Provision of fibre pathway from the OPGW termination points to the buildings/cabins as required
- Provision of fibre termination into a communications rack and to a fibre patch panel inside of the buildings/cabins.
- Provision of a backup communications path using Ergon Energy infrastructure.
- Supply of IP telephones at the Track Sectioning Yard, Feeder Station and Auto Transformer sites

All design work for telecommunications systems was conducted by Aurizon's STE division under an Internal Services Agreement with the BEP.

Installation and commissioning of the telecommunications systems was conducted by Aurizon's STE division

4.3.7. Property Overview

Acquisition of the land adjacent the corridor was necessary to accommodate the proposed feeder station. The existing Struan road corridor circa 5km west from the Struan road crossing was used to accommodate the Ergon transmission line under a permit for permissible usage. All other assets were accommodated inside of the existing rail corridor. Property was, required to carry out landowner investigations and work with the Community engagement team to assess acquisition issues

4.3.8. Civil Overview

Aurizon civil engineering were required to assess geotechnical information and offer civil expertise relating to the design and recommendation of mast foundations and. Substation yards. Specific considerations were given to black soil and flood areas. Civil engineering maintained no involvement in the project beyond the design validation stage

4.3.9. Handover of Completed Project Deliverables

The Commissioning plan was developed by LORAC. (Laing O'Rourke Australia Contractors)

4.3.9.1. Commissioning

The Commissioning Plan addressed the commissioning strategy including:

- Possession planning and track closure requirements
- Roles and responsibilities
- Construction interfaces
- Testing and verification
- Criteria for acceptance and the certification
- Defects list/omissions and alterations with action lists and completion time frames.

Due to the nature and extent of this project the commissioning of the electrical system was done in several discrete and independent stages.

Package Providers provided a signed Handover Certificate confirming the satisfactory completion of the works under their control, subject to any exceptions documented in the certificate. These certificates provided confirmation that the design and construction works were completed in accordance with required internal and external standards and controls and are considered safe for operation. These certificates were provided to the Client

4.3.9.2. Asset Handover (physical not financial)

The criteria for handover of the project are summarised as follows:

- Defects Liability Plan
 - Project Completion Report
 - Design Completion Report
 - Customer Acceptance
 - Project Registers
 - Project Closure Advice
 - Project Finalised Notice to Client
 - Signed Project Completion Form.
 - Any Residual Defects listed and accepted in accordance with Defect List procedure.
 - Certificates of Practical Completion for contract works
 - As-constructed documentation and Operation & Maintenance manuals
 - Verification and Validation evidence and other requirements of the EMM (particularly Section 14)
 - Completion of documents demonstrating compliance, including legislative, government, stakeholder and owners' requirements
 - Evidence of completion of necessary training
 - Readiness and capability/ capacity of the Operational Area to receive the deliverable
 - Ongoing Maintenance contract to be transferred to Network Assets/Asset Maintenance
- High voltage infrastructure handed over to Ergon including a deed of release

4.3.10. Project Efficiencies

The topology and formation of the Bauhinia Line presented challenges causal to design and construction methods. When considering safety, scope, schedule, standard, service, (cost is not being considered under this remit) the project is considered within acceptable ranging. By exception, considerations of efficiency in this scope are generally categorised into:

- Connection to Existing power network
- Formation of existing Line not originally constructed to accommodate Electrical Masts/Overhead system
- Brownfield corridor – Maintaining the Rolleston serviceable throughout construction to allow coal haulage from Rolleston Mine
- Topology – The area is generally highly fluctuating in terms of gradient and geology. Access is restricted.

Reliable Power Supply

The project's power infrastructure was specifically designed to balance electrical load applied by the railway traction system, on the high voltage supply network. The electrification solution included a 132kV switchyard connected to the existing Ergon transmission network via 5km 132kV transmission line, a 50kV feeder station, a track sectioning yard, several trackside auto transformers compounds, 110km of rail overhead wiring, telecommunications infrastructure and more than 2,300 overhead wiring masts and foundations.

The interface between the 50kV rail network power systems and the 132kV distribution network presented a significant 'Power Quality' challenge. Static Frequency Converters (SFC) were used for the first time in the Australian rail industry to overcome this challenge and deliver a reliable, balanced, immunised electrical supply to the rail power network from the existing grid. This was considered an efficiency step change, energy efficient departure from the prevailing technology and has pioneered a benchmark for Australian rail projects.

Maintaining System Capacity

This innovative use of helicopters efficiently addressed access constraints – the rail line's footprint was designed for diesel powered trains and not readily adaptable to accommodate the electrification infrastructure. The method facilitated high production rates to maintain schedule. Equally, if not more importantly, the method reduced on-track time minimising disruption to Rolleston Mine Train services

An effective alternate construction methodology involved deployment of a Bell UH-1H helicopter to lift, position and install a significant proportion of the overhead wiring masts. A Squirrel helicopter was later used to run out the optical ground and feeder wires instead of engaging conventional wire trucks and long-reach boom techniques.

Adoption to Existing Rail line

The Bauhinia line's rail formation was originally built for diesel trains without consideration of electrification infrastructure. This presented significant challenges in terms of topology, geology and site access therefore conventional reinforced concrete mast foundations would be an efficient method.

The D & C adopted a *Design for Manufacture and Assembly* approach, prefabricated steel driven piles for overhead wire footings for inaccessible areas along narrow steep formations. These formations were up to 14m in height.

The steel driven mast piles were fabricated offsite, achieving production, logistics and safety benefits. The reduced installation rate of using prefabricated mast piles resulted in average installation time of 20min per mast compared to 90-120min for conventional method

5. Extent of Review

5.1. Scope and Finding

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. The QCA may accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.3.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

For consistency to the remainder of the 2010 Capex assessment being undertaken by Aecom, and to assist the QCA panel determining their decision for Prudence of Scope, we provide a spreadsheet overview in Appendix A.

5.2. Standard

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope.

The QCA may accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

For consistency to the remainder of the 2010 Capex assessment being undertaken by Aecom, and to assist the QCA panel determining their decision for Prudence of Scope, we provide a spreadsheet overview in Appendix A

5.3. Costs (By AECOM)

Out of Scope (*Remit of Others*)

6. Summary of Findings

6.1. Qualification to Summary of Findings

Brimik have taken into account the characteristics that the QCA considers relevant to the determination of prudence and efficiency, namely:

- **Capital expenditure** is prudent if *“it is required as a result of legal obligation, growth in demand, renewal of existing infrastructure.”*
- **Operating expenditure** is prudent if *“it is required to meet ... the forecast required supply or ... its nominated standard of service”*
- **Capital expenditure** is efficient if *“the scope is the best means of achieving the desired outcomes after having regard to the options available...”*
- **Operating expenditure** is efficient if *“it is undertaken in a least-cost manner over the life of the relevant assets...”*

The methodology is of validation of documentation and demonstration of process and relevance. The review has adopted an engineering prudence and not an engineering design validation or proof of concept.

6.2. Findings

Based upon the information provided, and in review team's reasonable opinion, the Bauhinia Electrification Project meets with the terms described for Capital Expenditure.

Referenced to the 2010 Undertaking Schedule A 3.3.2(c)(ii) - The project **scope** is considered prudent relating to reasonable demand. The documentation quality to inform this finding is assessed as **High** as appropriate to deliver the outcome of providing access to an access seeker. To operate Electric traction on the Bauhinia Line to meet the demand profile from Rolleston and broader efficiencies to the Blackwater Electric system.

There is evidence of an access seeker committing to and requiring access for electric traction under a long term access agreement. This is underpinned by an end user agreement with the Coal Producer whom held other complimentary obligations carrying demand risk.

There is evidence the Aurizon Network IAR process did consider demand and efficiency modelling work and iterations post the 2009 CRIMP and up to the time of the investment decision. The IAR considered the Blackwater system efficiency to underpin the timing and the point at which the BEP was required to meet Rolleston demand and deliver whole of system efficiency utilizing the electric assets. As a caveat to this statement, our assessment reaches to evidencing the IAR process only, it does not reach to undertaking a detailed audit of Aurizon's modelling. Our view is the capacity modelling work and iterations of demand assessment post the 2009 CRIMP and that used for IAR decision, informs the point at which Electrification of the Rolleston Line is reasonably required for haulage demand and whole of system efficiency.

A key driver for the demand and timing of the investment is the operationalization of the Wiggins Island Coal Terminal, and the underpinning commitment for additional tonnage to be railed from Rolleston Mine. The timing is noted as being at practical completion of the facility, where Glencore were obligated, as founding shipper, to 10.9mtpa Take or Pay (ToP) capacity from Rolleston Mine. This capacity was additional capacity to the 8.4mtpa through existing rail haulage and access agreements.

Referenced to the 2010 Undertaking Schedule A 3.3.2(c)(iii) - The project **scope** is considered prudent relating to investment timing. The documentation quality to inform this finding is assessed as **Medium-High**. Acknowledging the obligation to fulfil an Access Agreement, the investment may have been subjected to deferral optioning. The interim demand, until WICET demand profile required, may have been fulfilled by existing non-electric traction. The scope was found to be reasonably required under an obligation of an access agreement. It is considered the scope was appropriate to meet medium and long term demand scenarios.

At the time of the WIRP Deed execution and WICET Financial Decision (FD) in September 2011, it was expected WICET would be completed in mid 2014 and operational in December 2014. This operational date, is the date determining the commencement of additional demand from Rolleston (and other WICET Shippers). This timing is referenced in the feasibility process, the request from the access seeker and the IAR. At the time of the BEP investment decision, the operational date of WICET, due to project delivery challenges, there was reasonable information available relating to the WICET project delays and tempered coal forecast for the Blackwater and Moura Systems that would be reasonably available to AN (refer Section 8: IEEFA Briefing Note – WICET May 2014). The target completion dates in the AN agreement with WIRP customers are acknowledged as not varied until a Variation Deed was executed in November 2013 (at which time, it was formalised there to be a delay by 9 months). At the time of the BEP investment decision (April 2013) the WIRP agreements were unchanged.

In our opinion, while the variation documents were not executed until November 2013, there was a reasonable level of information publicly available and, information that the network operator would be reasonably expected to know of, to consider a deferral of capital and meet demand with non-electric services.

The **scope** assessment has found the project satisfies the parameters of the 2010 Undertaking – Schedule A 3.3.2 however, the option to defer the investment for up to two years would be considered a viable alternative.

Referenced to the 2010 Undertaking Schedule A 3.3.3(b)(ii) and (c)(i) - The project **standard** is considered prudent. The documentation quality to inform this finding is assessed as **High**. The standard assessment has found the project satisfies the conditions of the 2010 Undertaking – Schedule A 3.3.3.

7. Assessment

7.1. Assessment of Criteria – Scope Prudency

Assessing prudency for **scope** of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clauses 2.1, 3.1.1, 3.2.1 & 3.2.2

QCA prior approval is not required for capital expenditure (Clause 2.1). At the Aurizon considered the pre-approval (Clause 3.1) process would not have been expeditious to meet the demand access required by the customer seeking access.

The customer comprised of Rolleston Joint venture (either representing itself or by causing its above rail operator, Aurizon Operations), there-for Customer Group Acceptance was not sought, or appropriate in the circumstances (Clause 3.2.1, 3.2.2)

- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.3.2(c), Aurizon Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

7.2. Prudency of Scope

SCOPE – Overall summary of assessment for Scope Prudency		
Criteria	Comment	Finding
2010 Undertaking-Schedule A-3.3.2 Was their sufficient demonstration of Prudency in relation to the delivered scope to satisfy the reasonable requirement	Clause 3.3.2 (b), (c) (vii) The scope is considered prudent. The documentation quality to inform this finding is assessed as High . Alternate delivery optioning conducted, assessed and selected. There is demonstration of an investment assessment incorporating of life cycle cost and forward demand utilising the Bauhinia Line to service demand, specifically Rolleston Mine forecast capacity. The scope satisfactorily delivered the outcome of facilitating Electric haulage and met with terms sought by the access seeker.	High
	Clause 3.3.2 (c) (ii) In terms of assessing prudency with regard to be being “reasonably required”. The information provided demonstrates the scope is considered prudent. The documentation quality to inform this finding is assessed as Medium-High. Reasonably required under obligations requested under an access agreement. The investment is evidence supported by an access agreement to operate electric traction. The investment governance process was consistent with an investment of this magnitude. The demand profiles as available at the time of investment (2009 CRIMP, ABARES, Queensland Coal Report, Coal volume actuals and forecast) indicate the capacity may have been accomplished with non- electric traction until at least 2015-16.	Medium-High

For the purposes of direct correlations in assisting the QCA panel determining their decision for Prudency of Scope, we have included **Appendix A**, an agreed template for the 2016 Capital Submission assessment.

7.3. Assessment Criteria- Standard Prudency

Assessing the prudency of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are excessive to the requirements of the scope.

The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.


7.4. Prudency of Standard

STANDARD – Overall summary of assessment for Standard Prudency		
Criteria	Comment	Finding
<p>2010 Undertaking-Schedule A-3.3.3</p> <p>Was their sufficient demonstration of an appropriate Standard of the Work relative to compliance, value, sustainability, assurance, warranted and being fit for purpose.</p>	<p>Clause 3.3.3 (a) (b) (c) The standard is considered prudent. The documentation quality to inform this finding is assessed as High.</p> <p>Stress testing evident for statutory and regulatory compliance. The engineering standard represents equal to the associated infrastructure and that previously endorsed by QCA assessments. Methods demonstrate market testing and innovation assessed and selected. The project management is considered to be within boundary of industry standards.</p>	<p>High</p>

For the purposes of direct correlations in assisting the QCA panel determining their decision for Prudency of Standard, we have included **Appendix A**, an agreed template for the 2016 Capital Submission assessment

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Appendix A

Project Prudency Assessment Form			
Assessment Number	13	Project Overview	
Project Name	Bauhinia Electrification		
Project Number	A.03989		
Project Type	Growth		
Project Discipline	Expansion		
Asset Type	Electrical Expansion		
System	Blackwater		
Expenditure Claimed	\$ 149,247,831		
Assessors			
Discipline	Name	Assessment Complete	Notes
Engineering	Brimik	YES	
Safety	Gary Blundell		
Environmental	Elisha Bawden		
Cost	Gary McDonald		
Reviewer			
Discipline	Name	Review Complete	Notes
Review			
Prudency Assessment Results			
Area	Confidence Level	Comment	
Scope	Medium-High	The scope is considered prudent with alternate optioning conducted, assessed and selected. There is demonstration of requirement through the assessment of life cycle cost and demand utilising the Bauhinia Spur, specifically Rolleston Mine forecast capacity. The scope delivered the outcome being the electrification of 107km Rail Line from Rangal to Rolleston. At the time of the investment decision, the BEP scope may well have been deferred for up to two years with interim demand serviced by diesel traction.	
Standard	High	The standard is considered prudent with stress testing evident for statutory and regulatory compliance. The engineering standard represent equal to associated infrastructure supported by previous assessment. Methods demonstrate market testing and innovation assessed and selected. The project management is considered to be within boundary of industry standards	
Cost	0	0	
Expenditure Overview			
Area	Value	Adjustments	
Total approved funding			
Actual costs to date			
Previous Capital Expenditure Claim approved by QCA			
Capital Expenditure Claimed	\$ 149,247,831	\$	-
Recommended Capital Expenditure	\$ 149,247,831		

Project Name	Bauhinia Electrification	
Project Number	A.03989	
Project Type	Growth	
Project Discipline	Expansion	
Asset Type	Electrical Expansion	
System	Blackwater	
Expenditure Claimed	\$	149,247,831.00

Reason for Project	
Expansion	<input checked="" type="checkbox"/>
Renewal	<input type="checkbox"/>
Environmental Compliance	<input type="checkbox"/>
Safety Compliance	<input type="checkbox"/>
Risk Mitigation	<input type="checkbox"/>

SCOPE Assessed by Brimik

Assessing the prudence of scope of works involves assessing whether the works are reasonably required. QCA will accept the scope of a capital expenditure project:

- if it has been approved by a customer group or pre-approved in accordance with Clause 3.1.1
- If Aurizon Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.2.2(c), QR Network had reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
Initial Scope Qualification	Are the project works below-rail infrastructure? If not, what proportion of the works are 'below-rail'?	YES	The project scope is consistent with below – rail infrastructure in all aspects			
	Was the project commissioned in 2015-16 (or earlier if they have been deferred for inclusion in the RAB)?	YES	Aurizon commissioned the project prior to 2015-16. The project scope was delivered and operationalised with first electric trains utilising in December 2014			
	Is the project capital expenditure (capex) and has not otherwise been treated as ongoing maintenance expenditure (opex)?	YES	The project expenditure is capital by definition. There has been no evidence identified as being funded by Opex.			
	Has the project been covered by other claims, including review events to recover the cost of repairing flood damage?	NO	No evidence of other claim sources			
	Was the project fully funded by Aurizon Network? If not, was the amount claimed for the proportion of works funded by Aurizon Network?	YES	The project was fully funded by Aurizon Investment			
3.3.2 (b)	(i) Has the scope of works been pre-approved by a Customer Group under Clause 3.2.2(f) of the 2010 Undertaking?	NO	No evidence provided supporting pre-approval under the 2010 undertaking	None		Refer independent report Section 4.2
Pre-approval or Customer Group	(i) Has the scope of works been pre-approved in accordance with Clause 3.1.1 of the 2010 Undertaking?	NO	No evidence provided supporting pre-approval under the 2010 undertaking	None		Refer independent report Section 4.2

If NO to both of the above, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.2 (c) Were the works reasonably required?	Expansion projects					
	(i) Was the project aligned to the Coal Rail Infrastructure Master Plan?	NO	The 2009 CRIMP (Scenario - SBB225) mentions BEP as a scenario option. The 2009 CRIMP was superseded by BEP IAR Process. It was not listed in the 2010 QCA Customer Vote approved CAPEX program	None		Refer independent report Section 4.1
	(ii) Were the works reasonably required to accommodate the requirements of relevant Access Agreements?	YES	Aurizon Operations access agreement and Haulage contract with Xstrata (Glencore) 2012/2013	None		Refer independent report Section 4
	(iii) Were the works reasonably required to accommodate Reasonable Demand?	YES	Demand forecast for Rolleston Mine and in combination with Blackwater system capacity indicated medium and long term demand profile however, market deterioration from 2012 tempered near-term demand.	None		Refer independent report Section 4
	Renewal Projects					
	(iv) Considering the age and condition of the assets, would operational constraints (load or speed restrictions) on the asset have been required in FY15-16 without this intervention?	N/A				
	(iv) Were the works consistent with the Asset Management Plan?	N/A				
	(iv) Were the works reasonably required to reduce external risk to an acceptable level?	N/A				
	(v) Were the works reasonably required to address a deficiency in compliance with safety, environmental or other legislative requirements?	N/A				
	Procurement					
(vi) Comment on the appropriateness of Aurizon Network's processes to evaluate and select proposed capex projects, including the extent to which alternatives are evaluated as part of the process.						
(vii) Comment on the extent to which the capex project was subjected to the capital evaluation and selection process.						
(viii) Comment on the extent to which consultation has occurred with relevant stakeholders about the capex project.						
Comment on Prudency of Scope		The scope is considered prudent with alternate optioning conducted, assessed and selected. There is demonstration of requirement through the assessment of life cycle cost and demand utilising the Bauhinia Spur, specifically Rolleston Mine forecast capacity. The scope delivered the outcome being the electrification of 107km Rail Line from Rangal to Rolleston. At the time of the investment decision, the BEP scope may well have been deferred for up to two years with interim demand serviced by diesel traction.				
Prudency of Scope Documentation Quality		Medium-High				

STANDARD

Assessed by Brimik

Assessing the prudence of standard of works involves assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not oversized such that they are beyond the requirements of the scope.

The QCA will accept the standard of works undertaken where:

- the standard of works has been pre-approved in accordance with Clause 3.1.2
- QR Network can demonstrate to the QCA's reasonable satisfaction, having regards to all factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
- the proposed works are consistent in all material respects with the existing standard and configuration of adjacent infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has been previously accepted by the QCA as being reasonable.

Requirement	Considerations	Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (i) Pre-approval	Has the standard of works been pre-approved in accordance with Clause 3.1.2 of the 2010 Undertaking?	NO	No evidence provided supporting pre-approval under the 2010 undertaking	None		Refer independent report Section 4 and 7
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (b) (iii) Works consistent with Adjacent and/or Existing Infrastructure Standards	Are the works consistent in all material respects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, to the extent that the standard of the adjacent or existing infrastructure has previously been accepted by the QCA as being reasonable?	YES	The works are very consistent with adjacent and adjoining infrastructure. The connecting infrastructure is complimentary to the works. Previously approved standard by QCA	None		Refer independent report Section 4 and 7
If NO, complete the following:		Response	Comment	Impact on Claim	Recommended Adjustment	Information assessed
3.3.3 (c) (i) Were the works of a reasonable standard to meet the requirements of the scope?	(i) With regard to the requirements of Railway Operators and what is reasonable required to comply with Access Agreements	YES	Consistent with precedent and beneficial Total Life Cost of Haulage/Access Agreements			Refer independent report Section 4 and 7
	(ii) With regards to current and likely future usage levels	YES	Capacity Demand remains supported and underpinned by WICET and RG Tanna Capacity Profile. A medium to long outlook is relevant however, near term usage remains steady			Refer independent report Section 4 and 7
	(iii) With regards to the requirements of the National Codes of Practice	YES	Completion Process and Audit regime identified compliance			Refer independent report Section 4 and 7
	(iv) With regards to the requirements of other relevant Australia design and construction standards	YES	Completion Process and Audit regime identified compliance			Refer independent report Section 4 and 7
	(v) With regards to Aurizon Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator	YES	Completion Process and Audit regime identified compliance			Refer independent report Section 4 and 7
	(vi) With regards to all relevant legislation, including requirements of any Authority (e.g. EPA)	YES	Completion Process and Audit regime identified compliance			Refer independent report Section 4 and 7
Comment on Prudence of Standard			The standard is considered prudent with stress testing evident for statutory and regulatory compliance. The engineering standard represent equal to associated infrastructure supported by previous assessment. Methods demonstrate market testing and innovation assessed and selected. The project management is considered to be within boundary of industry standards			
Prudence of Standard Documentation Quality			High			

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